

RECORD OF COMMENTS
Request for Public Comments on a Systematic Review of the Commerce Control List
 [Docket No. 070619210-7211-01]

Published in the *Federal Register*

[72 FR 39052](#)

Comment period extension published in [72 FR 51213](#)

Comments Due: November 1, 2007

| Comment # | Name of sender | Name of organization | Date signed | Mode of transmission Number of pages |
|-----------|---|--|-------------|--|
| 1 | Liz Gant | <u>Samuel Shapiro & Company Inc.</u> | 7/31/07 | -Email -2 pages |
| 2 | Walter H. Zimmer, Senior Materials Engineer AFRL/ ML Collocate for JSF Propulsion | <u>Walter H. Zimmer</u> | 8/13/07 | -E-mail -1 page |
| 3 | John R. Murhpy, Business Development/Export Licensing & Compliance Manager | <u>Sartomer Company Inc.</u> | 8/27/07 | -Email -1 page |
| 4 | William Root | <u>William Root</u> | 9/9/07 | -Email - 127 pages -This included a cover memo and 10 separate attachments |
| 5 | Daniel Shaw, Regulatory Affairs Specialist | <u>Henkel Corporation</u> | 10/24/07 | -Email -1 page |

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|----|---|--|----------|--------------------|
| 6 | Laurence K. Disenhof, Group Director, Export Compliance | <u>Cadence Design Systems, Inc.</u> | 10/24/07 | -Email -3 pages |
| 7 | Nicole Malcolm, Senior Manager, Trade Compliance | <u>Novellus Systems Inc.</u> | 10/29/07 | -Email -4 pages |
| 8 | Victor G. Sosa | <u>University of New Hampshire</u> | 10/30/07 | -Email -2 pages |
| 9a | Ken Montgomery, Director, International Trade Regulation | <u>AEA</u> | 8/1/07 | -Mail -14 pages |
| 9b | Ken Montgomery, Director, International Trade Regulation | <u>AEA</u> | 10/31/07 | -Mail -4 pages |
| 10 | Lezlee Westine, President and CEO | <u>TechNet</u> | 10/31/07 | -Fax -3 pages |
| 11 | Dan Hoydysh, Chairman | <u>Computer Coalition for Responsible Exports (CCRE)</u> | 10/31/07 | -Mail -4 pages |
| 12 | Robert A. Shapiro | <u>Thompson Coburn LLP Attorneys at Law on behalf of Ticona Polymers, Inc. ("Ticona")</u> | 11/1/07 | -Mail -22 pages |
| 13 | Eric McClafferty, Counsel to the Hydraulic Institute / Valve Manufacturers Association Export Control Task Force | <u>Kelley Drye Collier Shannon on behalf of a number of manufacturers of fluid handling equipment that are members of the Hydraulic Institute/Valve Manufacturers Association (HI/VMA) Export Control Task Force</u> | 11/1/07 | -Email -6 pages |

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| 14 | William Primosch | <u>National Association of Manufacturers (NAM)</u> | 11/1/07 | -Mail -8 pages |
| *15 (This comment was not intended to be made publicly available) | Regulations and Procedures Technical Advisory Committee | Regulations and Procedures Technical Advisory Committee | 11/1/07 | -Email -9 pages |
| 16 | David Rose, Chairman, SIA Export Controls Committee | <u>Semiconductor Industry Association (SIA)</u> | 11/1/07 | -Mail -6 pages |
| 17 | Kathleen Lockard Palma, Counsel, International Trade Regulation | <u>General Electric Company ("GE"),</u> | 11/1/07 | -Email -10 pages |
| 18 | Julia M. McCalmon and Jason T. Hungerford, Counsel to Robbins & Myers, Inc. | <u>Thompson Hine LLP Attorneys at Law on behalf of Robbins and Myers, Inc. ("R&M")</u> | 11/1/07 | -Mail -98 pages |
| 19 | Michelle D. Christy | <u>Massachusetts Institute of Technology</u> | 11/1/07 | -Mail -2 pages |
| 20 | Robert M. Berdahl, President, Association of American Universities Anthony P. DeCrappeo, President, Council on Governmental Relations | <u>Association of American Universities Council on Government Relations</u> | 11/1/07 | -Mail -4 pages |
| 21 | Norma Rein, Senior Manager, Global Trade Controls Policy | <u>The Boeing Company</u> | 11/1/07 | -Fax -12 pages |

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| 22 | Eric L. Hirschhorn, Executive Secretary | <u>Industry Coalition on Technology Transfer (ICOTT)</u> | 11/1/07 | -Mail -7 pages |
| 23 | Victoria D. Hadfield, President, SEMI North America | <u>Semiconductor Equipment and Materials International ("SEMI")</u> | 11/1/07 | -Email -13 pages |
| 24 | Cynthia L. Roberts, Global International Trade Compliance Leader | <u>SABIC Innovative Plastics</u> | 11/2/07 | -Email -1 page |
| 25 | Hallock Northcott, President and CEO | <u>American Association of Exporters and Importers (AAEI)</u> | 11/1/07 | -Mail -3 pages |

(the Board) by the Port of Tacoma, grantee of FTZ 86, requesting authority on behalf of Tesoro Refining and Marketing Company (Tesoro), to expand the scope of manufacturing activity conducted under zone procedures within Subzone 86D at the Tesoro oil refinery complex in Anacortes, Washington. The application was submitted pursuant to the Foreign-Trade Zones Act, as amended (19 U.S.C. 81a-81u), and the regulations of the Board (15 CFR part 400). It was formally filed on July 10, 2007.

Subzone 86D (108,200 BPD capacity, 350 employees) was approved by the Board in 2001 for the manufacture of fuel products and certain petrochemical feedstocks and refinery by-products (Board Order 1140, 66 FR 6583-6585, 1-22-2001).

The subzone is located on West March Point Road in Anacortes, Washington (Skagit County). The request anticipates expansion of Tesoro's crude unit and modifications and upgrades to existing units within the refinery complex that may increase the overall crude distillation capacity of the refinery up to 150,000 BPD. No additional feedstocks or products have been requested.

Zone procedures would exempt the increased production from customs duty payments on the foreign products used in its exports. On domestic sales of the increased production, the company would be able to choose the finished product duty rate on certain petrochemical feedstocks and refinery by-products (duty-free) by admitting foreign crude oil in non-privileged foreign status. The duty rates on crude oil range from 5.25 cents/barrel to 10.5 cents/barrel. The application indicates that the savings from zone procedures help improve the refinery's international competitiveness.

In accordance with the Board's regulations, a member of the FTZ staff has been designated examiner to investigate the application and report to the Board.

Public comment is invited from interested parties. Submissions (original and 3 copies) shall be addressed to the Board's Executive Secretary at the address below. The closing period for their receipt is September 17, 2007. Rebuttal comments in response to material submitted during the foregoing period may be submitted during the subsequent 15-day period (to October 1, 2007).

A copy of the application and accompanying exhibits will be available for public inspection at each of the following locations:

U.S. Department of Commerce Export

Assistance Center, 2601 Fourth Avenue, Suite 310, Seattle, WA 98121.

Office of the Executive Secretary, Foreign-Trade Zones Board, U.S. Department of Commerce, Room 2111, 1401 Constitution Ave., NW, Washington, DC 20230.

For further information, contact Diane Finver at Diane_Finver@ita.doc.gov or (202) 482-1367.

Dated: July 10, 2007.

Andrew McGilvray,

Executive Secretary.

[FR Doc. E7-13824 Filed 7-16-07; 8:45 am]

BILLING CODE 3510-DS-S

DEPARTMENT OF COMMERCE

Bureau of Industry and Security

[Docket No. 070619210-7211-01]

Request for Public Comments on a Systematic Review of the Commerce Control List

AGENCY: Bureau of Industry and Security, Commerce.

ACTION: Notice of inquiry.

SUMMARY: The Bureau of Industry and Security (BIS) is soliciting comments from the public regarding the Commerce Control List (CCL) in the Export Administration Regulations (EAR). BIS has already requested that its Technical Advisory Committees (TACs) review the CCL and recommend potential changes to BIS. BIS believes that it would also be beneficial to allow interested members of the public to submit comments regarding the CCL.

DATES: Comments must be received by September 17, 2007.

ADDRESSES: Written comments on this notice of inquiry may be sent by e-mail to publiccomments@bis.doc.gov. Include "Notice of Inquiry—CCL" in the subject line of the message. Comments may also be submitted by mail or hand delivery to Timothy Mooney, Office of Exporter Services, Regulatory Policy Division, Bureau of Industry and Security, Department of Commerce, 14th St. & Pennsylvania Avenue, NW., Room 2705, Washington, DC 20230, ATTN: Notice of Inquiry—CCL; or by fax to (202) 482-3355.

FOR FURTHER INFORMATION CONTACT: Timothy Mooney, Regulatory Policy Division, Bureau of Industry and Security, telephone: (202) 482-2440, e-mail: tmooney@bis.doc.gov.

SUPPLEMENTARY INFORMATION:

Background

The Commerce Control List (CCL) is found in Supplement No. 1 to part 774 of the EAR. The CCL is a list of items subject to the Export Administration Regulations (EAR). Items subject to the EAR are under the export control jurisdiction of the Bureau of Industry and Security (BIS), U.S. Department of Commerce. The CCL covers items (i.e., commodities, software, and technology) enumerated in Export Control Classification Numbers (ECCNs). There are 10 general categories (0-9) of ECCNs and each category has five parts (Systems, Equipment and Components; Test, Inspection and Production Equipment; Materials; Software; and Technology). The CCL covers a broad range of commodities, software and technologies and plays an important role in the U.S. system for controlling the export of dual-use items. Items not listed on the CCL, but subject to the EAR, are designated as EAR99.

Changes are made regularly to the CCL to reflect revisions in the control lists of the multilateral export control regimes (Wassenaar Arrangement; Missile Technology Control Regime; Australia Group; Nuclear Suppliers' Group). To conduct a more systematic review of the CCL, BIS has requested that its TACs review the CCL and recommend potential changes to BIS.

In addition to seeking recommendations from its TACs, BIS is also inviting the interested public to submit comments regarding:

(1) The overall structure of the CCL, including suggestions for how the structure of the CCL may be changed to better advance U.S. national security, foreign policy, and economic interests;

(2) Types of items that should be listed on the CCL and the appropriate levels of controls to be placed on those items, taking into account technology levels, markets, and foreign availability;

(3) Any updates to the CCL item descriptions that would enable the descriptions to better reflect the intent of the multinational controls and to eliminate any overly broad descriptions that inadvertently capture non-critical items that are not controlled by other countries; and

(4) Coordination and harmonization of controls on items covered by the multilateral regimes, such as the Wassenaar Arrangement.

Comments should be submitted to BIS as described in the **ADDRESSES** section of this notice by September 17, 2007.

Dated: July 11, 2007.

Matthew S. Borman,

Deputy Assistant Secretary for Export Administration.

[FR Doc. E7-13843 Filed 7-16-07; 8:45 am]

BILLING CODE 3510-33-P

DEPARTMENT OF COMMERCE

International Trade Administration

A-570-898

Chlorinated Isocyanurates from the People's Republic of China: Preliminary Results of Antidumping Duty Administrative Review

AGENCY: Import Administration, International Trade Administration, Department of Commerce.

SUMMARY: The Department of Commerce ("the Department") is conducting an administrative review of the antidumping duty order on chlorinated isocyanurates ("chlorinated isos") from the People's Republic of China ("PRC") covering the period December 16, 2004, through May 31, 2006. We have preliminarily determined that sales have been made below normal value ("NV") by Hebei Jiheng Chemical Company Ltd. ("Jiheng Chemical"). If these preliminary results are adopted in our final results of this review, we will instruct U.S. Customs and Border Protection ("CBP") to assess antidumping duties on all appropriate entries of subject merchandise during the period of review ("POR").

Interested parties are invited to comment on these preliminary results. We intend to issue the final results no later than 120 days from the date of publication of this notice, pursuant to section 751(a)(3)(A) of the Tariff Act of 1930, as amended ("the Act").

EFFECTIVE DATE: July 17, 2007.

FOR FURTHER INFORMATION CONTACT:

Katharine Huang or Charles Riggle, AD/CVD Operations, Office 8, Import Administration, International Trade Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue, NW., Washington, DC 20230; telephone: (202) 482-1271 or (202) 482-0650, respectively.

SUPPLEMENTARY INFORMATION:

Background

On June 24, 2005, the Department published the antidumping duty order on chlorinated isos from the PRC.¹ On June 2, 2006, the Department published a notice of opportunity to request an

administrative review of this order.² On June 30, 2006, in accordance with 19 CFR 351.213(b)(1), the following requests were made: Clearon Corporation ("Clearon") and Occidental Chemical Corporation ("OxyChem"), petitioners in the underlying investigation, and BioLab, Inc. ("BioLab"), a domestic producer of the like product, requested that the Department conduct an administrative review of Jiheng Chemical's sales and entries during the POR; On the same date, in accordance with 19 CFR 351.213(b)(2), Jiheng Chemical, a foreign producer/exporter of subject merchandise, requested that the Department review its sales of subject merchandise.

On July 27, 2006, the Department initiated this administrative review with respect to Jiheng Chemical.³ The Department issued an antidumping duty questionnaire to Jiheng Chemical on August 15, 2006.

On August 16, 2006, the Department requested that the Office of Policy provide a list of surrogate countries for this review.⁴ On August 23, 2006, the Office of Policy issued its list of surrogate countries.⁵

On August 24, 2006, the Department requested that interested parties submit surrogate value information. On September 12, 2006, the Department requested that interested parties provide surrogate country selection comments. On September 15, 2006, Clearon and OxyChem ("Petitioners") and BioLab requested an extension of time for all interested parties to submit surrogate value information, provide surrogate country selection comments, and submit factual information. On September 19, 2006, the Department granted the Petitioners' and BioLab's extension requests. On October 25, 2006, BioLab requested a further extension of time to submit surrogate value information and provide surrogate country selection

comments. On October 31, 2006, the Department granted the requested extension to all parties.

On November 17, 2006, Petitioners, BioLab and Jiheng Chemical provided comments on publicly available information to value the factors of production ("FOP") and the selection of a surrogate country. All interested parties recommended India as the surrogate country. On November 27, 2006, Jiheng Chemical submitted rebuttal comments on Petitioners' November 17, 2006 surrogate value submission. On November 27, 2006, Petitioners and BioLab requested an extension of time for all parties to submit rebuttal information concerning surrogate values. On November 28, 2006, the Department granted Petitioners' and BioLab's extension requests. On November 30, 2006, BioLab requested an extension of time for all parties to submit factual information. On December 4, 2006, the Department granted BioLab's extension request. On December 6, 2006, Petitioners and BioLab submitted rebuttal comments on Jiheng Chemical's November 17, 2006 surrogate value submission. On December 15, 2006, Jiheng Chemical submitted rebuttal information on Petitioners' and BioLab's December 6, 2006 submissions.

On December 15, 2006, Petitioners and BioLab submitted factual information on surrogate value selection. On December 26, 2006, Petitioners submitted comments on Jiheng Chemical's December 15, 2006 rebuttal information. On January 5, 2007, Jiheng Chemical submitted rebuttal information on Petitioners' December 26, 2006 comments. On January 16, 2007, Petitioners submitted rebuttal information on Jiheng Chemical's January 5, 2007 comments.

On October 11, 2006, Jiheng Chemical submitted its sections A, C, and D questionnaire responses ("AQR, CQR and DQR", respectively). On November 6, 2006, the Department issued a section A supplemental questionnaire to Jiheng Chemical. On November 17, 2006, BioLab submitted comments on Jiheng Chemical's AQR, CQR and DQR. Petitioners submitted comments on Jiheng Chemical's AQR, CQR and DQR on November 20, 2006. On November 28, 2006, Jiheng Chemical submitted rebuttal comments on Petitioners' November 20, 2006, and BioLab's November 17, 2006, comments on its AQR, CQR and DQR. On December 5, 2006, Jiheng Chemical submitted its section A supplemental questionnaire response ("1st SQR"). On January 19, 2007, BioLab submitted comments on Jiheng Chemical's 1st SQR.

² See *Antidumping or Countervailing Duty Order, Finding, or Suspended Investigation; Opportunity to Request Administrative Review*, 71 FR 32032 (June 2, 2006).

³ See *Initiation of Antidumping and Countervailing Duty Administrative Reviews and Request for Revocation in Part*, 71 FR 42626 (July 17, 2006).

⁴ See Memorandum to Ron Lorentzen, Director, Office of Policy, from Wendy Frankel, Director, AD/CVD Operations, Office 8, "Surrogate-Country Selection: 2004-2006 Administrative Review of the Antidumping Duty Order on Chlorinated Isocyanurates from the People's Republic of China" (August 16, 2006).

⁵ See the Memorandum from Ron Lorentzen, Director, Office of Policy, to Wendy Frankel, Director, AD/CVD Operations, Office 8, "Administrative Review of Chlorinated Isocyanurates from the People's Republic of China: Request for a List of Surrogate Countries" (August 23, 2006) ("Surrogate Country Memorandum").

¹ See *Notice of Antidumping Duty Order: Chlorinated Isocyanurates From the People's Republic of China*, 70 FR 36561 (June 24, 2005).

DATES: The fees would be charged from May 1 to September 30.

ADDRESSES: Forest Supervisor, Rogue River-Siskiyou National Forest, 333 W. 8th Street/P.O. Box 520, Medford, Oregon 97501-0209.

FOR FURTHER INFORMATION CONTACT: Jerry Sirski, Recreation Specialist, 541-899-3815.

SUPPLEMENTARY INFORMATION: The Federal Recreation Lands Enhancement Act (Title VII, Pub. L. 108-447) directed the Secretary of Agriculture to publish a six month advance notice in the Federal Register whenever new recreation fee areas are proposed.

These facilities are in close proximity to the Wild, Scenic, and Recreational segments of the Illinois River. This area offers significant recreational viewing opportunities, fishing experiences, and is rich in historical and cultural importance. A market analysis indicates that the \$4/per day single vehicle fee is both reasonable and acceptable for this sort of unique recreation experience.

Dated: August 29, 2007.

Scott D. Conroy,
Forest Supervisor, Rogue River-Siskiyou National Forest.

[FR Doc. 07-4344 Filed 9-5-07; 8:45 am]

BILLING CODE 3410-11-M

DEPARTMENT OF AGRICULTURE

Natural Resources Conservation Service

Notice of Proposed Change to Section IV of the Virginia State Technical Guide

AGENCY: Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture.

ACTION: Notice of availability of proposed changes in the Virginia NRCS State Technical Guide for review and comment.

SUMMARY: It has been determined by the NRCS State Conservationist for Virginia that changes must be made in the NRCS State Technical Guide specifically in practice standards: #396, Fish Passage and #645, Upland Wildlife Habitat Management. These practices will be used to plan and install conservation practices on cropland, pastureland, woodland, and wildlife land.

DATES: Comments will be received for a 30-day period commencing with the date of this publication.

FOR FURTHER INFORMATION CONTACT: Inquire in writing to John A. Bricker, State Conservationist, Natural Resources Conservation Service (NRCS), 1606 Santa Rosa Road, Suite 209, Richmond,

Virginia 23229-5014; Telephone number (804) 287-1691; Fax number (804) 287-1737. Copies of the practice standards will be made available upon written request to the address shown above or on the Virginia NRCS Web site: <http://www.va.nrcs.usda.gov/technical/draftstandards.html>.

SUPPLEMENTARY INFORMATION: Section 343 of the Federal Agriculture Improvement and Reform Act of 1996 states that revisions made after enactment of the law to NRCS State technical guides used to carry out highly erodible land and wetland provisions of the law shall be made available for public review and comment. For the next 30 days, the NRCS in Virginia will receive comments relative to the proposed changes. Following that period, a determination will be made by the NRCS in Virginia regarding disposition of those comments and a final determination of change will be made to the subject standards.

Dated: August 27, 2007.

Kenneth E. Carter,
Assistant State Conservationist (Programs),
Natural Resources Conservation Service,
Richmond, Virginia.

[FR Doc. E7-17624 Filed 9-5-07; 8:45 am]

BILLING CODE 3410-16-P

DEPARTMENT OF COMMERCE

Bureau of Industry and Security

[Docket No. 070619210-7489-02]

Request for Public Comments on a Systematic Review of the Commerce Control List

AGENCY: Bureau of Industry and Security, Commerce.

ACTION: Notice of Inquiry; extension of comment period.

SUMMARY: This notice extends the comment period on a July 17, 2007 notice of inquiry in which the Bureau of Industry and Security (BIS) solicited comments from the public regarding the Commerce Control List (CCL) in the Export Administration Regulations (EAR). This extension of time would allow the public additional time to comment on the notice of inquiry.

DATES: Comments must be received by November 1, 2007.

ADDRESSES: Written comments on this notice of inquiry may be sent by e-mail to publiccomments@bis.doc.gov. Include "Notice of Inquiry—CCL" in the subject line of the message. Comments may also be submitted by mail or hand delivery to Timothy Mooney, Office of

Exporter Services, Regulatory Policy Division, Bureau of Industry and Security, Department of Commerce, 14th St. & Pennsylvania Avenue, NW., Room 2705, Washington, DC. 20230, ATTN: Notice of Inquiry—CCL; or by fax to (202) 482-3355.

FOR FURTHER INFORMATION CONTACT: Timothy Mooney, Regulatory Policy Division, Bureau of Industry and Security, Telephone: (202) 482-2440, E-mail: tmooney@bis.doc.gov.

SUPPLEMENTARY INFORMATION:

Background

On July 17, 2007, the Bureau of Industry and Security (BIS) published a notice of inquiry in the Federal Register (72 FR 39052) that invited the public to submit comments regarding the Commerce Control List (CCL) in the Export Administration Regulations (EAR).

The notice indicated that, in addition to seeking recommendations from its Technical Advisory Committees (TACs) as a part of a systematic review of the CCL, BIS believed that it would also be beneficial to allow interested members of the public to submit comments regarding the CCL.

Specifically, in addition to seeking recommendations from its TACs, BIS invited the interested public to submit comments regarding:

- (1) The overall structure of the CCL, including suggestions for how the structure of the CCL may be changed to better advance U.S. national security, foreign policy, and economic interests;
- (2) Types of items that should be listed on the CCL and the appropriate levels of controls to be placed on those items, taking into account technology levels, markets, and foreign availability;

(3) Any updates to the CCL item descriptions that would enable the descriptions to better reflect the intent of the multinational controls and to eliminate any overly broad descriptions that inadvertently capture non-critical items that are not controlled by other countries; and

(4) Coordination and harmonization of controls on items covered by the multilateral regimes, such as the Wassenaar Arrangement.

The notice of inquiry indicated that the deadline for public comments closes on September 17, 2007. BIS is now extending the comment period until November 1, 2007, to allow the public additional time to comment on the notice of inquiry.

Dated: August 30, 2007.
 Tom Andrukonis,
 Acting, Director, Office of Exporter Services.
 [FR Doc. E7-17639 Filed 9-5-07; 8:45 am]
 BILLING CODE 3510-33-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

Membership of the National Oceanic and Atmospheric Administration Performance Review Board

AGENCY: National Oceanic and Atmospheric Administration (NOAA), Department of Commerce.

ACTION: Notice of Membership of the NOAA Performance Review Board.

SUMMARY: In accordance with 5 U.S.C. 4314(c)(4), NOAA announces the appointment of twenty-two members to serve on the NOAA Performance Review Board (PRB). The NOAA PRB is responsible for reviewing performance appraisals and ratings of Senior Executive Service (SES) members and making written recommendations to the appointing authority on SES retention and compensation matters, including performance-based pay adjustments, awarding of bonuses and reviewing recommendations for potential Presidential Rank Award nominees. The appointment of members to the NOAA PRB will be for a period of 24 months. **EFFECTIVE DATE:** The effective date of service of the twenty-two appointees to the NOAA Performance Review Board is September 4, 2007.

FOR FURTHER INFORMATION CONTACT: Claudia McMahon, Executive Resources Program Manager, Workforce Management Office, NOAA, 1305 East-West Highway, Silver Spring, Maryland 20910, (301) 713-6306.

SUPPLEMENTARY INFORMATION: The names and position titles of the members of the NOAA PRB are set forth below (all are NOAA officials except Tyra D. Smith, Director, Human Resources, Bureau of the Census, Department of Commerce; William J. Fleming, Deputy Director for Human Resources Management, Office of Human Resources Management, Department of Commerce; John E. Oliver, Jr.—Deputy Assistant Administrator for Operations, National Marine Fisheries Service; Maureen E. Wylie—Chief Financial Officer; Vickie L. Nadolski—Director, Western Region, National Weather Service; Charles S. Baker—Deputy Assistant Administrator, National

Environmental Satellite, Data and Information Service; Alexander E. MacDonald—Deputy Assistant Administrator for Laboratories and Cooperative Institutes and Director, ESRL, Office of Oceanic and Atmospheric Research; Paul N. Doremus—Director, Strategic Planning Office of Program Planning and Integration; William Corso—Deputy Assistant Administrator for Ocean Services and Coastal Zone Management, National Ocean Service; Timothy R.E. Keeney—Deputy Assistant Secretary; Tyra D. Smith—Director, Human Resources, Bureau of the Census, Department of Commerce; Craig N. McLean—Deputy Assistant Administrator for Programs and Administration, Office of Oceanic and Atmospheric Research; Elizabeth R. Scheffler—Associate Assistant Administrator for Management and CFO/CAO, National Ocean Service; Rebecca Lent—Director, International Affairs, National Marine Fisheries Service; Deidre R. Jones—Director, Systems Engineering Center, National Weather Service; Joseph F. Klimavicz—Chief Information Officer and Director for High Performance Computing and Communications, Office of the Under Secretary; Scott C. Rayder—Chief of Staff for NOAA; Helen M. Hurcombe—Director, Acquisition and Grants Office; Gregory A. Mandt—Director, Science and Technology, National Weather Service; Louis W. Uccellini—Director, National Centers for Environmental Prediction, National Weather Service; Samuel D. Rauch III—Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service; Kathleen A. Kelly—Director, Office of Satellite Operations, National Environmental Satellite, Data and Information Service; Daniel J. Basta—Director, Office of National Marine Sanctuaries, National Ocean Service; William J. Fleming—Deputy Director for Human Resources Management, Department of Commerce.

Dated: August 28, 2007.

Conrad C. Lautenbacher, Jr.,
 Vice Admiral, U.S. Navy (Ret.), Under
 Secretary of Commerce for Oceans and
 Atmosphere.

[FR Doc. 07-4347 Filed 9-5-07; 8:45 am]

BILLING CODE 3510-12-M

COMMODITY FUTURES TRADING COMMISSION

Sunshine Act Meeting

AGENCY HOLDING THE MEETING: Commodity Futures Trading Commission (Commission).

DATE AND TIME: Tuesday, September 18, 2007, commencing at 9 a.m.

PLACE: 1155 21st Street, NW., Washington, DC, Lobby Level Hearing Room (Room 1000).

STATUS: Open.

MATTERS TO BE CONSIDERED: Public hearing to examine the oversight of trading on regulated futures exchanges and Exempt Commercial Markets (ECMs).

CONTACT PERSONS AND ADDRESSES: Requests to appear and supporting materials should be mailed to the Commodity Futures Trading Commission, Three Lafayette Center, 1155 21st Street, NW., Washington, DC 20581, attention Office of the Secretariat; transmitted by facsimile at 202-418-5521; or transmitted electronically to [secretary@cftc.gov]. Reference should be made to "oversight of trading on regulated futures exchanges and Exempt Commercial Markets." For substantive questions regarding requests to appear and supporting materials, please contact David P. Van Wagner, Chief Counsel, (202) 418-5481; or Duane Andresen, Special Counsel, (202) 418-5492, Division of Market Oversight.

SUPPLEMENTARY INFORMATION: The Commission is undertaking a review of issues related to the oversight of trading on regulated futures exchanges and Exempt Commercial Markets (ECMs). In furtherance of that review, the Commission hereby announces that it will hold a public hearing to commence on Tuesday, September 18, 2007, at 9 a.m., at the Commission's headquarters in Washington, DC.

The Commission has previously announced that the hearing will generally focus on a number of issues, including:

- The tiered regulatory approach of the Commodity Futures Modernization Act of 2000 (CFMA) and whether this risk-based model is beneficial;
- The similarities and differences between ECMs and regulated exchanges;
- The associated regulatory risks of each market category;
- The types of regulatory or legislative changes that might be appropriate to address such identified risks; and
- The impact that regulatory or legislative changes might have on the

From: "Liz Gant" <liz@shapiro.com>
To: <publiccomments@bis.doc.gov>
Date: Tue, Jul 31, 2007 2:19 PM
Subject: Notice of Inquiry--CCL

Reference: Notice of Inquiry--CCL

Bureau of Industry and Security

[Docket No. 070619210-7211-01]

Request for Public Comments on a Systematic Review of the
Commerce Control List:

To Whom It May Concern,

As an International Freight Forwarder, we are constantly receiving questions on the CCL and how it may work. We do not have specific comments about what items should be on the CCL, but we would like to offer a suggestion to make things easier for exporters to identify items which may fall on the CCL.

We would like to see BIS link the CCL with a Schedule B number and/or HTS number. Maybe it could be worded similar to what Commerce does for ADD/CVD - the HTS numbers are provided for reference only, but the Department of Commerce written description of the CCL item or ECCN remains the deciding factor as to whether or not the item is controlled. If exporters could query a list of possible Schedule B/and or HTS numbers, this would make things a little less confusing for exporters and forwarders.

Thank you for considering this suggestion.

Sincerely,
Liz Gant
Samuel Shapiro & Co., Inc.

Liz Gant
Samuel Shapiro & Company, Inc.
Email: liz@shapiro.com
<http://www.shapiro.com>
Mailing Address:
45662 Terminal Drive
Suite100
Dulles, VA 20166
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Baltimore corporate address:
One Charles Center

100 North Charles Street, Suite 1200
Baltimore, MD 21201-3895

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CC: "Jane Taeger" <jane@shapiro.com>, "Nigel McCallum" <nigel@shapiro.com>

Submitted on August 13, 2007 by Walter H. Zimmer, an individual commenter

I offer these comments, having read the proposed CCL to understand the limits of coverage afforded critical US Defense technologies, particularly those with nominally "dual use" turbine engine materials manufacturing technology, common to both Military and commercial engines.

In examining other Commerce Dept Bureau of Industry and Security "Completed Assessments", the following areas are seriously out of date and could benefit from re-evaluation as indicated.

[Reference:

<http://www.bis.doc.gov/DefenseIndustrialBasePrograms/OSIES/DefMarketResearchRpts/>]

1) Forging (1992)

Additional Comment: The Commerce Control List appears not to address the export of critical FORGING (manufacturing) technology required to produce high reliability fan and compressor components key to the F119, F135 and F136 engines. DoD sponsored research and development has sponsored and is now productively and technologically exploiting advanced forging processes (high temperature, controlled strain rate process, strain limited, tool cooling compensated) that create forged machining performs with low defect population, controlled defect size, controlled, homogenous, microstructures in titanium and nickel based superalloys. Based on DoD supported/sponsored software, such as DEFORM, forging tooling and process parameters (temp, strain rate) are explicitly and dynamically controlled to yield high reliability rotating fan and compressor integrally bladed rotors. Beyond the DESIGN component of turbine engine technology covered in Dept of State Foreign Export Control Regime, the export of the forging and manufacturing technology underpinning these advanced turbine components represents a grave compromise of critical turbine engine technology.

2) Investment Castings (1987)

Additional comment: The Commerce Control List appears not to address the export of critical casting technology required to produce turbine engine components with technologically advanced airfoil geometry, structural stability, internal cooling and orientation control. DoD sponsored research and development has advanced certain casting technology to enable high temperature components for compressor and turbine blade (hot section) of advanced turbine engines. Beyond the DESIGN component of turbine engine technology covered in Dept of State Regime, the export of the casting and manufacturing technology underpinning these advanced turbine components represents a grave compromise of critical turbine engine technology.

Is it possible to address these items with language similar to

<http://www.gpo.gov/bis/ear/pdf/cd9.pdf>

"9B004 Tools, dies or fixtures for the solid state joining of "superalloy", titanium or intermetallic airfoil-to-disk combinations"? Engine manufacturers and their subcontractor suppliers are apparently seeking to outsource the manufacturing component of turbine engine technology (Foreign Export Control language addressing manufacture is somewhat vague. Such language in BIS regime f)

3) Ball and Roller Bearings (2000)

Additional Comment: Similar concerns to the above regarding the manufacture and production of advanced bearings for Turbine Engines.

4) Advanced Composites (1993)

Additional Comment: Similar concerns to the above regarding the manufacture and production of advanced Organic matrix and ceramic matrix composites for Turbine Engines.

Additionally, is there a planned evaluation for the F-35 Joint Strike Fighter similar to the 2005 "National Security Assessment of the C-17 Globemaster Cargo Aircraft's Economic and Industrial Base Impacts"?5). The update of "Technology Transfer to China"(1999), particularly relating to aircraft turbine engine technology, is obviously needed.

Walter H. Zimmer
Senior Materials Engineer Collocate to JSF Propulsion, 577AESG/YJN
Wright-Patterson AFB, OH 45433

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August 27, 2007

Mr. Timothy Mooney
Office of Exporter Services
Regulatory Policy Division
Bureau of Industry and Security
Department of Commerce
14th St. & Pennsylvania Avenue, NW.
Washington, DC 20230

ATTN: Notice of Inquiry-CCL

Dear Mr. Mooney:

The export of "Hydroxy-terminated polybutadiene (HTPB) other than that controlled by the U.S. Munitions List" is controlled by ECCN Number 1C111 – Propellants and constituent chemicals for propellants under section b.2. The typical HTPB resins have hydroxyl functionalities greater than or equal to 2 and are reacted with diisocyanates to produce polyurethane elastomeric propellant binders. Sartomer Company has recently developed monofunctional HTPB resins and believed that these materials should be classified as EAR 99 since such products cannot be used in the preparation of polyurethane elastomers. However, CCATS # G055777 contained the statement that "The entry for ECCN 1C111.B.2. does not allow for discrimination among various types of HTPB". Since the monofunctional HTPB resins cannot be used to make polyurethane elastomers and therefore are not viable for the production of propellant binders, it is suggested that ECCN 1C111.b.2 be modified to specify HTPB resins with hydroxyl functionalities greater than or equal to 2. Such a change would eliminate an overly broad description that inadvertently captures a non-critical item.

Best regards,

John R. Murphy
Business Development/Export Licensing & Compliance Manager



September 9, 2007

To: publiccomments@bis.doc.gov
From: William A. Root, Export Control Consultant
Subject: Notice of Inquiry - CCL

Re: Notice appearing in the July 17, 2007, Federal Register (Docket 070619210-7211-01)

Specially designed

The highest priority fix to the CCL with the greatest impact and the simplest solution is to remove "(MTCR context)" from the definition of "specially designed" in part 772.

Munitions production

The most significant omissions from the CCL are a munitions production technology sub-item negotiated in COCOM 25 years ago and retained by Wassenaar and "production facilities" for "missiles," which was the main objective of the Missile Technology Control Regime when it was established 20 years ago. See recommended 2E018.b in Attachment doc cclatt8wa and revised 9B116 in Attachment doc cclatt9mt.

Overall structure of the CCL

Columns AT1 and AT2 are obsolete, since all the countries listed in these columns are subject to virtually total embargoes. The embargo of Syria should be moved from a Supplement to part 736 to part 746, as is the embargo of Cuba now. The OFAC embargo of Sudan should be described in part 746, as is the OFAC embargo of Iran now. Attachment docs cclatt1742supp2, cclatt2iraq, cclatt3china, and cclatt4otherunilateral contain details on the related issues of different treatments among embargoed countries and selective controls on some ECCNs xx99x to Iraq, China, India, Pakistan, Russia, and UAE and on computers to an entity in Israel.

A separate NS column 3 in the Country Chart for items eligible for GBS would simplify administration. It is misleading to state eligibility for LVS if the same item or sub-item is eligible for GBS to the same destinations regardless of dollar value. It is irrational to require a TSR assurance for exports to Country Group B of software which are eligible for CIV to Country Group D:1. Attachment doc cclatt5lvsgbscivtsr contains details on these License Exception issues.

Types of items to be listed on the CCL

Unless an item is on the Wassenaar Sensitive List, Wassenaar members obtain no information on what other members are exporting. This suggests limiting the Wassenaar list (and the corresponding Wassenaar-based CCL items) to what is on the Sensitive List. Also see above

referenced docs cclatt1, 2, 3, and 4 for suggested ECCN xx99x changes.

Updates to CCL item descriptions to better reflect intent

In addition to defining “specially designed” for other than MTCR context (see above), it is suggested that the General Technology Note, with its defined “required” criterion, apply to all software as well as all technology items. Attachment doc cclatt6gtn contains details.

Coordination and harmonization with multilateral regimes

Attachment doc cclatt7xref contains suggested additional cross-references to assist in identifying related items on the CCL. Attachments docs cclatt8wa, cclatt9mt, cclatt10np, and cclatt11cb contain recommended changes to harmonize the CCL with Wassenaar, MTCR, NSG, and AG/CWC multilateral regimes respectively.

Attachment 1

742 Supplement 2

The following differences between 742 Supplement 2(c)(6-45) and the CCL concerning license requirements and licensing policy for embargoed countries should be resolved:

| <u>2(c)</u> | <u>ECCN</u> | <u>Comment</u> |
|-------------|-------------|---|
| 6 | 9A991.a-d | 6 covers all aircraft, helicopters, engines, and related spare parts and components; 9A991.a-b cover all non-USML aircraft (a term which includes helicopters), 9A991.c covers aero gas turbine engines and specially designed parts therefor, 9A991.d covers aircraft parts and components. Therefore, 6 engines other than gas turbine engines are EAR99 and 9A991 parts and components other than related spare parts and components are not authorized by EAA sections 6(a) or 6(j). |
| 7 | 9A990.c | 7 covers heavy duty on-highway tractors; 9A990.c covers on-highway tractors with single or tandem rear axles rated for 9 mt per axle (20,000 lbs.) or greater and specially designed parts. Therefore, 7 tractors not meeting 9A990.c specifications are EAR99 and 9A990.c parts are not authorized by EAA sections 6(a) or 6(j). |
| 8 | 9A990.b | 8 and 9A990.b both cover off-highway wheel tractors of carriage capacity 9t (10 tons) or more; 9A990.b also covers parts and accessories. Therefore, 9A990.b parts and accessories are not authorized by EAA sections 6(a) or 6(j). |
| 9 | 9A990.a | 9 covers large diesel engines (greater than 400 horsepower) and parts to power tank transporters; 9A990.a covers diesel engines for trucks, tractors, and automotive applications of continuous brake horsepower of 400 BHP (298 kW) or greater (performance based on SAE J1349 standard conditions of 10 Kpa and 25°). Therefore, engines meeting 9 but not 9A990.a specifications are EAR99 and engines meeting 9A990.a but not 9 specifications are not authorized by EAA sections 6(a) or 6(j). |
| 10 | 5A992.b | 10 and 5A992.b both cover cryptographic, cryptoanalytic, and cryptologic equipment; 5A992.b also covers other information security equipment and components. Therefore, 5A992.b other equipment and components are not authorized by EAA sections 6(a) or 6(j). |
| 11 | 6A998 | 11 covers radar equipment; 6A998 covers airborne radar equipment and specially designed components therefor. Therefore, 11 radar equipment other than airborne is EAR99 and 6A998 components are not authorized by EAA sections 6(a) or 6(j). |
| 11 | 7A994 | 11 covers navigation and direction finding equipment; 7A994 covers navigation direction finding equipment, inertial navigation systems, including parts and components. Therefore, 11 direction finding equipment which is not navigation and navigation equipment which is neither direction finding nor inertial is EAR99 and 7A994 parts and components are not authorized |

- by EAA sections 6(a) or 6(j).
- 12 3B992 12 covers electronic test equipment; 3B992 covers equipment for testing only specified electronic items but also covers specially designed components and accessories for such equipment. Therefore, 12 equipment for testing equipment not specified in 3B992 is EAR99 and 3B992 components and accessories are not authorized by EAA sections 6(a) or 6(j).
- 13 5A991.g 13 and 5A991.g both cover mobile communications equipment; 5A991.g also covers assemblies and components therefor. Therefore, 5A991.g assemblies and components are not authorized by EAA sections 6(a) or 6(j).
- 14 6A991 14 covers acoustic underwater detection equipment; 6A991 covers marine or terrestrial acoustic equipment capable of detecting or locating underwater objects or features or positioning surface vessels or underwater vehicles and specially designed components. Therefore, 14 equipment not having 6A991 capabilities is EAR99 and 6A991 equipment for other than underwater detection and components are not authorized by EAA sections 6(a) or 6(j).
- 15 2A994 15 covers portable electric power generators; 2A994 covers portable electric generators and specially designed parts. Therefore 2A994 generators which are not "power" generators and 2A994 parts are not authorized by EAA sections 6(a) or 6(j).
- 16 8A992.f 16 covers vessels and boats, including inflatable boats; 8A992.f covers boats including inflatable boats and specially designed components therefor and 8A992 heading covers specially designed parts therefor. Therefore 16 vessels are EAR99 and 8A992.f components and parts are not authorized by EAA sections 6(a) or 6(j).
- 17 8A992.g 17 and 8A992.g both cover marine and submarine engines; 8A992.g also covers specially designed parts therefor. Therefore, 8A992.g parts are not authorized by EAA sections 6(a) or 6(j).
- 18 8A992.a-d 18 covers underwater photographic equipment; 8A992.a covers specified types of underwater television systems, 8A992.b covers photographic still cameras specially designed or modified for underwater use, 8A992.c covers stroboscopic light systems specially designed for underwater use, 8A992.d covers other underwater camera equipment, and 8A992 heading covers specially designed parts therefor. Therefore, 18 photographic equipment not specified in 8A992.a-c nor regarded as 8A992.d camera equipment is EAR99 and 8A992.c stroboscopic light systems not regarded as photographic equipment and 8A992 parts are not authorized by EAA sections 6(a) or 6(j).
- 19 8A992.e 19 and 8A992.e both cover submersible systems; 8A992 heading covers specially designed parts therefor. Therefore, 8A992 parts are not authorized by EAA sections 6(a) or 6(j).

- 20 8A992.h 20 covers scuba gear and related equipment; 8A992.h covers underwater breathing equipment (scuba gear) and related equipment and 8A992 heading covers specially designed parts therefor. Therefore, underwater breathing equipment not regarded as scuba gear and 8A992 parts are not authorized by EAA sections 6(a) or 6(j).
- 21 9A991.e Both 21 and 9A991.e cover pressurized aircraft breathing equipment; 9A991.e also covers specially designed parts therefor. Therefore, 9A991.e parts are not authorized by EAA sections 6(a) or 6(j).
- 22 2B991.c & .d 22 covers computer numerically controlled machine tools; 2B991.c & .d cover such tools meeting specified technical conditions. Therefore, 22 tools not meeting 2B991 conditions are EAR99.
- 23 9B990 23 and 9B990 both cover vibration test equipment; 9B990 also covers specially designed parts and components. Therefore, 9B990 parts and components are not authorized by EAA sections 6(a) or 6(j).
- 24 4A994 24 covers digital computers with an APP of 0.00001 WT or above, assemblies, and related equipment; 4A994.b covers digital computers with an APP equal to or greater than 0.00001 WT and specially designed components therefor. 4A994.a covers computers, related equipment, and "electronic assemblies" rated for a specified temperature and specially designed components therefor. 4A994.c-g cover other "electronic assemblies" and related equipment exceeding specified technical thresholds and specially designed components therefor. Therefore, 24 assemblies and related equipment not described in 4A994 are EAR 99 and 4A994.a computers and 4A994 components are not authorized by EAA sections 6(a) or 6(j).
- 24 4B994 24 covers equipment for development or production of magnetic and optical storage equipment; 4B994 covers only such equipment meeting specified technical conditions. Therefore, 24 equipment not described in 4B994 is EAR99.
- 24 4C994 24 covers materials for fabrication of head/disk assemblies; 4C994 covers materials specially formulated for and required for the fabrication of head/disk assemblies for controlled magnetic and magnetic-optical hard disk drives. Therefore, 24 materials not controlled by 4C994 are EAR99.
- 25(A) 5A991.h 25(A) covers radio relay systems or equipment operating at a frequency equal to or greater than 19.7 GHz; 5A991.h covers radio relay communications equipment designed for use at frequencies equal to or greater than 19.7 GHz and assemblies and components therefor. Therefore, 25(A) systems or equipment not regarded as communications equipment or operating at but not designed for use at greater than 19.7 Ghz are EAR99 and 5A991.h designed for use at but not operating at such frequencies and 5A991.h assemblies and components are not authorized by EAA sections 6(a) or 6(j).
- 25(A) 5A991.b.7.c 25(A) covers radio relay systems or equipment operating at "spectral

- efficiency” greater than 3 bit/s/Hz; 5A991.b.7.c covers telecommunications transmission equipment and systems employing digital modulation techniques other than quadrature amplitude modulation (QAM) controlled by b.7.a or b.7.b having a “spectral efficiency” exceeding 3 bit/sec/Hz and specially designed components and accessories therefor but excluding equipment specially designed to be integrated and operated in any satellite system for civil use and excluding radio relay equipment for operation in an ITU allocated band not exceeding 960 MHz or “total digital transfer rate” not exceeding 8.5 Mbit/s and “spectral efficiency” not exceeding 4 bit/sec/Hz. Therefore, 25(A) QAM systems or equipment not controlled by 5A991.b.7.a or b.7.b and 25(A) non-QAM systems or equipment excluded from 5A991.b.7.c are EAR99 and 5A991.b.7.a and b.7.b not meeting 25(A) specifications and 5A991.b.7 components and accessories are not authorized by EAA sections 6(a) or 6(j).
- 25(B) 5A991.b.5.a 25(B) covers fiber optic systems or equipment operating at a wavelength greater than 1000 nm; 5A991.b.5.a covers telecommunications transmission equipment and systems employing a “laser” and having a transmission wavelength exceeding 1,000 nm and specially designed components and accessories therefor. Therefore, 25(B) systems or equipment not regarded as telecommunications transmission or not employing a “laser” or operating at a wavelength greater than 1000 nm but not “having” (assuming “having” interpreted as designed for) a transmission wavelength exceeding 1,000 nm system are EAR99 and 5A991.b.5.a systems or equipment not regarded as fiber optic and 5A991.b.5.a components and accessories are not authorized by EAA sections 6(a) or 6(j).
- 25(C) 5A991.b.1 25(C) covers “telecommunications transmission systems” (the term defined in 5A991.b is “telecommunications transmission equipment”) or equipment with a “digital transfer rate” at the highest multiplex level exceeding 45 Mb/s; 5A991.b.1 covers telecommunications transmission equipment or systems designed to operate at a “digital transfer rate” at the highest multiplex level exceeding 45 Mbit/s or a “total digital transfer rate” exceeding 90 Mbit/s and specially designed components and accessories therefor excluding equipment specially designed to be integrated and operated in any satellite system for civil use. Therefore, 25(C) systems or equipment “with” (assuming “with” interpreted as operating at) the specified “digital transfer rate” but not designed to operate at that rate and 25(C) equipment specifically excluded from 5A991.b.1 are EAR99 and 5A991.b.1 with a “digital transfer rate” less than 45 Mbit/s but a “total digital transfer rate” exceeding 90 Mbit/s and 5A991.b.1 components and accessories are not authorized by EAA sections 6(a) or 6(j).
- 26(i) 3A991.a 26(i) covers microprocessors operating at a clock speed over 25 MHz;

- 3A991.a covers “microprocessor microcircuits”, “microcomputer microcircuits”, and microcontroller microcircuits having a clock frequency exceeding 25 MHz. Therefore, 26(i) microprocessors not meeting the definition of “microprocessor microcircuits” or “operating” at a clock speed over 25 MHz but not “having” (assuming “having” is interpreted as designed for) a clock frequency exceeding 25 MHz are EAR99 and 3A991.a “microcomputer microcircuits” and microcontroller microcircuits are not authorized by EAA sections 6(a) or 6(j).
- 26(ii) 3A991.a 26(ii) covers microprocessors with a CTP of 550 mtops or above; but the 3A991 License Requirement Note conditionally permitting microprocessors with a CTP below 550 MTOPS to be shipped NLR (No License Required) to North Korea has been deleted. 26(ii) is apparently a subset of 26(i). The omission of an entry for Iran for 26(ii) could be construed, perhaps unintentionally, to mean that the portion of 26(i) covered by 26(ii) is not controlled to Iran.
- 27 3B991 27 covers semiconductor manufacturing equipment described in 3B001 and 3B991. 3B001 is also covered by 742 Supplement 2(c)(1), so that the EAR provides that this ECCN is authorized by EAA section 6(j) as well as by EAA section 6(a).
- 28 3D003 28 covers software specially designed for the computer-aided design and manufacture of integrated circuits; 3D003 covers computer-aided-design software designed for integrated circuits meeting any of three technical conditions. 3D003 is covered by 2(c)(1). Therefore, 28 software for manufacture rather than design and for design if not meeting any 3D003 technical condition is EAR99.
- 29 5A991.c.10 29 covers packet switch equipment described in 5A991.c.
- 30 6D993 30 covers specially designed software for air traffic control applications that uses any digital signal processing techniques for automatic target tracking or that has a facility for electronic tracking; 6D993 covers ATC software application programs hosted on general purpose computers located at ATC centers and capable of automatically handing over primary radar target data (if not correlated with secondary surveillance radar data) from the host ATC center to another ATC center. Therefore, 30 software not meeting 6D993 specifications is EAR99 and 6D993 software not meeting 30 specifications is not authorized by EAA sections 6(a) or 6(j).
- 31 6A997 31 and 6A997 both cover gravity meters having static accuracy of less (better) than 100 microgal, or gravity meters of the quartz element (worden) type; but 6A997 is limited to gravity meters for ground use. Therefore, 31 gravity meters for other than ground use are EAR99.
- 32 6A996 32 and 6A996.a cover the same type of magnetometers. 6A996.b covers other types of magnetometers. Therefore, 6A996.b is not authorized by EAA sections 6(a) or 6(j).

- 33 1C006.d 33 covers fluorocarbon compounds described in 1C006.d for cooling fluids for radar. 1C006 is covered by 742 Supplement 2(c)(1). Therefore, 1C006.d is authorized by both EAA section 6(a) and EAA section 6(j).
- 34 1C210 34 covers fibers described in 1C210. 1C210 is covered by 742 Supplement 2(c)(4). 34 incorrectly refers to (c)(1). Therefore, 1C006.d is authorized by both EAA section 6(a) and EAA section 6(j) but the contract sanctity dates given in 34 are incorrect.
- 35 2B993 35 covers machines described in 2B003 and 2B993 for cutting gears up to 1.25 meters in diameter (2B003 is covered by 742 Supplement 2(c)(1)). Therefore, 2B993 machines not for cutting gears up to 1.25 meters in diameter are not authorized by EAA sections 6(a) or 6(j).
- 36 36 covers aircraft skin and spar milling machines; there is no comparable ECCN. Therefore, 36 is EAR99.
- 37 2B996 37 covers manual dimensional inspection machines described in ECCN 2B996.
- 38 2B997 38 and 2B997 both cover robots capable of employing feedback information in real time processing to generate or modify programs; 2B997 also covers robots to generate or modify numerical program data. Therefore, 2B997 robots to generate or modify numerical program data are not authorized by EAA sections 6(a) or 6(j).
- 39 2A983 39 covers explosive device detectors described in 2A983. 2A983 also covers parts and components.
- 40 2D983 40 covers software described in 2D983 specially designed or modified for the development, production, or use of explosives detection equipment.
- 41 2E983 41 covers technology described in 2E983 specially designed or modified for the development, production, or use of explosives detection equipment.
- 42 1E355 42 covers production technology controlled under 1C355. However, 1C355 covers materials, not technology. 1E355 is probably intended.
- 43 1C992 43 covers commercial charges and devices controlled under 1C992.
- 44 1C997 44 covers ammonium nitrate, including certain fertilizers containing ammonium nitrate, under ECCN 1C997.
- 45 Numerous 45 covers specific processing equipment, materials, and software controlled under 0A999, 0B999, 0D999, 1A999, 1C999, 1D999, 2A999, 2B999, 3A999, and 6A999. Both 45 and these ECCNs are identified as applicable only to North Korea, even though Cuba, Iran, Sudan, and Syria are also subject to complete embargoes.

Recapitulation

The only ECCNs applicable to Iran, North Korea, Sudan, and Syria which match 742 Supplement 2(c)(6-44) descriptions in every substantive respect are:

1C006.d (33)
 1C210 (34)
 1C992 (43)
 1C997 (44)
 1E355 (42)
 2B996 (37)
 2D983 (40)
 2E983 (41)
 3B991 (12)
 5A991.c.10 (29)
 6A996 (32)
 9A991.a,b (6)

The following ECCNs cover less than the corresponding 742 Supplement 2(c) descriptions. ECCNs are generally more carefully drafted from a technical point of view than descriptions in other parts of the EAR. Therefore, rather than broadening the following ECCNs to cover what is now 742 Supplement 2(c) EAR99 coverage, the descriptions in 742 Supplement 2(c) might reasonably be narrowed to remove existing EAR99 coverage. 742 Supplement 2(c) citations follow the ECCN numbers in parenthesis.

2B991.c,d (22)
 2B997 (38)
 2B (no ECCN) (36)
 3A991.a (26)
 3B992 (12)
 3D003 (28)
 4A994 (24)
 4B994 (24)
 4C994 (24)
 5A991.b.1 (25C)
 5A991.b.5.a (25B)
 5A991.b.7 (25A)
 5A991.h (25A)
 6A991 (14)
 6A997 (31)
 6A998 (11)
 6D993 (30)
 7A994 (11)
 8A992.a-d (18)
 8A992.f (16)
 9A990.a (9)
 9A990.c (7)
 9A991.c (6)

The following ECCNs or parts thereof are not now described in 742 Supplement 2(c). Therefore, there is now no stated EAA authority for their control. Most AT-only ECCNs were established simply to continue coverage for AT purposes of items removed from COCOM or Wassenaar coverage, without any consideration of relevance to anti-terrorism. For this reason, rather than broadening 742 Supplement 2(c) descriptions to include these items, they might reasonably be deleted. The 742 Supplement 2(c) citation which describes the portion of the ECCN not stated as authorized by either EAA section 6(a) or EAA section 6(j) follows the ECCN number in parenthesis. If there is no such citation, the entire ECCN, or part thereof, might, by this reasoning, be deleted.

1C990
1C991
1C995
1C996
1D993
1E994
2A983 (39)
2A994 (15)
2B991.a,b
2B992
2B993 (35)
2B997 (38)
2B998
2D991
2D992
2D994
2E991
2E994
3A991.a (26)
3A991.b-1
3A992
3B992 (12)
3C992
3D991
3E991
4A994 (24)
4D993
4D994
4E992
4E993
5A991.a
5A991.b.1 (25C)
5A991.b.2-4

5A991.b.5.a (25B)
5A991.b.5.b-e
5A991.b.6
5A991.b.7 (25A)
5A991.b.8
5A991.c.1-9, 11-12
5A991.d-f
5A991.g (13)
5A991.h (25A)
5B991
5C991
5D991
5E991
5A992.a
5A992.b (10)
5B992
5D992
5E992
6A991 (14)
6A992
6A994
6A995
6A998 (11)
6B995
6C992
6C994
6D991
6D992
6D993 (30)
6E991
6E992
6E993
7A994 (11)
7B994
7D994
7E994
8A992.a-d (18)
8A992.e (19)
8A992.f (16)
8A992.g (17)
8A992.h (20)
8A992.i-k
8D992
8E992

9A990.a (9)
9A990.b (8)
9A990.c (7)
9A991.c,d (6)
9A992
9B990 (23)
9B991
9D990
9D991
9E990
9E991
9E993

Attachment 2

Unilateral Controls to Iraq

There are two types of U.S. unilateral controls on exports to Iraq:

- license requirements for RS reasons for ECCNs 0B999, 0D999, 1B999, 1C992, 1C995, 1C997, 1C999, and 6A992, per 742.6(a)(3) and 746.3(a)(3); and
- the “ballistic missile” definition “for purposes of exports or reexports to Iraq or transfers within Iraq” as “any missile capable of a range greater than 150 kilometers,” per 746.3(a)(5) and the reference to 746.3 at the end of the 772.1 definition of “missiles.”

The RS controls mean that those 8 listed xx99x ECCNs cannot be deleted, even though they might otherwise disappear because AT1 and AT2 columns are now obsolete.

The apparent intent of the unique to Iraq “ballistic missile” definition is to require a license to Iraq for ≥ 150 km range in instances where the license requirement to other countries is for ≥ 300 km range. However, this intent is nowhere stated in the EAR. Ranges between 150 and 300 km are now EAR99 except for 9A120 based on MTCR 19.A.3, related 20.A.1 subsystems which are USML, and 9B115 and 9B116 production equipment and production facilities for those subsystems. There is no stated license requirement to Iraq for this portion of EAR99.

There are 45 ECCNs containing a 300 km range parameter, namely:

1A101, 1C101, 1D103, 1E001, 1E101, 1E102
 3A101, 3D101, 3E001, 3E101, 3E102
 4A101, 4E001
 6A102, 6A107, 6A108, 6B108, 6D102, 6D103, 6E001, 6E002, 6E101
 7A102, 7A103, 7D001, 7D101, 7E001, 7E002, 7E101
 9A101, 9A104, 9A106, 9A110, 9B105, 9B115, 9B116, 9D001, 9D002, 9D003, 9D101, 9D104,
 9E001, 9E002, 9E101, 9E102

Suggested remedies:

-Revise 746.3(a)(1) to state clearly the 150 km modification of MT controls to Iraq

-Match each of the 45 relevant ECCNs with a new unilateral ECCN to Iraq (plus Cuba, Iran, North Korea, Sudan, and Syria), e.g.:

| <u>ECCN(s) to be matched</u> | <u>New matching ECCN</u> |
|------------------------------|--------------------------|
| 1A101 | 1A191 |
| 1E001, 1E101, 1E102 | 1E191 |
| 6E001, 6E002, 6E101 | 6E191 |
| 7D001, 7D101 | 7D191 |
| 9A110 | 9A190 |
| 9B115, 9B116 | 9B196 |
| 9D001, 9D002, 9D003, 9D101 | 9D191 |

9E001, 9E002, 9E101, 9E102, 9E191

-In Related Controls paragraphs in each of the 45 existing ECCNs, reference the corresponding new unilateral ECCN

-In Related Controls paragraphs in each of the new unilateral ECCNs reference the corresponding existing ECCN.

Attachment 3

Unilateral China Controls

There are four types of U.S. unilateral controls on exports to China:

- 31 ECCNs xx99x to military end-use per 744 Supplement 2;
- all items subject to the EAR to some Chinese entities specified in 744 Supplement 4;
- all items except EAR99 to other Chinese entities specified in 744 Supplement 4;
- all items except EAR99 and ECCNs xx999 to still other Chinese entities specified in 744 Supplement 4.

It is recommended that selective controls on Chinese entities listed in 744 Supplement 4 (*i.e.*, all except EAR99 or all except EAR99 and xx999) be limited to the 31 xx99x ECCNs listed in 744 Supplement 2, but for all end-uses, not just military end-uses.

(This would be consistent with the extensive review of unilaterally controlled items which preceded issuance of the China military end-use rule.)

The following changes in license requirements and licensing policies for the 31 xx99x ECCNs listed in 744 Supplement 2 are recommended:

Deemed Export

734.2(b)(2) *Export of technology or software ...* (ii) Any release of technology or source code subject to the EAR to a foreign national. Such release is deemed to be an export to the home country or countries of the foreign national. This deemed export rule does not apply to persons lawfully admitted for permanent residence in the United States and does not apply to persons who are protected individuals under the Immigration and Naturalization Act (8 U.S.C. 1324b(a)(3)) and does not apply to Chinese employees of a validated end-user (see 748.15), including a transfer inside the United States and does not apply to release of technology or source code listed in 744 Supplement No. 2 to Chinese nationals intended for other than "military end-use" as defined in 744.21(f). ...

(This would put into regulations the response to Comment 40 in the June 19, 2007, Federal Register on the VEU impact on deemed exports and would resolve the ambiguity in the following response to Comment 41: "Under the new "military end-use" control, a license is now required for any deemed export covered by section 744.21 of the EAR." It is reasonable to construe "any" to be modified by "military end-use.")

De minimis

734 Supplement No. 2 (a)(1)(ii) In calculating the U.S. content value, do not include parts, components, or materials that could be exported from the United States to the new country of destination without a license (designated as "NLR"; designated as "C57" for exports not requiring a license to a Validated End-User (748.15); or not requiring a license for export or reexport to China for items listed in 744 Supplement 2 if not intended for "military end-use") ...

(This would be a reasonable interpretation of the impact of the June 19, 2007, final rule on *de minimis* exclusions from “subject to the EAR,” a topic not mentioned in that rule.)

Licensing Policies

742.2(b)(4) License applications for items described in paragraph (a) or (b)(3) of this section, when destined for the People’s Republic of China, will be reviewed in accordance with the licensing policies in ~~both~~ paragraph (b) of this section; and in 742.4(b)(7) if controlled for national security reasons; or, if there is a third reason, the licensing policies applicable to that third reason, whichever is more restrictive.

742.3(b)(4) License applications for items described in paragraph (a) or (b)(2) of this section, when destined for the People’s Republic of China, will be reviewed in accordance with the licensing policies in ~~both~~ paragraph (b) of this section; and in 742.4(b)(7) if controlled for national security reasons; or, if there is a third reason, the licensing policies applicable to that third reason, whichever is more restrictive.

742.4(b)(7) For the People’s Republic of China (PRC), there is a general policy of approval for license applications ~~to export, reexport, or transfer items to civil end uses. There for transactions described in paragraph (a) of this section except that there is a presumption of denial for license applications to export, reexport, or transfer items~~ transactions that would make a direct and significant contribution to the PRC’s military capabilities such as, but not limited to, the major weapons systems described in Supplement No. 7 to Part 742 of the EAR which would prove detrimental to the national security of the United States.

742.5(b)(4) License applications for items described in paragraph (a) or (b)(3) of this section, when destined for the People’s Republic of China, will be reviewed in accordance with the licensing policies in ~~both~~ paragraph (b) of this section; and in 742.4(b)(7) if controlled for national security reasons; or, if there is a third reason, the licensing policies applicable to that third reason, whichever is more restrictive.

744.21(e)(1) ~~Applications to export, reexport, or transfer items~~ There is a general policy of approval for license applications described in paragraph (a) paragraphs (a) and (b) of this section will be reviewed on a case-by-case basis to determine whether the export, reexport, or transfer except that there is a presumption of denial for transactions that would make a material direct and significant contribution to the military capabilities of the PRC and would result in advancing the country’s military activities contrary to which would prove detrimental to the national security interests of the United States. When it is determined that an export, reexport, or transfer would make such a contribution, the license will be denied.

744.21(c)(3) Applications for items requiring a license for other reasons that are destined to the PRC for a military end-use ~~also~~ will be subject to the review policy stated in paragraph (c)(1) of this section if controlled for national security reasons or to the review policy for other reasons, whichever is more restrictive.

(Licensing policies described in paragraph (b) for items described in paragraph (a) of 742.2, 742.3, and 742.5 differ from policies described in 742.4(b)(7). Therefore, both cannot apply.

742.4(b)(7) and 744.21(e)(1) provide no guidance for military use which does not rise to the type of military use warranting denial. 744.21(e)(1) does not even provide guidance for purely civil use.

EAA Section 3(2)(A) language should be used in setting licensing policy for national security controls. 744.21(e)(1) includes in license review standards for the new license requirements to China “contrary to the national security interests of the United States.”

Licensing policy for 742.4 national security should omit transfers, since the license requirement applies only to exports and reexports. Although 744.21(a) requires a license for transfers, this may have to be revised for reasons set forth below under that reference.)

Major Weapons Systems

742 Supplement No. 7 entries (6) and (7)(a)... missiles ... range of at least ~~25~~ 150 kilometers ... (For consistency with Iraq, per 746.3(a)(5). If a range less than 300 km is intended to affect license requirements, many ECCNs would be affected. These ECCNs have not yet been revised to reflect the Iraq 150 km range. If a similar short-range policy is in effect for China, these numerous ECCNs should also be annotated to that effect.)

742 Supplement No. 7 entry (7)(c) Unmanned Aerial Vehicles (UAVs) of any type, including sensors for guidance and control of these systems, except model airplanes.

742 Supplement No. 7 entry ~~(8) Offensive Space Weapons Systems or capabilities that can deny freedom of action in space for the United States and its allies or hinder the United States and its allies from denying an adversary the ability to take action in space. This includes systems such as anti-satellite missiles, or other systems designed to defeat or destroy assets in space.~~

(Such systems or capabilities are defensive, not offensive. They are intended to counter U.S. offensive systems in space. They are similar to U.S. efforts to build ABM systems. They should be encouraged rather than discouraged, just as we are encouraging Russia to join the United States in developing ABM systems.)

742 Supplement No. 7 entry 9 ... (C4ISR): Systems specifically designed, modified or configured for military applications that support ... Also includes sensor technologies.

(For consistency with USML Category XI. Military use of civil communications networks does not constitute a direct and significant contribution to the PRC’s military capabilities.)

742 Supplement No. 7 entry 11 Night vision equipment specifically designed, modified, or

configured for military use: ~~Any~~ **This includes** electro-optical devices ~~that is~~ used to detect visible and infrared energy and to provide an image.; ~~This includes~~ night vision goggles, forward-looking infrared systems, thermal sights, and low-light systems that are night vision devices, as well as infrared focal plane array detectors and cameras ~~specifically designed, developed, modified or configured for military use~~; image intensification and other night sighting equipment or systems ~~specifically designed, modified or configured for military use~~; second generation and above ~~military~~ image intensification tubes ~~specifically designed, developed, modified, or configured for military use~~, and infrared, visible and ultraviolet devices ~~specifically designed, developed, modified, or configured for military application~~.

(For consistency with USML Category 12(c).)

Military End-Use Restrictions

744.21(a) ... you may not export, ~~reexport, or transfer~~ any item subject to the EAR listed in Supplement No. 2 to Part 744 or reexport any U.S.-origin such item to the PRC without a license if, at the time of the export, or reexport, or transfer, you know ...

(Limiting “reexport” controls to U.S.-origin items is for consistency with numerous references to “subject to the EAR” in the 734.2(b) definition of “reexport” coupled with the reference to “U.S.-origin” in the 734.3(a)(2) portion of the definition of items subject to the EAR. It is also consistent with the 736.2(b)(1) General Prohibition One concerning “reexport any item of U.S.-origin.”)

Deleting “transfer” is because it is probably unintended to require, as the existing text does, that a Chinese national resident in China obtain a U.S. license to transfer a Chinese-origin item listed in Supplement 2 to another Chinese national resident in China. The 772.1 definition of “you” is very broad.

The word “transfer” in the existing text literally includes transfers within the United States. Even if modified by adding “(in country),” it would be more restrictive for these unilaterally controlled items than is now the case for multilaterally-controlled nuclear items, per 744.2 and 744.5. The only transfers control of which is authorized by the EAA are transfers to an embassy or affiliate of a controlled country or to a person with the knowledge or intent that the goods or technology will be transferred to an unauthorized recipient (EAA Section 16(5)(B,C)), whereas this control is based on military end-use, not on military end-user.

Adding “subject to the EAR” is because, without that change, the 772.1 definition of “item,” unintentionally but literally, includes items not subject to the EAR, such as publicly available and *de minimis*.)

744.21(a)(1) You have knowledge, as defined in 772.1 of the EAR, that the item is intended, ~~entirely or in part~~, for a “military end-use,” as defined in paragraph (f) of this section, in the PRC; or (2) You have been informed by BIS, as described in paragraph (b) of this section, that the item is or may be intended, ~~entirely or in part~~, for a “military end-use” in the

PRC.

(Deleting “, entirely or in part,” is for consistency with BIS oral briefings that coverage of parts and components has been removed from this control.)

744.21(b) ... a license is required ~~for specific exports, reexports or transfers of~~ to export any item subject to the EAR listed in Supplement No. 2 to Part 744 or reexport any U.S.-origin such item
(For consistency with 744.21(a)(2). The rule contains no statement that 744.21(b) is intended to catch all items, including all xx99x ECCNs and EAR99.)

744.21(c) Despite the ~~prohibitions~~ license requirements described in paragraphs (a) and (b) of this section, you may export or reexport items subject to the EAR listed in Supplement No. 2 to Part 744 to the PRC without a license under the provisions of the following License Exceptions:
(1) TMP for items for use by the news media as set forth in 740.9(a)(2)(viii) of the EAR;
(2) GOV for items for personal or official use by personnel and agencies of the U.S. Government as set forth in 740.11(b)(2)(i) and (ii) of the EAR;
(3) TSU for operation technology and software, sales technology and software updates pursuant to the terms of 740.13(a), (b), or (c) of the EAR;
(4) BAG pursuant to the terms of 740.14(a) through (d) only of the EAR; and
(5) AVS for the temporary sojourn of civil aircraft pursuant to the terms of 740.15(a)(4) of the EAR.

(For consistency with 736 Supplement No. 1 General Order No. 2(c) and 744.2(c). All civil aircraft are subject to this control by the inclusion of 9A991(b) in 744 Supplement No. 2. Omission of an exception for temporary sojourn of aircraft was probably inadvertent.)

744.21(e): See above under Licensing Policy

744.21(f) ... “military end-use means: incorporation into a military item described on the U.S. Munitions List ...; incorporation into a military item described on the International Munitions List ...; incorporation into items listed under ECCNs ending in “A018” on the CCL ...; ~~or for the “use”, “development”, or “production” of military items described on the USML, or the IML, or items listed under CCL ECCNs ending in “A018” on the CCL;~~ “Military end-use” also means or “deployment” of items by means of aircraft classified under ECCN 9A991.a or .b of military items described on the USML, the IML, or CCL ECCNs ending in “A018”-as set forth in Supplement No. 2 to Part 744.

(The existing “deployment” element of the “military end-use” definition is unclear as to whether the concern is that aircraft themselves might be placed in battle formation or strategic position or that aircraft might be used to deploy items on the USML, IML, or A018 ECCNs. The above assumes the latter was intended, since aircraft as defined in 9A991.a or .b appear to be unsuitable for battle formation or strategic position.)

End-User Statements

748.9(b)(1) Does your transaction involve items controlled for national security reasons? ~~Does your transaction involve items destined for the People's Republic of China (PRC)?~~

(2) Does your transaction involve items controlled for national security reasons destined for one of the following countries? (This applies only to those overseas destinations specifically listed.) ~~If your item is destined for the PRC, does your transaction involve items that require a license to the PRC for any reason?~~

(i) If yes, your transaction may require an Import Certificate or End-User Statement. ~~If your transaction involves items destined for the PRC that are controlled to the PRC for any reason, your transaction may require a PRC End-User Statement. ...~~

748.10(a) ... ~~In the case of the PRC, this section applies to transactions involving all items that require a license to the PRC for any reason.~~

(b)(4) ... ~~Note that this \$50,000 threshold does not apply to exports to the PRC of computers subject to the provisions of 748.10(b)(3) or to items classified under ECCN 6A003.~~

(i) ... ~~If the total value of entries on a license application that require a license to the PRC for any reason listed on the CCL exceeds \$50,000, then a PRC End-User Statement covering all such controlled items that require a license to the PRC on your license application must be obtained.~~

(ii) If your license application involves a lesser transaction that is part of a larger order for items controlled for national security reasons ~~(or, for the PRC, for any reason)~~ in a single ECCN exceeding \$50,000, an Import Certificate, or a PRC End-User Statement, as appropriate, must be obtained.

(iii) ... You also may be specifically requested by BIS to obtain an End-User Statement for a transaction valued under \$50,000 ~~or for a transaction that requires a license to the PRC for reasons in the EAR other than those listed on the CCL.~~

(c)(1) ... ~~Note that in the case of the PRC, applicants must request that the importer obtain an End-User Statement for all items on a license application that require a license to the PRC for any reason listed on the CCL. ...~~

(Any pre-requisite action by the PRC for a U.S. export is counter-productive, especially if the required action goes beyond support documentation required generally for other countries. Many years ago, a similar, Fowler-Debre, requirement for a French Government certification of non-nuclear use of U.S. high performance computers being considered for export to France was removed for this reason. A request by a U.S. exporter for an EUS for one of the 31 items would alert the Chinese authorities that the Americans assume a military end-use which would result in denial if that use were determined to constitute a direct and significant contribution to Chinese military capabilities. This could delay issuance of the EUS while the Chinese tried to figure out how to reduce the risk of denial. Meanwhile the exporter would be unable to submit the license application because of the requirement that it include the EUS number. The exporter may be motivated to apply for a license either to alert U.S. authorities to a potential problem or to seek to persuade U.S. authorities that the license should be approved because the military nature of the end-use was inconsequential. Either way, the Chinese delay would be to the disadvantage of both the U.S. exporter and the U.S. governmental authorities. The latter would be kept in the dark while the Chinese sought to acquire the item from another

source less likely to be denied. In other words, the EUS requirement could defeat the purpose of the new control. This would be particularly unfortunate, since the Chinese statement would be largely, perhaps entirely, irrelevant, being related to the end-user, whereas the U.S. control applies to the end-use and not to the end-user.

References to reasons listed on the CCL are confusing. 744 Supplement 2 lists all or parts of items listed on the CCL. However, the entries for those items on the CCL do not mention the China military end-use license requirement.

There is no apparent reason for China to be treated more restrictively than other destinations with respect to the \$50,000 *de minimis* EUS exception. 748.10(b)(4)(i) states:

If the total value of entries that require a license to the PRC for any reason on the CCL on a license application exceeds \$50,000, then a PRC End-User Statement covering all controlled items on your license application must be obtained.

This means that a license application involving 10 different ECCNs, each at \$5001, would require a PRC EUS. This contrasts with the preceding sentence in 748.10(b)(4)(i) which, for a destination other than the PRC, requires an IC only if a single national security entry on the CCL exceeds \$50,000. One wonders why \$5001 non-national security items to China would require an EUC whereas a \$49,999 national security item to another destination would not.

744 Supplement 2

The following recommended changes do not include any deletions of items listed in 744 Supplement 2 in the belief that only revisions could be considered at this time. The changes recommended are designed to come closer to the objective of denying items which would make a direct and significant contribution to the PRC's military capabilities without hindering exports or reexports which would not make such contributions.

1D993 "Software" ~~specialty designed~~ "specialty designed" for the "development", "production", or "use" of ~~equipment or~~ fibrous and filamentary materials controlled by 1C210.b, or 1C990.
(Remove "(MTCR context)" from the definition of "specialty designed" in Part 772.1.
Neither 1C210.b nor 1C990 controls any equipment.)

1D999 Limited to specific software controlled by 1D999.b for equipment controlled by 1B999.e that is ~~specialty designed~~ "specialty designed" for the production of prepreps controlled in ~~Category 1, n.e.s. by 1C010.e or 1C210.c.~~

(The only prepreps specified in Category 1 are those described in 1C010.e or 1C210.c. The expression "n.e.s." in this Supplement implies inclusion of production of prepreps controlled only by EAR99; but BIS interprets the expression "controlled in the CCL" to omit EAR99. Moreover, 1B999.e and 1D999.b use "n.e.s." to define equipment or software, not to define prepreps.)

1E994 Limited to “technology” according to the General Technology Note for the “development”, or “production”, or “use” of fibrous and filamentary materials controlled by 1C990 other than glass, aramid or polyethylene controlled by 1C990

(The word “technology” is extraordinarily broad without the usual General Technology Note modifier. Wassenaar recognizes that “use” technology is much less significant than “development” or “production” technology. The unmodified text in the final rule could be misinterpreted to cover technology for EAR99 materials excluding only glass, aramid or polyethylene controlled by 1C990.)

2A991 Limited to bearings and bearing systems not controlled by 2A001 and with operating temperatures above 573K (300°C) controlled by 2A991.a.1

(2A991.a.1 is the only portion of 2A991 using the figure 573K. It does not control bearing systems. It is limited to bearings having all the characteristics in the heading of 2A991.a and in 2A991.a.1.)

2B991 Limited to “numerically controlled” machine tools controlled by 2B991.c having “positioning accuracies”, with all compensations available, less (better) than 9 micrometer along any linear axis; and machine tools controlled under by 2B991.d.1.a.

(2B991.c contains parameters other than positioning accuracy. The headings of 2B991.d and 2B991.d.1 limit the coverage of 2B991.d.1.a.)

2B996 Limited to manual dimensional inspection or measuring systems or equipment machines not controlled by 2B006 controlled by 2B996.a with measurement uncertainty equal to or less (better) than $(1.7 + L/1000)$ micrometers in any axes (L measured Length in mm).

(2B996.a is limited to machines having two or more axes as well as by a stated measurement uncertainty.)

3A292.d Limited to digital oscilloscopes and transient recorders, using analog-to-digital conversion techniques, capable of storing transients by sequentially sampling single-shot inputs at successive intervals of less than 0.4 ns (greater than 2.5 giga-samples per second), digitizing to 8 bits or greater and storing 256 or more samples

(3A292.d contains parameters other than samples per second.)

3A999.c All flash x-ray machines, and components of pulsed power systems designed thereof, including Marx generators, but omitting components high power pulse shaping networks, high voltage capacitors, and triggers.

(Pulse shaping, capacitors, and triggers of concern are covered by ECCNs 3A228, 3A229, 3A230, or 3A001.e.2.b.)

3E292 Limited to “technology” according to the General Technology Note for the “development”, or “production”, or “use” of digital oscilloscope and transient recorders with sampling rates greater than 2.5 giga-samples per second, which are controlled by the portion of

3A292.d described in this Supplement

4A994 Limited to computers ~~not controlled by 4A001 or 4A003~~, controlled by 4A994.b with an Adjusted Peak Performance ("APP") exceeding 0.5 Weighted TeraFLOPS (WT)

(Adding "controlled by 4A994.b" more clearly states the apparent intent not to include any other sub-item and not to include components.)

4D993 "Program" proof and validation "software", "software" allowing the automatic generation of "source codes", and operating system "software" ~~not controlled by 4D003~~ that are ~~specially designed~~ "specially designed" for real time processing equipment and have 4D993.a, .b, .c characteristics.

(The heading of 4D993 on the CCL should be amended to add "see List of Items Controlled." The three sub-items on the CCL should be linked with either "and" or "or.")

5A991 Limited to telecommunications equipment ~~designed~~ "specially designed" to operate outside the temperature range from 219K (-54°C) to 397K (124°C), which is controlled by 5A991.a; radio equipment using Quadrature-amplitude-modulation (QAM) techniques, which is controlled by ~~5A991.b.7~~ 5A991.b.7.a or 5A991.b.7.b; and or phased array antennae, operating above 10.5 Ghz, containing active elements and distributed components, and designed to permit electronic control of beam shaping and pointing, except landing systems with instruments meeting international ICAO standards (MLS), which are controlled by 5A991.f

(5A991.a uses the expression "specially designed," not "designed." 5A991.b.7.c is not QAM. 5A991.f contains more parameters than the frequency.)

5D991 Limited to "software" ~~specially designed or modified~~ "specially designed" for the "development", "production", or "use" of equipment controlled by 5A991.a, 5A991.b.7.a or b.7.b, and or 5A991.f or of "software" specially designed or modified for the "development", "production", or "use" of equipment controlled by 5A991.a, 5A991.b.7, and 5A991.f

5E991 Limited to "technology" according to the General Technology Note for the "development", or "production", or "use" of equipment controlled by 5A991.a, 5A991.b.7.a or b.7.b, or 5A991.f or of "software" specially designed or modified for the "development", "production", or "use" of equipment controlled by 5A991.a, 5A991.b.7, and 5A991.f

6A995 "Lasers", ~~not controlled by 6A005 or 6A205~~ See List of Items Controlled

(6A995 heading on the CCL should be amended to add "See List of Items Controlled")

7A994 Other navigation direction finding equipment, airborne communication equipment, all aircraft inertial navigation systems not controlled under 7A003 or 7A103, and other avionic equipment, ~~including parts and components, n.e.s.~~

Note. This item does not control inertial navigation systems certified for use on "civil aircraft" by civil authorities of a country in Country Group A:1 or theodolite systems incorporating inertial equipment designed for civil surveying purposes.

(The expression “parts and components, n.e.s.” is extraordinarily broad. The suggested Note is based on 7A003 Notes 2 and 3.)

7B994 Other equipment “specially designed” for the test, inspection, or “production” of navigation and avionics equipment controlled by 7A994

7D994 “Software”, ~~n.e.s.~~, “specially designed” for the “development”, “production”, or “use” of navigation, airborne communication and other avionics, controlled by 7A994

7E994 “Technology”, ~~n.e.s.~~, according to the General Technology Note, for the “development”, or “production”, ~~or “use”~~ of navigation, airborne communication, and other avionics equipment controlled by 7A994.

8A992 Limited to underwater systems or equipment, ~~not controlled by 8A001, 8A002, or 8A018~~ controlled by 8A992.a,b,c., and ~~specially designed~~ “specially designed” parts therefor

8D992 “Software” ~~specially designed or modified~~ “specially designed” for the “development”, “production”, or “use” of equipment controlled by 8A992.a,b,c.

8E992 “Technology” according to the General Technology Note for the “development”, or “production”, ~~or “use”~~ of equipment controlled by 8A992.a,b,c

9A991 Limited to “aircraft”, ~~n.e.s.~~, controlled by 9A991.a or .b and aero gas turbine engines ~~not controlled by 9A001 or 9A101~~ controlled by 9A991.c

(The 772 definition of “civil aircraft,” the term used in 9A991.b, does not include all “aircraft”, n.e.s. “Aero” gas turbine engines controlled by 9A991.c does not include all gas turbine engines not controlled by 9A001 or 9A101.)

9D991 “Software” “specially designed” for the “development”, “production”, or “use” of equipment controlled by 9A991.a,b,c ~~or 9B991~~

9E991 “Technology” according to the General Technology Note for the “development”, or “production”, or “use” of equipment controlled by 9A991.a,b,c ~~or 9B991~~

Selective Unilateral Controls

744 Supplement 4 and 736 Supplement 1 General Order 3 require a license to export to specified entities in specified countries items which would not otherwise require a license to those countries. No CCL issues arise if the controls apply to all items subject to the EAR. However, controls for some entities are applied only to selected items, as follows:

China: 7 entries all except EAR99 and 5 entries all except EAR99 and xx999
India: 1 entry all except EAR99 and xx999
Israel: 1 entry for computers above Tier 3 level described in 742.12(b)(3)(i)(B)
Russia: 1 entry all except EAR99

742.6(a)(3) and 746.3(a)(3) require licenses to export to Iraq the following:
0B999, 0D999, 1B999, 1C992, 1C995, 1C997, 1C999, 6A992

742.8(a)(2) and 742.10(a)(2) exclude the following from reexport controls to Iran and Sudan:
2A994, 3A992.a, 5A991.g, 5A992, 6A991, 6A998, 7A994, 8A992.d,e,f,g, 9A990.a,b, 9A991.d,e

744 Supplement 2 lists the following 31 ECCNs as wholly or partly controlled to China if for military end-use:
1A290, 1C990, 1C996, 1D993, 1D999, 1E994, 2A991, 2B991, 2B992, 2B996, 3A292.d,
3A999.c, 3E292, 4A994, 4D993, 4D994, 5A991, 5D991, 5E991, 6A995, 6C992, 7A994, 7B994,
7D994, 7E994, 8A992, 8D992, 8E992, 9A991.a,b,c, 9D991, 9E991

Were it not for the above selective controls, all ECCNs xx99x could be deleted, now that all countries designated as supporting terrorism are subject to total embargoes.

There are several anomalies in the above selective controls:

1. The citation in the Israel control has been deleted.
2. Given that Israel is a Computer Tier 3 country, computers above the Tier 3 level for License Exception APP would require a license to this entity even if it were not listed.
3. ECCNs xx999 are treated liberally to some Chinese and Indian entities whereas three of them are treated restrictively to Iraq and one is treated restrictively to China military end-use and they were originally established as restrictive controls to North Korea when other xx99x ECCNs were (temporarily) removed from license requirements to North Korea.
4. 7A994 is treated liberally to Iran and Sudan but restrictively to China military end-use.
5. There is no correlation between Iraq and China controls.

The only recent reviews of ECCNs xx99x were in connection with the Iraq regional stability controls and the China military end-use controls.

It is suggested that:

- all xx99x ECCNs be deleted except the 8 to Iraq the 10 to Iran and Sudan and the 28 to China; and
- the Israeli entity computer control be deleted.

Attachment 5

License Exceptions LVS, GBS, CIV, and TSR

The following changes are recommended relating to License Exceptions LVS, GBS, CIV, and TSR, eligibility for which is now specified on the CCL.

1. Substitute a new NS Column 3 showing license requirements only for countries not listed in Country Group B for GBS.
2. Do not show LVS eligibility for any ECCN or part thereof which is eligible for GBS (new NS Column 3) to the same countries regardless of dollar value.
3. Make software items eligible for CIV also eligible for GBS, rather than for TSR. Present coupling CIV with TSR permits unintended more liberal treatment to D:1 countries than to B countries, since CIV is not, and cannot be, subject to the TSR assurance against reexport to D:1 countries.
4. Convert the obsolete 2B018 Advisory Note into text for GBS eligibility.
5. Specify GBS, CIV, and TSR non-availability for the portions of NS items also controlled for MT or NP.
6. Add previous eligibility overlooked in earlier CCL revisions.
7. Restrictions on TSR based on the Wassenaar Very Sensitive List (VSL) should be revised for consistency with that List.

Consequential CCL changes for recommendations 2 through 7 (but not 1) would be as follows:

1D001

GBS: Yes, except N/A for MT

CIV: Yes, except N/A for MT

TSR: ~~Yes, except N/A for MT~~ N/A

1D002

GBS: Yes, except N/A for MT

CIV: Yes, except N/A for MT

TSR: ~~Yes, except N/A for MT~~ N/A

1E002

TSR: Yes, except ~~for 1E002-e~~ N/A for MT

2B018

Delete Advisory Note and revise GBS entry to read:

GBS: Yes, as follows, except N/A for Rwanda:

Equipment used to determine the safety data of explosives as required by the International Convention on the Transport of Dangerous Goods (C.I.M.) Articles 3 and 4 in Annex 1 RID, provided that such equipment will be used only by the railway authorities of current C.I.M. members, or by the Government-accredited testing facilities in those countries, for the testing of explosives to transport safety standards, of the following description:

- a. Equipment for determining the ignition and deflagration temperatures;
- b. Equipment for steel-shell tests;
- c. Drophammers not exceeding 20 kg in weight for determining the sensitivity of explosives to shock;
- d. Equipment for determining the friction sensitivity of explosives when exposed to charges not exceed 36 kg in weight.

2E003

TSR: Yes, ~~except 2E003.a, .b, .e and .f~~

3A001

CIV: Yes, for ... a.5.b. ...

(for consistency with previous CIV eligibility)

3E002

TSR: Yes, ~~except .f.~~

4A003

LVS ~~\$5,000; N/A for...~~

4D002

TSR: Yes, ~~except N/A for “software” specifically designed or modified to support “technology” for computers requiring a license.~~

5A001

LVS: N/A ~~for 5A001.a and b.4~~

5B001

LVS: ~~\$5,000~~ N/A

5D001

GBS: Yes, except for “software” controlled by 5D001.a and specially designed for the “development” or “production” of items controlled by 5A001.b.5.

CIV: Yes, except for “software” controlled by 5D001.a and specially designed for the “development” or “production” of items controlled by 5A001.b.5.

TSR: ~~Yes~~ N/A, except Yes for exports and reexports to ~~destinations outside of Austria, ... of~~ "software" controlled by 5D001.a and specially designed for "development" or "production" of items controlled by 5A001.b.5

5D002

TSR: ~~N/A~~ Yes

5E002

TSR: ~~N/A~~ Yes

6A003

GBS: Yes for 6A003.a.1 and the non-NP portion of 6A003.a.2 with framing speed of not more than 2 million frames per second.

CIV: Yes for 6A003.a.1 and the non-NP portion of 6A003.a.2 with framing speed of not more than 2 million frames per second.

(For consistency with Advisory Note 3 in pre-1996 CCL)

6A005

GBS: Yes, for;

6A005.d (except the NP portion of d.2.c.);

6A005.a.4.a, a.4.b, and the non-NP portion of a.4.c (including the CO/CO₂ portion of a.3) CO₂ or CO/CO₂ "lasers" having an output wavelength in the range from 9,000 to 11,000 nm and having a pulsed output not exceeding 2 J per pulse and a maximum rated average single or multimode output power not exceeding 5 kW;

6A005.a.3 CO "lasers" having a CW maximum rated single or multimode output power not exceeding 10 kW;

6A005.a.4.a, a.4.b, and the non-NP portion of a.4.c "lasers" that operate in CW multiple transverse mode; and have a CW output power not exceeding 15 kW;

6A005.b "lasers" designed for use with a civil fiber optic communication system that have an output wavelength not exceeding 1,370 nm and a CW power output not exceeding 100 mW;

non-NP portion of 6A005.c.2.b.2.b Neodymium-doped (other than glass, pulse-excited, "Q-switched lasers" ~~controlled by 6A005.e.2.b.2.b~~ having a pulse duration equal to or more than 1 ns; and a multiple transverse mode output with a "peak power" not exceeding 400 MW;

6A005.c.2.b.3.b. or c.2.b.4.b Neodymium-doped (other than glass) "lasers" ~~controlled by~~

~~6A005.e.2.b.3.b or 6A005.e.2.b.4.b~~ that have an output wavelength exceeding 1,000 nm; but not exceeding 1,100 nm; ~~and that have~~ an average or CW output power not exceeding 2 kW; ~~and that~~ operate in a pulse-excited, non-"Q-switched" multiple-transverse mode; or in a continuously excited, multiple-transverse mode; and

6A005.g.1.f.

(eligibility for 6A005.b is based on Advisory Note 9 in Category 5 Part 1 Telecommunications)

CIV: Yes, for:

6A005.d (except the NP portion of d.2.c.);

6A005.a.4.a, a.4.b, and the non-NP portion of a.4.c (including the CO/CO₂ portion of a.3) CO₂ or CO/CO₂ "lasers" having an output wavelength in the range from 9,000 to 11,000 nm and having a pulsed output not exceeding 2 J per pulse and a maximum rated average single or multimode output power not exceeding 5 kW;

6A005.a.3 CO "lasers" having a CW maximum rated single or multimode output power not exceeding 10 kW;

6A005.a.4.a, a.4.b, and the non-NP portion of a.4.c "lasers" that operate in CW multiple transverse mode; and have a CW output power not exceeding 15 kW;

6A005.b "lasers" designed for use with a civil fiber optic communication system that have an output wavelength not exceeding 1,370 nm and a CW power output not exceeding 100 mW;

non-NP portion of 6A005.c.2.b.2.b Neodymium-doped (other than glass, pulse-excited, "Q-switched lasers" ~~controlled by 6A005.e.2.b.2.b~~ having a pulse duration equal to or more than 1 ns; and a multiple transverse mode output with a "peak power" not exceeding 400 MW;

6A005.c.2.b.3.b. or c.2.b.4.b Neodymium-doped (other than glass) "lasers" ~~controlled by 6A005.e.2.b.3.b or 6A005.e.2.b.4.b~~ that have an output wavelength exceeding 1,000 nm; but not exceeding 1,100 nm; ~~and that have~~ an average or CW output power not exceeding 2 kW; ~~and that~~ operate in a pulse-excited, non-"Q-switched" multiple-transverse mode; or in a continuously excited, multiple-transverse mode; and

6A005.g.1.f.

(Eligibility for 6A005.b is based on pre-1998 Advisory Note 9 in Category 5 Part 1 Telecommunications.)

6D003

GBS: Yes for 6D003.h

CIV: Yes for ~~6D003.h~~ 6D003.h

TSR: Yes, except for the following:

- (1) ~~Items controlled for MT reasons 6D003.h;~~ or
- (2) Exports or reexports to destinations outside of Austria, ... of “software” for items controlled by 6D003.a.

(All of 6D003.h was eligible for GLX (the predecessor of CIV) per 771A Supplement 1, when it was 6D03A.d. Nothing in 6D003 is controlled for MT reasons.)

6E001

TSR: Yes, except for the following: ...

~~(2) Items controlled by 6A004.e; ...~~

(3)(a) ... 6A001.a.1.b.1 (having sound pressure level > 210 dB and operating frequency in band from 30 Hz to 2 kHz), ... 6A002.a.2.a.4, ...

6E002

TSR: Yes, except for the following: ...

~~(2) Items controlled by 6A004.e; ...~~

~~(3) ... “development” “production” ...~~

(3)(a) ... 6A001.a.1.b.1 (having sound pressure level > 210 dB and operating frequency in band from 30 Hz to 2 kHz), ... 6A002.a.2.a.4, ...

~~(3)(e) “Software” controlled by 6D001 and specially designed for the “development” or “production” of equipment controlled by 6A002.a.1.c, 6A008.1.3 or 6B008.~~

7D001

TSR: N/A Yes, except N/A for MT

7D002

TSR: N/A Yes, except N/A for MT

7D003

TSR: N/A Yes, except for the following:

(1) Items controlled for MT reasons;

(2) Exports or reexports to destinations outside of (17 countries listed in 1E001 TSR paragraph (2)) of 7D003.a or .b

7E001

TSR: N/A Yes, except N/A for MT

7E002

TSR: N/A Yes, except N/A for MT

7E003

TSR: ~~N/A Yes, except N/A for MT~~

7E004

TSR: ~~N/A Yes, except N/A for MT~~

8D001

TSR: ~~Yes, except for the following;~~

- ~~(1) Items controlled for MT reasons; or~~
- ~~(2) Exports or reexports to destinations outside of ... of "technology" for the "development" or "production" of items controlled by ...~~

8E001

TSR: ~~Yes, except for the following;~~

- ~~(1) Items controlled for MT reasons; or~~
- ~~(2) Exports or reexports to destinations outside of ... of "technology" for the "development" or "production" of items controlled by ...~~

9A006

LVS: ~~\$5,000 except N/A for MT~~

9B002

LVS: ~~\$5,000 except N/A for MT~~

9B003

LVS: ~~\$5,000 except N/A for MT~~

9B004

LVS: ~~\$5,000 except N/A for MT~~

9B006

LVS: ~~\$5,000 except N/A for MT~~

9D001

TSR: ~~N/A Yes, except for the following:~~

- ~~(1) Items controlled for MT reasons; or~~
- ~~(2) Exports or reexports to destinations outside of ... of "software" for the "development" of items controlled by 9E003.a.1 or 9E003.a.3.a.~~

9D002

TSR: ~~N/A Yes, except N/A for MT~~

9D003

GBS: Yes, except N/A for MT
CIV: Yes, except N/A for MT
TSR: Yes, except N/A for MT N/A

9D004

TSR: N/A Yes, except N/A for MT

9E001

TSR: N/A Yes, except for the following:

- (1) Items controlled for MT reasons; or
- (2) Exports or reexports to destinations outside of ... of "software" controlled by 9D001 for the "development" of items controlled by 9E003.a.1 or 9E003.a.3.a.

9E002

TSR: N/A Yes, except N/A for MT

9E003

TSR: N/A Yes, except for exports or reexports to destinations outside of (list the allied countries receiving favored TSR treatment in other ECCNs) of "technology" controlled by 9E003.a.1 or 9E003.a.3.a.

Attachment 6

General Technology Note

The General Technology Note (GTN) for the Wassenaar Dual-Use List (WDUL) limits technology controls to what is “required,” with “required” defined as “peculiarly responsible for achieving or exceeding the controlled performance levels, characteristics or functions.” A similar GTN for the Wassenaar Munitions List (WML) also uses the defined word “required.” The Wassenaar GTNs do not apply to software.

The part 772 definition of “required” includes “software” as well as “technology”; but no CCL software item refers to the GTN. Most CCL software items now use the undefined expressions “specially designed or modified” or “specially designed.” Some CCL technology and software items contain no such qualifier at all.

The multilateral regimes other than Wassenaar (MTCR, NSG, and AG) contain technology notes which use the undefined expression “directly associated with, rather than the defined term “required.”

It is recommended that:

- the U.S. propose that the Wassenaar GTNs be revised to cover software and that Wassenaar software items be revised to replace “specially designed or modified” or “specially designed” with “according to the General Technology Note”;
- the U.S. propose that MTCR, NSG, and AG adopt the Wassenaar GTN as amended and that their technology and software items be qualified by “according to the General Technology Note”; and
- all CCL software and technology ECCNs subject to Commerce licensing authority include “according to the General Technology Note,” except for a few which already contain the substance of the definition of “required.”

Consequential revisions to the CCL would be as follows:

0D999.a Software according to the General Technology Note ...

0D999.b Software according to the General Technology Note ...

0D999.c Software according to the General Technology Note ...

0E018 “Technology” according to the General Technology Note ...

0E918 “Technology” according to the General Technology Note ...

0E982 “Technology” ~~exclusively~~ according to the General Technology Note ...

0E984 “Technology” according to the General Technology Note ...

1D001 “Software” ~~specially designed or modified~~ according to the General Technology Note ...

1D002 “Software” according to the General Technology Note ...

1D018 “Software” ~~specially designed or modified~~ according to the General Technology Note ...

1D101 "Software" ~~specially designed or modified~~ according to the General Technology Note ...
1D103 "Software" ~~specially designed~~ according to the General Technology Note ...
1D201 "Software" ~~specially designed or modified~~ according to the General Technology Note ...
1D390 "Software" according to the General Technology Note ...
1D993 "Software" ~~specially designed~~ according to the General Technology Note ...
1D999.a Software ~~specially designed~~ according to the General Technology Note ...
1D999.b Software ~~specially designed~~ according to the General Technology Note ...

1E002.a "Technology" according to the General Technology Note ...
1E002.b "Technology" according to the General Technology Note ...
1E002.c "Technology" according to the General Technology Note ...
1E002.d "Technology" according to the General Technology Note ...
1E002.e "Technology" according to the General Technology Note ...
1E002.f "Technology" according to the General Technology Note ...
1E103 ~~"Technical data"~~ "Technology" according to the General Technology Note ...
1E104 "Technology" according to the General Technology Note ...
1E355.a "Technology" according to the General Technology Note ...
1E355.b "Technology" according to the General Technology Note ...
1E994 "Technology" according to the General Technology Note ...
1E998 "Technology" according to the General Technology Note ...

2D001 "Software" ... ~~specially designed or modified~~ according to the General Technology Note
...

2D002 "Software" according to the General Technology Note ...
2D018 "Software" according to the General Technology Note ...
2D101 "Software" ~~specially designed or modified~~ according to the General Technology Note ...
2D201 "Software" ~~specially designed~~ according to the General Technology Note ...
2D202 "Software" ~~specially designed or modified~~ according to the General Technology Note ...
2D290 "Software" ~~specially designed or modified~~ according to the General Technology Note ...
2D983 "Software" ~~specially designed or modified~~ according to the General Technology Note ...
2D991 "Software" ~~specially designed~~ according to the General Technology Note ...
2D992.a "Software" according to the General Technology Note ...
2D994 "Software" ~~specially designed~~ according to the General Technology Note ...

2E003.a "Technology" according to the General Technology Note ...
2E003.b "Technology" according to the General Technology Note ...
2E003.c "Technology" according to the General Technology Note ...
2E003.d "Technology" according to the General Technology Note ...
2E003.e "Technology" according to the General Technology Note ...
2E018 "Technology" according to the General Technology Note ...
2E983 "Technology" ~~specially designed or modified~~ according to the General Technology Note
...

2E991 "Technology" according to the General Technology Note ...
2E994 "Technology" according to the General Technology Note ...

3D001 “Software” ~~specialy designed~~ according to the General Technology Note ...
 3D002 “Software” ~~specialy designed~~ according to the General Technology Note ...
 3D003 ... “software” ~~specialy designed~~ according to the General Technology Note ...
 3D004 “Software” ~~specialy designed~~ according to the General Technology Note ...
 3D101 “Software” ~~specialy designed or modified~~ according to the General Technology Note ...
 3D980 “Software” ~~specialy designed~~ according to the General Technology Note ...
 3D991 “Software” ~~specialy designed~~ according to the General Technology Note ... or “software”
~~specialy designed~~ according to the General Technology Note ...

3E003 Other “Technology” according to the General Technology Note ...
 3E980 “Technology” ~~specialy designed~~ according to the General Technology Note ...
 3E991 “Technology” according to the General Technology Note ...

4D001.a “Software” ~~specialy designed or modified~~ according to the General Technology Note
 ...
 4D001.b “Software” ... ~~specialy designed or modified~~ according to the General Technology
Note ...
 4D002 “Software” ~~specialy designed or modified~~ according to the General Technology Note ...
 4D003.a Operating system “software”, “software” development tools and compilers ~~specialy~~
~~designed~~ according to the General Technology Note ...
 4D003.c “Software” ~~having characteristics or performing functions exceeding the limits in~~
~~Category 5, Part 2 (“Information Security”)~~
 (5D002 makes 4D003.c redundant.)
 4D980 “Software” ~~specialy designed~~ according to the General Technology Note ...
 4D993 ... “software” ~~specialy designed~~ according to the General Technology Note ...
 4D994 “Software”... ~~specialy designed or modified~~ according to the General Technology Note
 ...

4E001.b “Technology” ... ~~specialy designed or modified~~ according to the General Technology
Note ...
 4E980 “Technology” according to the General Technology Note ...
 4E992 “Technology” other than that controlled in 4E001 according to the General Technology
Note ...
 4E993 “Technology” according to the General Technology Note ...

5D001.a “Software” ~~specialy designed or modified~~ according to the General Technology Note
 ...
 5D001.b “Software” ~~specialy designed or modified~~ according to the General Technology Note
 ...
 5D001.c “Software” ~~specialy designed or modified~~ according to the General Technology Note
 ...
 5D001.d “Software” ~~specialy designed or modified~~ according to the General Technology Note
 ...
 5D980.a “Software” ~~primarily useful~~ according to the General Technology Note ...

- 5D980.b “Software” ~~primarily useful~~ according to the General Technology Note ...
- 5D991 “Software” ~~specially designed or modified~~ according to the General Technology Note ...
- 5E001.b.1 ~~Required~~ “technology” according to the General Technology Note ...
- 5E001 b.2 “Technology” according to the General Technology Note ...
- 5E001 b.3 “Technology” according to the General Technology Note ...
- 5E001 b.4 “Technology” according to the General Technology Note ...
- 5D002.a “Software” ~~specially designed or modified~~ according to the General Technology Note
...
- 5D002.b “Software” ~~specially designed or modified~~ according to the General Technology Note
...
- 5D002.c.1 “Software” having the characteristics or performing or simulating the functions of ...
- 5D002.c.2 “Software” according to the General Technology Note ...
- 5D992.a.1 “Software” ~~specially designed or modified~~ according to the General Technology Note
...
- 5D992.a.2 “Software” ~~specially designed or modified~~ according to the General Technology Note
...
- 5D992.b.1 “Software” having the characteristics or performing or simulating the functions of ...
- 5D992.b.2 “Software” ~~designed or modified~~ according to the General Technology Note ...
- 5E992 a “Technology”n.e.s., according to the General Technology Note ...
- 5E992 b “Technology”n.e.s., according to the General Technology Note ...
- 6D001 “Software” ~~specially designed~~ according to the General Technology Note ...
- 6D002 “Software” ~~specially designed~~ according to the General Technology Note ...
- 6D003.a.1 “Software” ~~specially designed~~ according to the General Technology Note ...
- 6D003.a.2 “Source code” according to the General Technology Note ...
- 6D003.a.3 “Software” ~~specially designed~~ according to the General Technology Note ...
- 6D003.a.4 “Source Code” according to the General Technology Note ...
- 6D003.f.1 “Software” ~~specially designed~~ according to the General Technology Note ...
- 6D003.f.2 “Software” ~~specially designed~~ according to the General Technology Note ...
- 6D003.g “Software” ~~specially designed~~ according to the General Technology Note ...
- 6D003.h.1 Air Traffic Control “software” application “programs” hosted on general purpose computers located at Air Traffic Control centers and ~~capable of~~ according to the General Technology Note for any of the following: ...
- 6D003.h.2 “Software” according to the General Technology Note ...
- 6D102 “Software” ~~specially designed or modified~~ according to the General Technology Note ...
- 6D103 “Software” according to the General Technology Note that processes post-flight recorded data, enabling determination of vehicle position throughout its flight path, specially designed or modified for “missiles”.
- 6D991 “Software” ~~specially designed~~ according to the General Technology Note ...
- 6D992 “Software” ~~specially designed~~ according to the General Technology Note ...
- 6D993.a Air Traffic Control (ATC) “software” application “programs” hosted on general

purpose computers located at Air Traffic Control centers and ~~capable of~~ according to the General Technology Note ...

6E003 d Optics, “technology” according to the General Technology Note, ...
 6E003 e Lasers. “Technology” required according to the General Technology Note ...
 6E991 “Technology” according to the General Technology Note ...
 6E992 “Technology” according to the General Technology Note ...
 6E993.a Optical fabrication technologies according to the General Technology Note ...
 6E993.b “Technology” according to the General Technology Note ...
 6E993.c “Technology” according to the General Technology Note ...
 6E993.d “Technology” required according to the General Technology Note ...

7D001 “Software” specially designed or modified according to the General Technology Note ...
 7D002 “Source code” according to the General Technology Note ...
 7D003.a “Software” specially designed or modified according to the General Technology Note ...
 ...
 7D003.b “Source code” according to the General Technology Note ...
 7D003.c “Source code” according to the General Technology Note ...
 7D003.d “Source code” according to the General Technology Note ...
 7D003.e Computer-aided-design (CAD) “software” specially designed according to the General Technology Note ...
 7D101 “Software” specially designed or modified according to the General Technology Note ...
 7D102.a Integration “software” according to the General Technology Note ...
 7D002.b Integration “software” specially designed according to the General Technology Note ...
 7D103 “Software” specially designed according to the General Technology Note ...
 7D994 “Software”, n.e.s., according to the General Technology Note ...

7E004.a “Technology” according to the General Technology Note ...
 7E004.b “Development” “technology” according to the General Technology Note ...
 7E004.c “Technology” according to the General Technology Note ...
 7E102 “Technology” according to the General Technology Note ...
 7E994 “Technology” according to the General Technology Note ...

8D001 “Software” specially designed or modified according to the General Technology Note ...
 8D002 Specific “software” specially designed or modified according to the General Technology Note ...
 8D992 “Software” specially designed or modified according to the General Technology Note ...

8E002.a “Technology” according to the General Technology Note ...
 8E002.b “Technology” according to the General Technology Note ...
 8E992 “Technology” according to the General Technology Note ...

9D001 “Software” specially designed or modified according to the General Technology Note ...

9D002 "Software" ~~specially designed or modified~~ according to the General Technology Note ...
 9D003 "Software" ~~specially designed or modified~~ according to the General Technology Note ...
 9D004.a 2D or 3D viscous "software" according to the General Technology Note validated with
 wind tunnel or flight test data required for detailed engine flow modeling.
 9D004.b "Software" according to the General Technology Note for testing aero gas turbine
 engines, assemblies or components, ~~specially designed~~ to collect , reduce and analyze data in real
 time, ~~and capable of~~ with feedback control , including
 9D004.c "Software" ~~specially designed~~ according to the General Technology Note ...
 9D004.d "Software" in source code "object code" or machine code required according to the
General Technology Note ...
 9D018 "Software" according to the General Technology Note ...
 9D101 "Software" ~~specially designed or modified~~ according to the General Technology Note ...
 9D104 "Software" ~~specially designed and modified~~ according to the General Technology Note ...
 9D990 "Software", n.e.s., according to the General Technology Note ...
 9D991 "Software" according to the General Technology Note ...

9E003.a "Technology" "required" according to the General Technology Note ...
 9E003.b "Technology" "required" according to the General Technology Note ...
 9E003.c "Technology" "required" according to the General Technology Note ...
 9E003.d "Technology" "required" according to the General Technology Note ...
 9E003.e "Technology" according to the General Technology Note ...
 9E003.f "Technology" "required" according to the General Technology Note ...
 9E003.g "Technology" "required" according to the General Technology Note ...
 9E003.h "Technology"... ~~and currently used in~~ according to the General Technology Note for ...
 9E018 "Technology" according to the General Technology Note ...
 9E990 "Technology" according to the General Technology Note ...
 9E991 "Technology" according to the General Technology Note ...
 9E993 Other "technology" according to the General Technology Note ...

Attachment 7

CCL Cross-References

It is recommended that underlined text be added to the CCL and ~~strike through text~~ be deleted.

0A001

Controls: ... (see 10 CFR part 110 Item 8(a))

0A002

... See 22 CFR part 121 Categories VI(e) and XV(e)

0A018

Related Controls: ~~N/A~~ (1) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (2) See also 0A979, 0A988, and USML Categories I(a), III(b-d), and X(a)

0A978

Related Controls: ~~N/A~~ See 746.8(b)(1) for additional licensing requirements re Rwanda concerning this entry.

0A979

Related Controls: ~~N/A~~ (1) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (2) See also 0A018, 0A988, and USML Category X(a)

0A982

Related Controls: ~~N/A~~ (1) See 746.8(b)(1) for additional licensing requirements re Rwanda concerning this entry. (2) See also 3A981.

0A983

Related Controls: ~~N/A~~ See 746.8(b)(1) for additional licensing requirements re Rwanda concerning this entry.

0A984

Related Controls: (1) ... Defense Trade Controls USML Category 1. (2) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (3) See also 0A986 and USML Category I.

0A985

Related Controls: ~~N/A~~ (1) See 746.8(b)(1) for additional licensing requirements re Rwanda concerning this entry. (2) See also USML Category I.

0A986

Related Controls: ~~N/A~~ (1) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (2) See also 0A984.

0A987

Related Controls: N/A (1) See 746.8(b)(1) for additional licensing requirements re Rwanda concerning this entry. (2) See also USML Category I(b).

0A988

Related Controls: N/A (1) See 746.8(b)(1) for additional licensing requirements re Rwanda concerning this entry. (2) See also 0A018, 0A979, and USML Category X(a).

0A999

Related Controls: N/A See also 0B001.c.10.

0B001

Controls: ... 10 CFR part 110 Item 8(b)

Related Controls: N/A See also 0A999, 2A226, 2A292, 2A999, 2B228, 2B229, 2B350, 3A992.a, 6A005, 6A205, and 6A995

0B002

Controls: ... 10 CFR part 110 Item 8(b)

Related Controls: N/A See also 0C201 and 3A233

0B003

Related Controls: N/A See also 0C201 and 10 CFR part 110 Item 8(f)

0B004

Controls: ... 10 CFR part 110 Item 8(g)

0B005

Controls: ... 10 CFR part 110 Item 8(e)

0B006

Controls: ... 10 CFR part 110 Item 8(d)

0B986

Related Controls: N/A See also 2B018 and USML Category III(d)

0B999

Related Controls: N/A See also 1A004 and 2A291

0C001

Controls: ... 10 CFR part 110 Item 9(b)

0C002

Controls: ... 10 CFR part 110 Item 9(a)

Related Controls: ~~N/A~~ See also 1C012

0C004

Controls: ... 10 CFR part 110 Item 9(d)

0C005

Controls: ... 10 CFR part 110 Item 9(e)

Related Controls: ~~N/A~~ See also 1C107

0C006

Controls: ... 10 CFR part 110 Item 8(b)

0C201

Controls: ... 10 CFR part 110 Item 8(b)

Related Controls: ~~N/A~~ See also 0B002 and 0B003

0D001

Controls: ... (see 10 CFR part 110 Items 8(a, b, d-g)). ... (see 22 CFR part 121 Categories VI(g) and XV(f)).

Related Controls: ~~N/A~~ Also see 0D999

0D018

Related Controls: (1) See 746.8(b)(1) for additional licensing requirements concerning this entry. (2) See also USML Category I(e) and III(e)

0D999

Specific software, not controlled by 0D001 or 9D103, as follows ...

0E001

Controls: ... (see 22 CFR part 121.1 Categories VI(g) and XV(f)).

Related Controls: ~~N/A~~ Also see 10 CFR part 110 items 8(a, b, d-g)

0E018

Related Controls: ~~N/A~~ (1) See 746.8(b)(1) for additional licensing requirements re Rwanda concerning this entry. (2) See also USML Categories I(i) and III(e)

0E982

Related Controls: ~~N/A~~ See 746.8(b)(1) for additional licensing requirements re Rwanda concerning this entry.

0E984

Related Controls: ~~N/A~~ See 746.8(b)(1) for additional licensing requirements re Rwanda concerning this entry.

1A001

Related Controls: (1) ... (see 22 CFR part 121 Category XXI). (2) See also 1C009.

1A002

Related Controls: (1) See also 1A102, 1A202, 9A010, and 9A110, and USML Categories IV(f) and XIII(d).

1A003

Related Controls: ... See also 1C008.

1A004

Related Controls: (1) See ECCNs 0B999, 1A995, 1B999, 2B351, and 2B352. (2) ... (see 22 CFR part 121.1 Categories X and XIV(f))

1A005

Related Controls: (1) ... (See 22 CFR part 121.1 Categories X(a) and XIV(f,h).) (2) ... (3) See 746.8(b)(1) for additional licensing requirements concerning this entry.

1A102

Resaturated pyrolyzed carbon-carbon components, not controlled by 1A002 or 9A010, designed for "missiles" ... 22 CFR part 121.1 Categories IV(f) and XIII(d)

1A202

Composite structures, ~~other than those~~ not controlled by 1A002, 1A102, 9A010, or 9A110, ...

Related Controls: ... (3) ... (see 10 CFR 110 item 8(a))

b. Made with any of the "fibrous or filamentary materials" ~~specified in~~ controlled by 1C210.a or with carbon prepreg materials specified in controlled by 1C210.c

1A225

Related Controls: ... (3) See also 1B228, 1B229, 1B230, and 1B231

1A226

Related Controls: ... (3) See also 1B228, 1B229, and 1B230

1A227

Related Controls: ... (see 10 CFR part 110 item 8(a).)

1A290

Depleted uranium (...), not controlled by 0C001, USML Category XXI, or NRC item 9(b)

1A984

~~Chemical agents, including~~ Tear gas formulations containing 1 percent or less of ... other

pyrotechnic articles having dual military and commercial use not controlled by 1C018.i
 Related Controls: N/A (1) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (2) See also USML Category XIV(d) for coverage of other teargases and Category V(c) for coverage of other pyrotechnics.

1A985

Related Controls: N/A (1) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (2) See also 4A980

1A995

Related Controls: See ECCNs 0B999, 1A004, 1B999, 2B351, and 2B352

1A999

Specific processing equipment, n.e.s. not controlled by 1A004 or USML Category XVI(c), as follows ...:

1B001

Related Controls: ... (2) Also see 1B101 and 1B201, 1B999, and 2B005; ...

1B018

Related Controls: N/A See also 2B116 and 9B006, 9B106, and 9B990

1B101

Related Controls: ...

Related Controls: Also see 1B201, 1B999, 2B001, and 2B005

1B102

... ~~other than that specified in~~ not controlled by 1B002 ...

1B115

Equipment, ~~other than that~~ not controlled in by 1B002, 1B018, or 1B102, or 2B018 for the "production" of propellant or propellant constituents, as follows, and specially designed components therefor

- a. ... for liquid propellants or propellant constituents controlled by 1C011.a, 1C011.b, 1C111, or ~~on the~~ U.S. Munitions List Category V.a.12.i, a.20.i, b.3, c.3.i-iv, c.5, c.6.i.A, c.6.ii.A, c.6.ii.B, d.1, d.2, d.10, d.11, e.2, e.3, e.6, e.7, e.16, f.3.i-iv, f.10, f.14, f.16, f.17, or f.18;
- b. ... for solid propellants or propellant constituents ~~described in~~ controlled by 1C011.a, 1C011.b, or 1C111, or on the U.S. Munitions List V.a.12.i, a.20.i, b.3, c.3.i-iv, c.5, c.6.i.A, c.6.ii.A, c.6.ii.B, d.1, d.2, d.10, d.11, e.2, e.3, e.6, e.7, e.16, f.3.i-iv, f.10, f.14, f.16, f.17, or f.18.

1B116

Related Controls: N/A See also 2B104

1B117

Batch mixers, not controlled by 2B018, ...

Related Controls: N/A See also 1B115, 1B118, and 1B119

1B118

Continuous mixers, not controlled by 2B018, ...

Related Controls: N/A See also 1B115, 1B117, and 1B119

1B119

Fluid energy mills, not controlled by 2B018, for grinding or milling propellant or propellant constituents specified in controlled by 1C011.a, 1C011.b, or 1C111 or on the U.S. Munitions List V.a.12.i, a.20.i, b.3, c.3.i-iv, c.5, c.6.i.A, c.6.ii.A, c.6.ii.B, d.1, d.2, d.10, d.11, e.2, e.3, e.6, e.7, e.16, f.3.i-iv, f.10, f.14, f.16, f.17, or f.18, and specially designed components therefor.

Related Controls: N/A See also 1B115, 1B117, and 1B118

1B201

Filament winding machines, ~~other than those~~ not controlled by ECCN 1B001 or 1B101, ...

Related Controls: (1) ... (2) See also 1B999

1B225

Related Controls: (1) ... (2) See also 1B999

1B228

Related Controls: ... (3) See also 1A225, 1A226, and NRC item 8(g)

1B229

Related Controls: (1) ... (see 10 CFR part 110 item 8(g). ... (3) See also 1A225 and 1A226

1B230

Related Controls: (1) ... (see 10 CFR part 110 item 8(g). (3) See also 1A225, 1A226, 2A293, 2B231, and 2B350

1B231

Related Controls: (1) ... (see 10 CFR part 110 item 9(c)). ... (3) See also 1A225, 1C235, and 3A231

1B999

Related Controls: See also 1B001, 1B101, 1B201, 1B225, and 1D999, and 3A201

1C001

Related Controls: (1) See 743.1 for reporting requirements for exports under specified License Exceptions. (2) See also 1C101.

1C002

Related Controls: See also 0B001.c, 1C118, 1C202, and 1C228

1C004

Related Controls: ~~N/A~~ See also 1C117 and 1C226

1C005

Related Controls: ~~N/A~~ See also 3A001, 3A201, and 6A006

1C006

Related Controls: ~~N/A~~ See also 1C996

1C007

Related Controls: See also OC005, 1C107, and 1C234.

1C008

Related Controls: ~~N/A~~ See also 1A003

1C009

Related Controls: ~~N/A~~ See also 1A001

1C010

Related Controls: ... (4) Also see 0B001.c.

1C011

Related Controls: (1) See also 1C018 and 1C111. (2) ... (see 22 CFR ~~part 121~~ 121.1 Category V)

1C012

Control(s): ... (see 10 CFR part 110 item 9(a))

Related Controls: ~~N/A~~ See also 0C002.

1C018

Related Controls: ... (6) See also 1A984, 1C011, 1C111, and 1C239, and 1C992. ... (8) See 746.8(b)(1) for additional licensing requirements re Rwanda concerning this entry.

1C107

Graphite and ceramic materials, ~~other than those~~ not controlled by 1C007, ...

1C111

... chemicals ..., ~~other than those~~ not controlled by 1C011, as follows ...

Related Controls: (1) ... (See 22 CFR ~~121.12(b)(6), other ferroene derivatives~~ Category V.f.3).
 (2) For propellants and constituent chemicals for propellants not controlled by 1C111, 1C011, 1C018, or 1C992, see 22 CFR 121.1 Category V.

1C116

Related Controls: ... (2) Also see 0B001.c and 1C216

1C117

Tungsten, molybdenum, and alloys of these metals, not controlled by 1C004, ...

Related Controls: ~~N/A~~ See also 1C226

1C118

Titanium-stabilized duplex stainless steel (Ti-DSS), not controlled by 1C002.

Related Controls: ~~N/A~~ See also 1C202

1C202

Alloys, ~~other than those~~ not controlled by 1C002.a.2.e or .d or 1C118

Related Controls: ... (2) Also see ECCN ~~1C002~~ 0B001.c

1C210

... , ~~other than those~~ not controlled by 1C010.a, .b or .e or by 9C110, as follows ...

Related Controls: ... (2) Also see ECCNs ~~1C010~~ 0B001.c and 1C990.

1C216

... ~~other than than~~ not controlled by 1C116 ...

Related Controls: ... (2) Also see ECCN ~~1C116~~ 0B001.c. (3) ... (see 10 CFR 110 item 8(a)).

1C226

Parts made of tungsten, tungsten carbide, or tungsten alloys (greater than 90% tungsten), not controlled by 1C004 or 1C117, ...

1C227

Related Controls: (1) ... (2) See also 2A225

1C228

Magnesium (high purity), not controlled by 1C002 or 1C111, ...

Related Controls: (1) ... (2) See also 2A225

1C230

Beryllium, not controlled by 1C111 or 6C004, metal, ...

1C231

Hafnium, not controlled by 6C004, metal, ...

Related Controls: (1) ... (2) See also 2A225

1C234

Zirconium, not controlled by 1C007, 1C111, or 6C004, with ...

Related Controls: ... (2) ... (see 10 CFR 110 item 8(a)). (3) See also 1A003 and 2A225

1C235

Related Controls: ... (2) Also see ECCNs 1B231 and 3A231. (3) ... (see 10 CFR part 110 item 9(c)).

1C236

Related Controls: ... (2) ... (see 10 CFR part 110 item 9(c)). (3) See also 1C999

1C239

High explosives, ~~other than those~~ not controlled by 1C011, 1C018, 1C111, 1C992, or the U.S. Munitions List, ...

1C240

Related Controls: ... (2) ... (see 10 CFR 110 item 8(a)). (3) See also 1C002, 1C004, 1C116, 2A292, and 2B350

1C350

Related Controls: ... The Department of State controls CWC Schedule 1 chemicals in Category XIV(a)(1), (a)(3), and (c)(1-4) and CWC Schedule 2 chemicals in Category XIV(a)(2), (a)(4), and (c)(5) (see 22 CFR 121.1). Also see ECCNs 1C355, 1C395, and 1C995. Chemical agents having military application which produce a powerful physiological effect are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121 Category XIV). See also ECCN 1A984; DEA 21 CFR 1311-1313; EPA 40 CFR 168.75, 262.59 f, and 707.60; CPSC 16 CFR 1010 and 1019; and FDA 21 CFR 312.110.

1C351

Related Controls: ... See 22 CFR part 121.1, Category XIV(a)(1), (a)(3), and (c)(1-4) ~~and 121.7~~ for additional CWC Schedule 1 chemicals controlled by the Department of State. Biological agents modified to increase a capability to produce casualties in humans or livestock, degrade equipment, or damage crops are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121 Category XIV(b)). See also DEA 21 CFR 1311-1313; EPA 40 CFR 168.75, 262.59 f, and 707.60; CPSC 16 CFR 1010 and 1019; and FDA 21 CFR 312.110.

1C352

Related Controls: ... (1) Biological agents modified to increase a capability to produce casualties in humans or livestock, degrade equipment, or damage crops are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121 Category XIV(b)). (2) See also Vaccines are controlled under ECCN 1C991. (3) See also DEA 21 CFR 1311-1313; EPA 40 CFR 168.75, 262.59 f, and 707.60; CPSC 16 CFR 1010

and 1019; and FDA 21 CFR 312.110.

1C353

Related Controls: (1) Vaccines ... (2) Biological agents modified to increase a capability to produce casualties in humans or livestock, degrade equipment, or damage crops are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121 Category XIV(b)). (3) See also DEA 21 CFR 1311-1313; EPA 40 CFR 168.75, 262.59 f, and 707.60; CPSC 16 CFR 1010 and 1019; and FDA 21 CFR 312.110.

1C354

Related Controls: ..., (1) Biological agents modified to increase a capability to produce casualties in humans or livestock, degrade equipment, or damage crops are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121 Category XIV(b)). (2) See also Vaccines are controlled under ECCN 1C991. (3) See also DEA 21 CFR 1311-1313; EPA 40 CFR 168.75, 262.59 f, and 707.60; CPSC 16 CFR 1010 and 1019; and FDA 21 CFR 312.110.

1C355

Related Controls: ... See also DEA 21 CFR 1311-1313; EPA 40 CFR 168.75, 262.59 f, and 707.60; CPSC 16 CFR 1010 and 1019; and FDA 21 CFR 312.110.

1C990

..., not controlled by 1C010, or 1C210, or 9C110,

1C991

Vaccines, "immunotoxins", "medical products", "diagnostic and food testing kits", not controlled by 1C351, 1C352, 1C353, 1C354, 1C395, or 1C995 as follows:

Related Controls: ~~Medical~~ ... See also DEA 21 CFR 1311-1313; EPA 40 CFR 168.75, 262.59 f, and 707.60; CPSC 16 CFR 1010 and 1019; and FDA 21 CFR 312.110.

Related Definitions: ... See 1C351 Related Definitions.

1C992

Commercial charges and devices containing energetic materials, ~~n.e.s.~~ not controlled by 1C018 or the U.S. Munitions List 22 CFR 121.1 Category V, as follows (see List of Items Controlled):

Related Controls ~~For~~ Commercial charges and devices containing USML controlled energetic materials that exceed the quantities noted or that are not covered by this entry, ~~are controlled under~~ see 1C018 or USML Category V.

1C996

Hydraulic fluids, containing synthetic hydrocarbon oils, not controlled by 1C006, ...

1C999

Related Controls: See also ~~1C236~~ 2A292 re 1C999.b and c.

- c. ... ball bearings (3 mm or greater diameter), not controlled by 2A001 or 2A991;
- d. Alpha-emitting radionuclides, ~~n.e.s.~~ not controlled by 1C236 or 10 CFR 110 Item 9(c).

1D001

Related Controls: ... (2) Also see 1D002, 1D101, and ~~1D102~~, 1D201, and 1D999.

1D002

Related Controls: (see 22 CFR part 121 Categories IV and XIII). See also 1D001, 1D101, 1D102, 1D201, and 1D999.

1D018

Related Controls: ~~N/A~~ See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

1D101

“Software”, not controlled by 1D001, ...

Related Controls: (1) ... (2) See also 1D002, 1D201, and 1D999.

1D201

“Software”, not controlled by 1D001 or 1D101, ...

Related Controls: (1) ... (2) See also 1D002 and 1D999.

1D999

Specific “software”, ~~n.e.s.~~ not controlled by 1D001, 1D101, or 1D201, as follows ...

Related Controls: See also ~~1B999~~ 1D002

1E001

“Technology” ... for ... 1A102, ... 1C (except 1C018, 1C351 to 1C354, ...1C996).

NS applies to “technology” for items controlled by ... 1C001 to ~~1C010~~ 1C011, or ~~1C018~~

~~License Requirement Notes: See 743.2 ...~~

Related Controls: (1) See also 1E101, and 1E201, and 1E994. (2) “Technology” for items ~~controlled by the NRC portion of 1C235 are is~~ ... (see 10 CFR part 810). (3) “Technology” for items described in 1C012 are is ... (see 10 CFR part 110 item 9(a)). (4) “Technology” for items controlled by 1A004 or 1A102 or by the portions of 1A005, 1C011, or 1C111 subject to Department of State export licensing authority are is itself subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121 Categories IV, V, and XIII).

1E002

Related Controls: (1) See also 1E001, 1E101, 1E102, 1E202, and ~~1E101~~ 1E994 for “technology” related to 1E002.e. or .f.

1E018

Related Controls: See 746.8(b)(1) for additional licensing requirements re Rwanda concerning this entry.

1E101

“Technology”, not controlled by 1E002.e or .f, ...

Related Controls: (1) “Technology” for items controlled by 1A102 or by the portions of 1C011 or 1C111 subject to Department of State export licensing authority are is itself subject to ... (see 22 CFR part 121 Categories IV, V, and XIII). (2) See also 1E001, 1E201, and 1E994.

1E102

Related Controls: (1) ... (2) See also 1E203

1E201

“Technology”, not controlled by 1E002.f or 1E101, ...

Related Controls: N/A See also 1E001, 1E202, and 1E994.

1E202

“Technology”, not controlled by 1E001, ...

Related Controls: N/A See also 1E002.f, 1E101, 1E201, and 1E994.

1E203

“Technology”, not controlled by 1E203, ...

1E350

“Technology”, not controlled by 1E001, ...

1E994

“Technology”, not controlled by 1E001, 1E002.f, 1E101, 1E201, or 1E202, ...

2A001

Related Controls: (1) See also 2A991 and 1C999.a. (2) ... (See 22 CFR part 121 Category VI(f).)

2A225

Crucibles, not controlled by 1C227, 1C228, 1C231, or 1C234, ...

2A226

Valves, not controlled by 0B001 or 9A106.d, ...

Related Controls: ... (2) Also see ECCNs 1C999, 2A292, and 2B350.g, and 2B999. (3) ... certain nuclear uses plants for the separation of the isotopes of uranium are subject to the export licensing authority of the Nuclear Regulatory Commission. (See 10 CFR part 110 item 8(b).)

2A290

Related Controls: ... (See 10 CFR part 110 item 8(a).)

2A291

Related Controls: ... (3) Also see ECCNs 2A291 and 0B999. (4) ... (see 10 CFR part 110 item 8(a).) (5) ... (see 22 CFR parts 120 through 130 part 121.1 Category XVI.)

2A292

Related Controls: ... (3) Also see ECCNs 0B001, 0C006, 1C004, 1C116, 1C240, 1C990, 1C999, 2A226, 2A290, 2B350.g,h, and 2B999.g,k. (4) ... (see 10 CFR part 110 item 8(a).)

2A293

Related Controls: ... (3) ... (see 10 CFR part 110 item 8(a).) (4) See also 1B230, 2B231, and 2B350.

2A983

Related Controls: ~~N/A~~ Also see 1A004 and 1A995.

2A991

Controls: This entry does not control ...

Related Controls: (1) ~~This entry does not control ...~~ (2) ... (See 22 CFR part 121 Category VI(f).) (2) Also see 1C999.a.

2A994

Note. A license is not required to reexport this entry to Iran or Sudan. See 742.8(a)(2) and 742.10(a)(2).

2A999

Related Controls: ~~See also 2A236, 2B350.~~ Valves specially designed or prepared for plants for the separation of the isotopes of uranium are subject to the export licensing authority of the Nuclear Regulatory Commission. (See 10 CFR part 110 item 8(b).)

Items:

- a. Bellows-sealed valves, not controlled by 0B001.b.1, 0B001.d.6, 2A226, 2A292, or 2B350.

2B001

Related Controls: ... (3) Also see ECCNs 2B002, 2B201, 2B290, and 2B991, 2B992, and 2D002.

2B004

Related Controls: ... (3) For specially designed dies, molds and tooling, see 1B003, 2B018, 9B001, 9B004, and 9B009 and ML18 (22 CFR part 121) (4) ... (5) Also see ECCNs 2B117 and 2B999.a.

2B005

Related Controls: ... (4) See also 2B999.i.

2B006

Related Controls: ... (3) Also see ECCNs 2B008, 2B206, and 2B996, and 3A992.a.

2B007

Related Controls: ... (3) Also see 2B008, 2B207, 2B225, and 2B997, and 8A002.h.

2B009

Related Controls: ... (4) Also see 2B999.i.

2B018

Related Controls: N/A (1) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (2) See also 1B115, 7B103, 9B115, and 9B116

2B104

“Isostatic presses”, ~~other than these~~ not controlled by 2B004, having ...

Related Controls: ... (3) Also see ECCNs ~~2B004~~, 2B204, and 2B117, and 2B999.a.

2B105

Chemical vapor deposition (CVD) furnaces ~~other than these~~ not controlled by 2B005.a ...

Related Controls: ... (3) Also see ECCNs ~~2B005~~ and 2B117, 2B226, and 2B227.

2B109

Flow-forming machines, ~~other than these~~ not controlled by 2B009, ...

Related Controls: ... (3) Also see ECCNs ~~2B009~~ and 2B209 and 2B999.i.

2B116

Vibration test systems, equipment and components therefor, not controlled by 1B018.b, or 9B006, ...

Related Controls: ... (3) Also see ECCNs 9B106, and 9B990.

2B121

... ~~other than these~~ not controlled by ...

2B201

Machine tools, ~~other than these~~ not controlled by 2B001, ...

Related Controls: ... (3) Also see ECCNs ~~2B001~~, 2B290, and 2B291

2B204

“Isostatic presses,” ~~other than these~~ not controlled by 2B004 or 2B104 ...

Related Controls: ... (3) Also see ECCNs ~~2B004~~ and ~~2B104~~ 2B999.a

2B206

Dimensional inspection machines, instruments or systems, ~~other than these~~ not controlled by 2B006, ...

Related Controls: ... (3) Also see ECCNs ~~2B006~~ and 2B996 and 3A992.a.

2B207

“Robots” or “end-effectors”, ~~other than those~~ not controlled by 2B007, ...

Related Controls: ... (3) Also see ECCNs ~~2B007~~, 2B225, and 2B997, and 8A002.h

2B209

Flow-forming machines ..., ~~other than those~~ not controlled by 2B009 or 2B109, ...

Related Controls: ... (3) Also see ECCNs ~~2B009~~ and ~~2B109~~ 2B999.l.

2B225

Related Controls: ... (2) Also see ECCNs 1A004, 1A005, 1A995, 2B007, and 2B207, and 2B352.f.2 and Related Definitions. (3) ... (see 10 CFR 110 items 8(a) & (d)).

2B226

Related Controls: ... (2) Also see ECCNs 2B104, 2B227, and ~~Category 3B~~ 3B001, and 3B991.

2B227

Related Controls: ... (2) Also see ECCNs 2B104 and 2B226.

2B228

Related Controls: (1) ... (2) Specially designed or prepared assemblies and components for plants for the separation of isotopes of uranium are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 10 item 8(b)). (3) Also see 0B001.

2B229

Related Controls: ... (3) Specially designed or prepared assemblies and components for plants for the separation of isotopes of uranium are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 10 item 8(b)). (4) Also see 0B001 and 2B999.m.

2B230

Related Controls: (1) ... (2) Also see 6A226 and 9B008.

2B231

Related Controls: ... (2) ... (see 10 CFR part 10 item 8(b)). (3) Also see 0B001, 1B230, 2A203, 2B350, and 2B999.j.

2B232

Related Controls: (1) ... (2) Also see U.S. Munitions List Categories I(a) and II(a).

2B290

Related Controls: ... (3) Also see ECCNs ~~2B001~~, ~~2B201~~, and 2B991.

2B350

Controls: The controls in this entry do not apply to ...

Related Controls: ~~The controls in this entry do not apply to ...~~ Also see ECCNs 0B001, 1B230, 2A226, 2A292, 2A293, and 2B231 and 22 CFR 121.1 Category XIV(l).

2B351

Related Controls: (1) ... (2) See also ECCN 2B225 and 22 CFR part 121 Category XIV(f-l). (3) Equipment for monitoring and detection, and identification of chemical agents which have military application and produce a powerful physiological effect or biological agents which have been modified to increase their capability to produce casualties in humans or livestock, degrade equipment, or damage crops are subject to the export licensing authority of the U.S. Department of State (see 22 CFR part 121,1 Category XIV(f)).

2B352

Related Controls: (1) ... (2) See also ECCN 2B225 and 22 CFR part 121 Category XIV(f-l). (3) Equipment for dissemination, detection, and identification of, and defense against, chemical agents and biological agents are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR 121.1 Category XIV(f))

2B991

Related Controls: Also see 2B001, 2B201, and 2B290, 2B998, and 2D002

2B993

Related Controls: N/A See also 2B998.

2B996

... equipment, not controlled by 2B006 or 2B206.

Related Controls: N/A See also 2B998.

2B997

Related Controls: N/A See also 2B998.

2B998

Assemblies, units or inserts, not controlled by 2B008, ...

2B999

a. Isostatic presses, n.e.s. not controlled by 2B004, 2B104, or 2B204

c ... not controlled by 0B001, 0B002, 0B004, 2B228, or NRC 10 CFR part 110.8;

f. ... not controlled by 2B350;

g. ... not controlled by 2A226, 2A292, or 2B350;

h. ... not controlled by 2B001.f;

i. ... not controlled by 2B005;

j. ... not controlled by 2A293, 2B231, or 2B350;

l. ... not controlled by 2B009, 2B109, or 2B209;

m. ... not controlled by 2B229;

n. ..., not controlled by 2B350.

2D001

Related Controls: ... (2) Also see ECCNs 2D101, and 2D201, 2D202, 2D290, and 2D991.

2D002

Related Controls: ... (2) Also see 2B001, 2D202, 2D290, and 2D991

2D018

Related Controls: N/A (1) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (2) See also the software components of 7B103 and 9B116

2D101

“Software”, not controlled by 2D001, ...

Related Controls: ... (2) Also see 2D201 and 9D004

2D201

“Software”, not controlled by 2D001 or 2D101, ...

Related Controls: ... (2) Also see ECCNs ~~2D002 and 2D202~~ 2D991

2D202

“Software”, not controlled by 2D001 or 2D002, ...

Related Controls: ~~N/A~~ Also see ECCNs 2D290 and 2D991

2D290

“Software”, not controlled by 2D001, 2D002, or 2D202 ...

Related Controls: (1) ... (2) Also see 2D991

2D991

“Software”, not controlled by 2D001, 2D002, 2D201, 2D202, or 2D290, ...

2E001

“Technology” ... for ... 2B (except 2B018, 2B352, 2B991, 2B992, ...) ...

Related Controls: ~~See also 2E101, 2E201, and 2E301~~

(2E001 is limited to development; 2E101, 2E201, and 2E301 are limited to use.)

2E002

“Technology” ... for ... 2B (except 2B018, 2B352, 2B991, 2B992, ...)

2E003

Related Controls: See 2E001, ~~2E002, and~~ or 2E101 for “development” ~~and~~ or “use” technology for equipment that are designed or modified for densification of ~~carbon-carbon composites,~~ structural composite rocket nozzles and reentry nose tips.

2E018

“Technology” for the “development”, “production”, or “use” of equipment controlled by 2B018
 Related Controls: ~~N/A~~ (1) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (2) See also 1E001 and 1E101 for 1B115 and 9E001, 9E002, and 9E102 for 9B115 and 9B116

2E101

Related Controls: ... (2) Also see 2E201

2E201

“Technology”, not controlled by 2E101, ...

Related Controls: ~~N/A~~ Also see 2E290 and 2E991

2E991

“Technology”, not controlled by 2E201 or 2E290, ...

3A001

Related Controls: (1) ... (22 CFR part 121.1 Category XV) ... (2) ... (22 CFR part 121.1 Category XV). (3) See also 1C005, 3A101, 3A201, 3A991, 3A992.a and 6A006.

3A002

Related Controls: See also 3A292, and 3A992, and USML Category XV.

3A002

Related Controls: ... (22 CFR part 121.1 Category XV).

3A101

... ~~other than those~~ not controlled by 3A001, ...

Related Controls: (1) ... (See 22 CFR part 121 Category XV). (2) Also see 3A992.a.

3A201

... ~~other than those~~ not controlled by 3A001 or 3A101, ...

Related Controls: ... (2) Also see 3A001.e.2 (capacitors) and 3A001.e.3 (superconducting electromagnets) 1B999, 1C005, 3A991, 3A992.a, 3A999.c, and 6A006.

3A225

... ~~other than those described in~~ not controlled by 0B001.c.11 ...

Related Controls: ... (3) Also see 3A999.a.

3A226

... ~~other than those described in~~ not controlled by 0B001.j.6 ...

3A227

... ~~other than those described in~~ not controlled by 0B001.j.5 ...

3A229

Related Controls: ... (3) Also see 3A230, 3A232, and 3A999.d

3A230

Related Controls: (1) ... (2) Also see 3A239 and 3A999.d.

3A232

Related Controls: ... (3) Also see 3A229.

3A233

Related Controls: ... (2) ... (See 10 CFR part 10 item 8(b)) (3) Also see 0B002.g, 3A992.a, 3A999.d, and 3A999.f.

3A292

... ~~other than those~~ not controlled by 3A002.a.5 ...

Related Controls: (1) ... (2) Also see 3A992.a.

3A980

Related Controls: N/A See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

3A981

Related Controls: N/A (1) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (2) Also see 0A982 and 4A980

3A991

... not controlled by 3A001 or 3A201.b ...

Related Controls: N/A Also see 1C005 and 6A006.

3A992

... not controlled by 0B001, 2B006, 2B206, 3A001, 3A002, 3A101, 3A201, 3A233, 3A292, 3B002, or 5B001

Related Controls: N/A Also see USML Category XV

Note. A license is not required to reexport 3A992.a to Iran or Sudan. See 742.8(a)(2) and 742.10(a)(2).

3A999

- a. ... not controlled by 3A225;
- b. ... not controlled by 3A233;
- c. ... not controlled by 3A001.e.2, 3A201.a or .c, or 3A226 to 3A230;
- d. ... not controlled by 3A229 or 3A230;
- e. ...
- f. ... not controlled by 3A233.

3B002

Related Controls: See also 3A999.a and 3B992.

3B992

Related Controls: ~~N/A~~ See also 3A992.a.

3C003

Controls: This entry controls only ...

Related Controls: ~~This entry controls only ...~~ Also see 1C350, 2B351.a, and 3C004.

3C004

Related Controls: ~~N/A~~ See also 1C350, 2B351.a, and 3C003.b.

3D001

NS applies to ... ~~and 3B~~ 3B001 and 3B002 ...

Related Controls: ... See also ~~3D101~~ 3D003 and 3D991.

(3D001 is for development or production, whereas 3D101 is for use.)

3D002

Related Controls: ~~N/A~~ Also see 3D991.

3D003

Related Controls: ... (3) Also see 3D001 and 3D991.

3D980

Related Controls: ~~N/A~~ (1) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (2) Also see 4D980

3D991

“Software”, not controlled by 3D001, 3D002, 3D003, or 3D101, ...

3E001

Related Controls: (1) See also ~~3E101 and 3E201~~ 3E002, 3E292, 3E980, and 3E991.

(3E001 is for development or production, whereas 3E101 and 3E201 are for use.)

3E980

Related Controls: ~~N/A~~ (1) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry. (2) See also 4E980

3E991

“Technology”, not controlled by 3E001, 3E101, 3E201, or 3E292, ...

4A001

Related Controls: (1) See also 4A101, and 4A994, and 5A002. (2) Equipment designed or rated for transient ionizing radiation ... (See 22 CFR part 121 Categories XI(a)(6) and XV.)

4A003

~~CC applies to digital computers for computerized finger print equipment~~
(ECCN 4A980 controls such computers.)

Related Controls: See also 4A994 and ~~4A980~~ 5A001.

4A004

Related Controls: ~~N/A~~ See also 3A001.a.9. neural network integrated circuits, 3A001.a.6. optical integrated circuits, and 6A002.d and 6A004.b. optical sensors and components.

4A101

~~... other than those not~~ controlled by 4A001, ...

Related Controls: ~~N/A~~ See also 4A994 and USML Category XI(a)(4,5).

4A102

... See 22 CFR part 121 Category XI(a)(6).

4A980

Related Controls: ~~N/A~~ See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

4A994

... not controlled by 4A001, 4A002, ~~or~~ 4A003, 4A101, or 4A102, ...

4D001

~~CC applies to "software" for computerized finger print equipment...~~
(ECCN 4D980 controls such software.)

Related Controls: ~~N/A~~ See also 4D994.

4D003

Related Controls: ~~N/A~~ See also 4D993.

4D980

Related Controls: ~~N/A~~ See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

4D994

"Software", not controlled by 4D001, ...

4E001

~~CC applies to "technology" for computerized finger print equipment...~~
(ECCN 4E980 controls such technology.)

Related Controls: ~~N/A~~ Also see 4E992.

Items: a. ... ~~4A993~~, ...

4E980

Related Controls: ~~N/A~~ See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

4E992

“Technology”, not controlled by 4E001, ...

5A001

Related Controls: ... (22 CFR `121.1 Category XI(a)(4,5) or XXI). See also ~~5A101~~ and 5A991

5A980

Related Controls: ~~N/A~~ See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

5B001

Related Controls: See also 3A992.a. and 5B991

5B991

Telecommunications test equipment, ~~n.e.s.~~ not controlled by 5B001

5D991

“Software”, not controlled by 5D001, ...

5E001

Related Controls: ... (22 CFR part 121.1 Category XV). See also ~~5E101~~ and 5E991.

5E991

“Technology”, not controlled by 5E001, ...

5A002

Controls: This entry does not control ...

Related Controls: See also 4A001.b and 5A992. ~~This entry does not control ...~~

5A992

Equipment not controlled by 4A001.b or 5A002

Note: Per 742.8(a)(2) and 742.10(a)(2), a license is not required for reexport to Iran or Sudan

5D002

Controls: This entry does not control ...

Related Controls: ~~This entry does not control ...~~ See also 4D001 for 4A001.b and 5D992.

5D992

... not controlled by 4D001 for 4A001.b or 5D002

5E002

Related Controls: See also 4E001 for 4A001.b, 4E001 for 4D001 for 4A001.b, and 5E992.

5E992

... not controlled by 4E001 for 4A001.b or 5E002

6A001

Related Controls: See also 6A018, 6A991, and USML Category XI(a)(1,2).

6A002

Related Controls: ... (22 CFR part 121 Category XII(c) and XV .) ... See also 6A102, 6A202, and 6A992, 6A999.a, and 6C992. See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

6A003

Related Controls: ... (2) Also see 6A203 and 6A999.b. ... (4) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

6A004

Related Controls: (1) ... (22 C.F.R. part 121 Category XV). (2) See also 6A994 and 6C004. (3) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

6A005

Related Controls:... (5) ... (see 10 CFR 110 Item 8(b) and ECCN 0B001.h.6). (6) ... (22 CFR part 121 Category XII(b).)

6A008

Controls: This entry does not control ...

Related Controls: ~~This entry does not control ...~~ See also 6A108, and 6A998, 7A006, 7A106, and USML Categories IV(h) and XI(a)(3). ...

6A102

... ~~other than these~~ not controlled by 6A002 ...

Related Controls: ~~N/A~~ See also 6A202, 6A992, 6A999.a, and USML Category XII(c).

6A107

Related Controls: ~~N/A~~ See also 6A202, 6A992, and USML Category XII(c).

a. ... ~~other than these~~ not controlled by 6A007.b

6A108

... ~~other than these~~ not controlled by 6A008 or 7A006

Controls: This entry does not control ...

Related Controls: (1) ~~This entry does not control ...~~ (2) ... (see 22 CFR part 121.1 Categories IV(h) and XI(a)(3)). (2) Also see 6A998.

6A202

Photomultiplier tubes, not controlled by 6A002 or 6A102, ...

Related Controls: (1) ... (2) Also see 6A992, 6A999.a, and USML Category XII(c).

6A203

~~... other than these~~ not controlled by 6A003 or 8A002.d or .e ...

Related controls: ... (2) Also see ECCN 6A003.a.2, a.3, and a.4 6A999.b

6A205

~~... other than those~~ not controlled by 0B001.g.5, 0B001.h.6, or 6A005 or described in 0B001.g.5 or h.6...

Related Controls: ... (2) Also see 6A005 and 6A995 and USML Category XII(b).

6A226

Pressure sensors, not controlled by 2B230 or 9B008, as follows ...

6A991

Marine or terrestrial acoustic equipment, ~~n.e.s.~~, not controlled by 6A001, ... n.e.s.

Related Controls: ~~N/A~~ Also see USML Category XI(a)(1,2)

Note: Per 742.8(a)(2) and 742.10(a)(2), a license is not required for reexport to Iran or Sudan

6A992

Optical sensors, not controlled by 6A002, 6A102, or 6A202.

Related Controls: ~~N/A~~ See also USML Category XII(c)

6A994

Related Controls: ~~N/A~~ Also see USML Category XV

6A995

Lasers, not controlled by 0B001.g.5, 0B001.h.6, 6A005, or 6A205

Related Controls: ~~N/A~~ See also USML Category XII(b)

6A996

"Magnetometers", ~~n.e.s.~~, not controlled by 6A006, ...

6A997

Gravity meters (gravimeters) for ground use, ~~n.e.s.~~, not controlled by 6A007

6A998

Radar systems, equipment, and assemblies, ~~n.e.s.~~, not controlled by 6A008, 6A108, 7A006, or 7A106 (See List of Items Controlled)...

Related Controls: N/A Also see USML Categories IV(h) and XI(a)(3).

Note: Per 742.8(a)(2) and 742.10(a)(2), a license is not required for reexport to Iran or Sudan.

6A999

- a. Seismic detection equipment, not controlled by 6A002, 6A102, 6A202, 6A992, or USML Categories XII(c) or XV;
- b. Radiation hardened TV cameras, ~~n.e.s.~~ not controlled by 6A003, 6A203, or 8A002.d.

6C004

Related Controls: See also 1C230, 1C231, 1C234, and 6C994

6C994

Optical materials, not controlled by 6C004

Related Controls: N/A Also see 1C234

6D001

Related Controls: ... (22 CFR part 121 Category XV). See also 6D991 and 6D992.

6D002

Related Controls: ... (22 CFR part 121 Category XV). ...

6D102

“Software”, not controlled by 6D002, ...

Related Controls: N/A Also see 6D991

6D103

“Software”, not controlled by 6D003, ...

Related Controls: See also 6D993

6D991

“Software”, not controlled by 6D001, 6D002, or 6D102, ...

6D992

“Software”, not controlled by 6D001 or 6D002, ...

6D993

Other “software” not controlled by 6D003 or 6D103, ...

6E001

Related Controls: ... (22 CFR part 121 Category XV). ... See also 6E101, 6E201, ~~and~~ 6E991 and 6E992. See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

6E002

Related Controls: ... (22 CFR part 121 Category XV). ... See also 6E101, 6E201, 6E991 and 6E992. See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

6E101

“Technology”, not controlled by 6E001 or 6E002, ...

6E201

“Technology”, not controlled by 6E001 or 6E002, ...

6E991

“Technology”, not controlled by 6E001, 6E002, or 6E101, ...

6E992

“Technology”, not controlled by 6E001, 6E002, 6E101, or 6E201 ...

7A003

Related Controls: ... (See 22 CFR part 121 Category VIII(e)).

7A005

... (... See 22 CFR part 121 Category XV).

Related Controls: See also 7A105 and 7A994.

7A101

Accelerometers, ~~other than those~~ not controlled by 7A001, ...

7A102

... gyros, ~~other than those~~ not controlled by 7A002, ...

Related Controls: ~~N/A~~ Also see 7A994.

7A103

... equipment and systems, ~~other than those~~ not controlled by 7A003, ...

Related Controls: (1) ... (See 22 CFR part 121 Category VIII(e)). (2) ... (See 22 CFR part 121 Category VIII(e)). (3) See also 7A994.

- a. Inertial or other equipment using accelerometers or gyros controlled by 7A001, or 7A002 for MT reasons, or 7A101, or 7A102 ...

7A104

... devices, ~~other than those~~ not controlled by 7A004, ...

Related Controls: (1) ... (2) See also 7A994.

7A105

... ~~other than those~~ not controlled by 7A005, ... (... 22 CFR part 121 Category XV(c)).
Related Controls: Also see 7A994.

7A106

... ~~other than those~~ not controlled by 7A006, ... (... 22 CFR part 121 Category IV(h)).
Related Controls: Also see 7A994.

7A994

~~Other~~ navigation direction finding equipment, airborne communication equipment, ~~all~~ aircraft inertial navigation equipment ~~not controlled under 7A003 or 7A103~~, and ~~other~~ avionic equipment, including parts and components, ~~n.e.s.~~ not controlled by 5A001, 5A101, 5A991, 6A008, 6A108, 6A998, 7A001-7A007, 7A101-7A106, 7A115-7A116, or 9A991

Related Controls: ... (22 CFR part 121 Category XV) ...

Note: Per 742.8(a)(2) and 742.10(a)(2), a license is not required for reexport to Iran or Sudan

7B001

Test, calibration or alignment equipment specially designed for equipment controlled by 7A ~~(except 7A994)~~ 7A001 to 7A006, 7A116, or 7A117, including items, or portions thereof, subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls

(7A101 to 7A104 are omitted, because MTCR 9.B.1. controls test equipment used "with", not "for," equipment specified in 9.A. and this equipment is covered by 7B101; 7A105, 7A106, and 7A115 are omitted, because MTCR 11 does not control any test equipment; 7A116 and 7A117 are included to conform with MTCR 2.B.1., 2.B.2., and 10.B.1.)

NS applies to ~~entire entry~~ equipment specially designed for 7A001 to 7A006

Controls: This entry does not control ...

Related Controls: (1) See also 7B002, 7B003, 7B101, 7B102, 7B103, 7B104 and 7B994.

~~(2) This entry does not control ...~~

7B003

NS applies to ~~entire entry~~ equipment specially designed for 7A001 to 7A006

Controls: This entry includes ...

Related Controls: (1) See also 7B103 (this entry is subject to the licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121)) 7B001, 7B002, 7B101-7B104, and 7B994. (2) This entry includes ...

7B101

... ~~other than that described in~~ not controlled by 2B018, 2B119 to 2B122, ...

Controls: This entry includes ... 7B001-7B003 and or 7B102

Related Controls: (1) See also 2B119 to 2B122, 7B003, 7B102, and 7B994. (2) This entry includes ...

7B102

... ~~other than those~~ not controlled by 7B002 ...

Related Controls: ~~N/A~~ Also see 7B994

7B103

Specially designed “production facilities”, not controlled by 2B018, 2D018, or 2E018.a or .b for equipment controlled by 7A117. ~~(These items are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls. See 22 CFR part 121.)~~

Related Controls: ~~N/A~~ Also see 7B994.

7B994

Other eEquipment, not controlled by 2B018, 2B119 to 2B122, 6B008, 6B108, 7B001-7B003 or 7B101-7B103, ...

7D001

Related Controls: (1) See also 7D003, ~~7D101~~ 7D102, 7D103, and 7D994. (2) The software related to ... ~~or 7B103~~ ... (See 22 CFR part 121 Categories VIII and XV.) (3) ... (see 22 CFR part 121 Category VIII.)

7D002

Controls: This entry does not control ...

Related Controls: ~~(1)~~ See also 7D003, 7D101, 7D102, and 7D994. ~~(2) This entry does not control...~~

7D003

Related Controls: See also 7D001, 7D002, 7D101, 7D102, 7D103 and 7D994.

7D101

“Software”, not controlled by 7D002 or 7D003, ...

Related Controls: (1) The software related to ... ~~or 7B103~~ ... (See 22 CFR part 121 Categories IV, VIII, XII, and XV.) (2) ... (See 22 CFR part 121 Category XV.) (3) See also 7D994.

7D102

Integration “software”, not controlled by 7D001, 7D002 or 7D003, ...

Related Controls: (1) ... (See 22 CFR part 121 Category XV.) (2) See also 7D994.

7D103

“Software”, not controlled by 7D001 or 7D003, ... (See 22 CFR part 121 Category IV.)

Related Controls: See also 7D994.

7D994

“Software”, ~~n.e.s.~~ not controlled by 5D001, 5D101, 6D001-6D003, 6D102-6D103, 7D001-7D003, or 7D101-7D103, ...

7E001

Related Controls: (1) See also 7E004, 7E101, 7E104, and 7E994. (2) The “technology” related to ... ~~7B103~~... (see 22 CFR part 121 Categories IV, VIII, and XV).

7E002

Related Controls: (1) See also 7E004, 7E101, ~~7E102~~, 7E104, and 7E994. (2) The “technology” related to ... ~~7B103~~ ... (see 22 CFR part 121 Categories IV, VIII, and XV).

7E003

Controls: This entry does not control ...

Related Controls: See also 7E101, 7E102, 7E994, and USML Category VIII. ~~This entry does not control ...~~

7E004

Related Controls: See also 7E001, 7E002, 7E101, ~~7E104~~, and 7E994 and USML Category VIII.

7E101

“Technology” not controlled by 7E001-7E004, ...

Related Controls: (1) The “technology” related to ... ~~7B103~~ ... (See 22 CFR part 121 Categories IV, VIII, and XV.) (2) ... (See 22 CFR part 121 Category VIII.)

7E104

Design “technology”, not controlled by 7E004.b.5, ... See 22 CFR part 121.1 Categories IV and VIII.)

7E994

“Technology”, ~~n.e.s.~~ not controlled by 5E001, 5E101, 5E111, 6E001, 6E002, 6E101, 7E001-7E004, 7E101, 7E102, or 7E104, ...

8A001

Related Controls: (1) ... (2) See also USML Category XX.

8A002

Systems and equipment not controlled by 8A018, as follows ...

Related Controls: ... Also see 2B007, 2B207, 2B997, 6A003, 6A203, and USML Categories VI(e,f) and XIII(c)(1).

8A018

Related Controls: (1) See also 8A002, and 8A992, 9A002, and USML Category VI(e,f). (2) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

8A992

Related Controls: See also ~~8A002~~ and ~~8A018~~ USML Category VI(f).

8D001

“Software” not controlled by 8D018 ...

Related Controls: ~~N/A~~ See also 8D992 and USML Category VI(g).

8D002

Related Controls: See also 8D992 and USML Category VI(g).

8D018

“Software” specially designed or modified for the “development”, “production”, or “use” of 8A018.

Related Controls: (1) See also 8D992, 9D001-9D004, and USML Category VI(g). (2) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

8D992

“Software” not controlled by 8D002 or 8D018 ...

8E001

“Technology” not controlled by 8E018, ...

Related Controls: ~~N/A~~ See also 8E992 and USML Category VI(g).

8E002

Related Controls: See also 8E992 and USML Category VI(g).

8E018

“Technology” according to the General Technology Note for the “development”, “production”, or “use” of 8A018.

Related Controls: (1) See also 8E992 and USML Category VI(g). (2) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

8E992

“Technology”, not controlled by 8E001 or 8E018, ...

9A001

Aero gas turbine engines, not controlled by 9A018.a.2, ...

Related Controls: See also 9A003, 9A011, 9A101, and 9A991, and USML Category VIII(b).

9A002

Related Controls: ~~N/A~~ See also 8A018 and USML Category VI(e,f).

9A003

Specially designed assemblies and components, not controlled by 9A018.a.4, ...

Related Controls: ~~N/A~~ See also 9A001.

9A004

Related Controls: (1) See also 9A104, 9A115, and USML Categories IV(b) and XV(a). ...

9A005

... (... See 22 CFR part 121 Category IV(a).)

Related Controls: See also 9A105

9A006

... (... See 22 CFR part 121 Category IV(b)).

Related Controls: See also 9A106 and 9A108.

9A007

... (... (See 22 CFR part 121 Category IV(a)).

Related Controls: See also 9A107.

9A008

... (... See 22 CFR part 121 Category IV(b)).

Related Controls: See also 9A108.

9A009

... (... See 22 CFR part 121 Category IV(a)).

Related Controls: See also 9A109.

9A010

... (... See 22 CFR part 121 Category IV(b)).

Related Controls: See also 1A002 and 9A110.

9A011

... (... See 22 CFR part 121 Categories IV(a) and VIII(b)).

Related Controls: See also 9A111.

9A018

Related Controls: (1) ... (2) See also 9A001, 9A003, 9A991, 9A992 and USML Categories VII(a-f) and IX(a). (3) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

9A101

... ~~other than those~~ not controlled by 9A001 ...

Related Controls: (1) ... (see 22 CFR part 121 Category IV). (2) See also 9A991.

9A104

... (... See 22 CFR part 121 Category IV(a)).

Related Controls: See also 9A012.

9A105

Liquid propellant rocket engines, not controlled by 9A005. (... See 22 CFR part 121 Category IV(a).)

9A106

... ~~other than these~~ not controlled by 9A006 ...
 Related Controls: ... (See 22 CFR part 121 Category IV(b).)

9A107

... ~~other than these~~ not controlled by 9A007 ... (... See 22 CFR part 121 Category IV(a).)

9A108

... ~~other than these~~ not controlled by 9A008 ... (... See 22 CFR part 121 Category IV(b).)

9A109

... ~~other than these~~ not controlled by 9A009 ... (... See 22 CFR part 121 Category IV(a).)
 Related Controls: See also 9A105.

9A110

... ~~other than these~~ not controlled by 1A002 or 9A010 ...
 Related Controls: (1) See also ~~1A002~~, 1C010 and 1C210. (2) ... Department of State (see 22 CFR part 121 Category IV(a).)

9A111

... (... See 22 CFR part 121 Category IV(a).)
 Related Controls: See also 9A011.

9A115

Launch support equipment, not controlled by 9A001 or 9A004-9A011, designed or modified for "missiles". (... . See 22 CFR part 121 Category IV(b).)

9A116

... (... See 22 CFR part 121 Category IV(b).)

9A117

... (... See 22 CFR part 121 Category IV(b).)

9A118

... (... See 22 CFR part 121 Category IV(b).)

9A119

... (... See 22 CFR part 121 Category IV(b).)

9A980

Related Controls: ~~N/A~~ See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

9A990

Related Controls: ~~N/A~~ See also USML Category VII(g).

Note: Per 742.8(a)(2) and 742.10(a)(2), a license is not required for reexport of 9A990.a or .b to Iran or Sudan

9A991

"Aircraft", ~~n.e.s.~~ not controlled by 9A018 or USML Category VIII, and gas turbine engines, not controlled by 9A001 or 9A101 or USML Category VIII, and parts and components, ~~n.e.s.~~ not controlled by 6A008, 6A108, 7A001-7A004, 7A006, 7A101-7A104, or 9A003 or USML Category VIII

Note: Per 742.8(a)(2) and 742.10(a)(2), a license is not required for reexport of 9A991.d or .e to Iran or Sudan

9A992

... use, not controlled by 9A018.e

Related Controls: ~~N/A~~ See also USML Category VIII

9B001

Related Controls: (1) ... 9B115 and 9B116. (2) See also 9B002, 9B003, 9B004, 9B009, and 9B991.

9B002

Related Controls: ~~N/A~~ See also 9B001, 9B003, 9B004, 9B009, 9B115, 9B116, and 9B991.

9B003

Related Controls: See also 9B001, 9B002, 9B004, 9B009, 9B115, 9B116, and 9B991.

9B004

Related Controls: ~~N/A~~ See also 9B002, 9B003, 9B004, 9B009, 9B115, 9B116, and 9B991.

9B005

Related Controls: See also 9B007, 9B105, 9D004.a, and 9E003.b.1.

9B006

Acoustic vibration test equipment, not controlled by 1B018.b, ...

Related Controls: See also 2B116, 9B007, 9B106, and 9B990. Note that some items in 9B006 may also be controlled under 9B106.

(As in other potential overlap situations, 9B106 should not control what is controlled by 9B006.)

9B007

Related Controls: ~~N/A~~ See also 1B018.b, 2B116, 9B005, 9B006, 9B008, 9B105, 9B106, and 9B990

9B008

Related Controls: ~~N/A~~ See also 2B230 and 6A226

9B009

Related Controls: ~~N/A~~ See also 9B001-9B004, and 9B991.

9B105

Related Controls: See also 9B005 and 9B007

9B106

Environmental chambers and anechoic chambers, not controlled by 1B018.b or 9B006, ...
 Related Controls: ~~N/A~~ See also 2B116 and 9B990.

9B115

... “production equipment”, not controlled by 1B003, 2B018, or 9B001-9B004 ...
Controls: Although ... BIS.
 Related Controls: ~~Although ... BIS.~~ Also see 9B009 and 9B991.

9B116

Specially designed “production facilities”, not controlled by 2B018, 2D018, 2E018.a or .b, or 9B001-9B004 for ...

9B990

... ~~n.e.s.~~ not controlled by 2B018, 2B116, 9B006, or 9B106

9B991

... not controlled by 9B001-9B004, 9B009, or 9B115

9C110

Resin impregnated fiber prepregs and metal coated fiber preforms therefor, not controlled by 1C010.e, ...

9D001

Related Controls: (1) ... (See 22 CFR part 121 Category XV.) (2) ... (See 22 CFR part 121 Categories IV, VIII, and XV.) (3) Also see 9D004, 9D990, and 9D991.

9D002

Related Controls: (1) ... (See 22 CFR part 121 Category XV.) (2) ... (See 22 CFR part 121 Categories IV, VIII, and XV.) (3) See also 9D004, 9D103, 9D990, and 9D991.

9D003

Related Controls: (1) See also 9D004, 9D101, 9D102, 9D103, 9D990, and 9D991. (2) ... (See 22 CFR part 121 Category XV.) (3) ... (See 22 CFR part 121 Categories IV, VIII, and XV.)

9D004

Related Controls: ~~N/A~~ See also 9D001-9D003, 9D101, 9D104, 9D105, 9D990, and 9D991.

9D018

“Software” specifically designed for the “development”, “production”, or “use” of equipment controlled by 9A018.

Related Controls: ~~N/A~~ (1) See also 9D990, 9D991 and USML Categories VII, VIII, and IX. (2) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

9D101

“Software”, not controlled by 2D018, 9D003 or 9D004, ...

Related Controls: ~~N/A~~ (1) See also 2D101, 9D102, 9D990, 9D991 and USML Categories IV, VIII, and XV.

9D103

“Software”, not controlled by 9D001-9D003, ... (... See 22 CFR part 121 Category IV.)

Related Controls: See also 9D990 and 9D991.

9D104

“Software”, not controlled by 9D003 or 9D004, ...

Related Controls: (1) “Software” for items controlled by 9A005 ... (see 22 CFR part 121 Category IV.) (2) For other related “software”, see also 9D101, 9D990, 9D991, and USML Categories IV, VIII, and XV.

9D105

... (... See 22 CFR part 121 Category IV.)

9D990

“Software”, ~~n.e.s.~~ not controlled by 2D018, 2D101, 9D001, 9D002, 9D101, or USML Category VII, ...

9D991

“Software”, not controlled by 6D001, 6D002, 6D102, 6D103, 7D001-7D003, 7D101, 7D102, 9D001-9D004, 9D018, 9D101, 9D104, or USML Category VIII, ...

9E001

... controlled by ~~9A001.e~~ 9A001.b ... or 9D (except 9D018, 9D990, or 9D991)

NS applies ... controlled by ~~9A001.e~~ 9A001.b, 9A004 to 9A012, ...

Related Controls: (1) ... (2) ... (See 22 CFR part 121 Category XV.) (3) ... (See 22 CFR part 121 Categories IV, VIII, and XV.) (4) See also 9E003, 9E018, 9E990, and 9E991

9E002

... controlled by ~~9A001.e~~ 9A001.b

NS applies to ~~entire entry~~ “technology” for items controlled by 9A001.b, 9A004 to 9A011, 9B001 to 9B010

Related Controls: (1) See also ~~9E102~~ 9E003, 9E018, 9E101, 9E990, and 9E991. (2) ... (3) ... 22 CFR part 121 Category XV. (4) ... (See 22 CFR part 121 Categories IV, VIII, and XV.)

9E003

Related Controls: (1) ... Department of State (see 22 CFR part 121 Categories IV, VIII, and XV.) (2) ...

9E018

Related Controls: ~~N/A~~ (1) See also 9E990, 9E991, and USML Categories VII, VIII, and IX. (2) See 746.8(b)(1) for additional BIS licensing requirements re Rwanda concerning this entry.

9E101

“Technology”, not controlled by 9E001-9E003 ...

Related Controls: (1) ... (see 22 CFR part 121 Category IV.). (2) See also 9E990 and 9E991

9E102

“Technology”, not controlled by 2E018 or 9E001-9E003, ...

Controls: For the purpose of this entry, “use” technology is limited to items controlled for MT and their subsystems.

Related Controls: (1) ~~For the purpose of this entry, “use” technology is limited to items controlled for MT and their subsystems.~~ (2) ... 9B115, 9B116, ... (see 22 CFR part 121, Category IV.) (2) See also 9E990.

9E990

“Technology”, ~~n.e.s.~~ not controlled by 2E018, 2E101, 9E001, 9E002, 9E018, 9E102, or USML Category VII, ...

9E991

“Technology”, not controlled by 6E001, 6E002, 6E101, 7E001-7E004, 7E101, 9E001-9E003, 9E018, 9E101, 9E102, or USML Category VIII, ...

Attachment 8

Harmonization with Wassenaar

Wassenaar Dual-Use List vs. ECCNs xx001-xx012

1B003

Unit: ~~Equipment~~ Tools in number; ~~components~~ dies, molds, or fixtures in \$ value.

2B001

Unit: ~~Equipment~~ Machine tools in number; ~~parts and accessories~~ deep-hole-drilling machine components in \$ value.

2B003

Unit: ~~Equipment~~ Machine tools in number; ~~parts~~ components, controls, and accessories in \$ value

2B004

Unit: ~~Equipment~~ Presses in number; ~~parts~~ components and accessories in \$ value.

2B009

... and having all the ~~characteristics~~ of the following (see List of Items Controlled):

4A001

Unit: ~~Equipment~~ Computers and related equipment in number; ~~parts and accessories~~ “electronic assemblies” and components in \$ value.

4A003

Unit: ~~Equipment~~ Computers and related equipment in number; ~~parts and accessories~~ “electronic assemblies” and components in \$ value.

b. Having the characteristics or performing functions exceeding the limits in Category 5, Part 2 (“Information Security”).

Note: 4A001.b does not control electronic computers and related equipment when accompanying their user for the user’s personal use..

(4A001.b is covered by 5A002. Wassenaar should delete 4.A.1.b and move its Note to 5.A.2.)

4A004

Unit: ~~Equipment~~ Computers and related equipment in number; ~~parts and accessories~~ “electronic assemblies” and components in \$ value.

4D003

c. “Software” having characteristics or performing functions exceeding the limits in Category 5, Part 2 (“Information Security”).

Note: 4D003.c does not control "software" when accompanying its user for the user's personal use.

(4D003.c is covered by 5D002. Wassenaar should delete 4.D.3.c and move its Note to 5D002.)

5B001

Unit: Equipment in number; ~~parts~~ components and accessories in \$ value

5A002

Note: 5A002 does not control commodities eligible for the Cryptography Note (see Category 5 Part 2 Note 3).

5D002

~~Note: Encryption software is controlled because of its functional capacity, and not because of any informational value of such software; such software is not accorded the same treatment under the EAR as other "software"; and for export licensing purposes, encryption software is treated under the EAR in the same manner as a commodity included in ECCN 5A002.~~

(This Note differs not only from Wassenaar but also from various EAR provisions which treat encryption software as software, rather than as a commodity.)

~~Note: Encryption software controlled for "EI" reasons under this entry remains subject to the EAR even when made publicly available in accordance with part 734 of the EAR.~~

(Wassenaar does not control publicly available encryption software. To conform with Wassenaar in this respect, parts 734 and 732.2(b) would also have to be revised.)

~~Note: After notification to BIS, 56 bit encryption items (including key management products not exceeding 512 bits) and up to (and including) 64 bit mass market encryption commodities and software are released from "EI" and "NS" controls. After a review by BIS, all other mass market encryption commodities and software eligible for the Cryptography Note also may be released from "EI" and "NS" controls. See 742.15(b)(1) and (b)(2) of the EAR.~~

(To conform with Wassenaar in this respect, 740.8, 740.17, and 742.15 would also have to be revised.)

6A002

Unit: Equipment , detectors, and sensors in number; ~~parts~~ components and ~~accessories~~ in \$ value

6A004

Unit: Equipment in number; ~~eable in meters/feet~~; components in \$ value

6A005

Unit: Equipment in number; ~~parts and accessories~~ "lasers", assemblies and components in \$ value

7A005

Global navigation satellite systems (i.e., GPS or GLONASS) receiving equipment having any of the following characteristics, and specially designed components therefor:

- a. Employing decryption; or
- b. A null-steerable antenna

7B001

NS applies to ~~entire entry~~ portion of 7B001 for 7A001-7A004 and 7A006

7B003

NS applies to ~~entire entry~~ portion of 7B003 for 7A001-7A004 and 7A006

Move and revise Related Controls (2) to a Note, as follows:

Note. This entry includes ~~inertial measurement unit tester (IMU module); IMU platform tester; IMU stable element handling fixture; IMU platform balance fixture; ... and accelerometer test station.~~

(To conform with 7.B.3. Note.)

7D001

NS applies to “software” for equipment controlled by 7A001 to 7A004, 7A006, the NS portion of 7B001, 7B002, or the NS portion of 7B003

7E001

NS applies to “technology” for items controlled by 7A001 to 7A004, 7A006, ~~7B001 to 7B003,~~ the NS portion of 7B001, 7B002, the NS portion of 7B003, 7D001 to 7D003, the NS portion of 7D001, 7D002, or 7D003

7E002

NS applies to “technology” for items controlled by 7A001 to 7A004, 7A006, ~~7B001 to 7B003,~~ the NS portion of 7B001, 7B002, or the NS portion of 7B003,

8A001

Unit: ~~Equipment in number; parts and accessories in \$ value~~

9A001

Unit: ~~Equipment in number; parts and accessories in \$ value~~

9A004

Unit: ~~Equipment in number; Components, parts and accessories in \$ value~~

9A006

Systems and components specially designed for liquid rocket propulsion systems, as follows:

Items:

- a. Cryogenic refrigerators, flightweight dewars, cryogenic heat pipes or cryogenic systems

- specially designed for use in space vehicles and capable of restricting cryogenic fluid losses to less than 30% per year;
- b. Cryogenic containers or closed-cycle refrigeration systems capable of providing temperatures of 100 K (-173°C) or less for “aircraft” capable of sustained flight at speeds exceeding Mach 3, launch vehicles or “spacecraft”;
 - c. Slush hydrogen storage or transfer systems;
 - d. High pressure (exceeding 17.5 Mpa) turbo pumps, pump components or their associated gas generator or expander cycle turbine drive systems;
 - e. High-pressure (exceeding 10.6 Mpa) thrust chambers and nozzles therefor;
 - f. Propellant storage systems using the principle of capillary containment or positive expulsion (i.e., with flexible bladders);
 - g. Liquid propellant injectors, with individual orifices of 0.381 mm or smaller in diameter (an area of $1.14 \times 10^{-3} \text{ cm}^2$ or smaller for non-circular orifices) specially designed for liquid rocket engines;
 - h. One-piece carbon-carbon thrust chambers or one-piece carbon-carbon exit cones with densities exceeding 1.4 g/cm^3 and tensile strengths exceeding 48 MPa.

9A007

Solid rocket propulsion systems with any of the following:

- a. Total impulse capacity exceeding 1.1 Mns;
- b. Specific impulse of 2.4 kNs/kg or more when the nozzle flow is expanded to ambient sea level conditions for an adjusted chamber pressure of 7 Mpa;
- c. Stage mass fractions exceeding 88% and propellant solid loadings exceeding 86%;
- d. Any of the components controlled by 9A008; or
- e. Insulation and propellant bonding systems using direct-bonded motor designs to provide a strong mechanical bond or a barrier to chemical migration between the solid propellant and case insulation material.

Technical Note

For the purposes of 9A007.e, a strong mechanical bond means bond strength equal to or more than propellant strength.

9A008

Components, as follows, specially designed for solid rocket propulsion systems: ...

Items:

- a. Insulation and propellant bonding systems using liners to provide a strong mechanical bond or a barrier to chemical migration between the solid propellant and case insulation material;
Technical Note: For the purposes of 9A008.a., a strong mechanical bond means bond strength equal to or more than propellant strength.
- b. Filament-wound “composite” motor cases exceeding 0.61 m in diameter or having structural efficiency ratios (PV/W) exceeding 25 km.
Technical Note: The structural efficiency ratio (PV/W) is the burst pressure (P) multiplied by the vessel volume (V) divided by the total pressure vessel weight (W).
- c. Nozzles with thrust levels exceeding 45 kN or nozzle throat erosion rates of less than

- 0.075 mm/s;
- d. Movable nozzle or secondary fluid injection thrust vector control systems capable of any of the following:
- d.1. Omni-axial movement exceeding + or - 5°;
 - d.2. Angular vector rotations of 20°/s or more; or
 - d.3. Angular vector accelerations of 40°/s² or more.

9A009

Hybrid rocket propulsion systems with:

Items:

- a. Total impulse capacity exceeding 1.1 Mns; or
- b. Thrust levels exceeding 220 kN in vacuum exit conditions.

9A010

... or "spacecraft", as follows: ...

Items:

- a. Components and structures each exceeding 10 kg, specially designed for launch vehicles manufactured using metal "matrix", "composite", organic "composite", ceramic "matrix" or intermetallic reinforced materials controlled by 1C007 or 1C010;
Note: The weight cut-off is not relevant for nose cones.
- b. Components and structures specially designed for launch vehicle propulsion systems controlled by 9A005 to 9A009 manufactured using metal matrix, composite, organic composite, ceramic matrix or intermetallic reinforced materials controlled by 1C007 or 1C010;
- c. Structural components and isolation systems specially designed to control actively the dynamic response or distortion of "spacecraft" structures;
- d. Pulsed liquid rocket engines with thrust-to-weight ratios equal to or more than 1 kN/kg and a response time (the time required to achieve 90% of total rated thrust from start-up) of less than 30 ms.

9B009

Unit: ~~Equipment in number; parts and accessories in \$ value~~

9D001

Related Controls: (1) "Software" "~~required~~" specially designed or modified ... (2) "Software" "~~required~~" specially designed or modified ...

9D002

Related Controls: (1) "Software" "~~required~~" specially designed or modified ... (2) "Software" "~~required~~" specially designed or modified ...

9D003

NS applies to "software" for "use" of FADEC for equipment controlled by 9A001 to 9A003,

9A005, 9A007, 9A009, or 9A011 and for equipment controlled by 9B001 to 9B009
 Related Controls: ... (2) "Software" ~~"required"~~ specially designed or modified ...

9E001

Related Definition: ~~"Development"~~ ... N/A
 (Note at beginning of E. Technology makes 9E001 Related Definition redundant.)

Wassenaar Munitions List vs. ECCNs xx018

0A018

- a. Construction equipment ~~built to military specifications~~, specially designed for ~~airborne transport~~ military use, and specially designed ~~parts and accessories~~ components therefor
 (For consistency with WML 17.b)
- c. ~~Muzzle loading (black powder) firearms~~
 (This item is not on the WML)

0D018

"Software" specially designed or modified for the "development, "production" or "use" of equipment controlled by 0A018.b, c, or f
 (For consistency with WML 21.a. Also note that a separate ECCN 0D018 would bring this software under the controls described in 746.8(b)(1)(ii), as is probably intended.)

0E018

"Technology" according to the General Technology Note for the "development", "production" or "use" of items controlled by ~~0A018.b through 0A018.e~~ 0A018.a, b, or d or for 0D018
 (For consistency with WML 22)

1B018

(1B018 should be deleted in its entirety, because it is subsumed by 2B018 if 2B018 is revised, as suggested below, to conform with WDUL 18.a and .b)

1C018

Note: 1C018.a does not control perforators specially designed for oil well logging.

- j. ~~Pyrotechnic devices~~ "Military pyrotechnics" having dual military and commercial use ...
- k. Other commercial explosive devices and charges ... ~~when used for commercial applications ...~~

(Note to a. is for consistency with WML 8 Note 4.

"Military pyrotechnics" is for consistency with WML 4.a. and "having dual military and commercial use" is for consistency with the USML Category V exception. Also see suggested change to 1A984 in Appendix 4-3.

Deletion of "when used for commercial applications" is for consistency with the following portion of ITAR 22 CFR 120.3: "The intended use of the article or service after its export (i.e., for a military or civilian purpose) is not

relevant in determining whether the article or service is subject to the controls of this subchapter." Also see suggested change to 1C992 in Appendix 4-3.)

1D018

"Software" specially designed or modified for the "development, "production" or "use" of items controlled by ~~1B018~~ 1C018

(For consistency with WML 21.a and with proposed transfer of 1B018 to 2B018.)

1E001

"Technology" ... for ... 1C (except 1C018, ...).

NS applies to "technology" for items controlled by ... 1C001 to ~~1C010~~ 1C011, ~~or 1C018~~

(Technology for 1C018 should be in a separate 1E018, because of regulations, such as 746.8(b)(1)(ii), which refer to "items described by ECCNs ending in "018".)

1E018

"Technology" according to the General Technology Note for the "development", "production" or "use" of items controlled by 1C018 or 1D018

(For consistency with WML 22. Also note that a separate ECCN 1E018 would bring this technology under the controls described in 746.8(b)(1)(ii), as is probably intended.)

2B018

Equipment on the International Munitions List Munitions production

Unit: Equipment in number; ~~parts and accessories~~ components in \$ value

Items: delete and substitute:

- a. Specially designed or modified "production" equipment for the "production" of products controlled by the U.S. Munitions List (22 CFR 121) or by ECCNs on the CCL with last two digits "18" and specially designed components therefor;
- b. Specially designed environmental test facilities and specially designed equipment therefor, for the certification, qualification, or testing of products controlled by the U.S. Munitions List (22 CFR 121) or by ECCNs on the CCL with last two digits "18".

Note: 2B018 includes the following equipment:

- a. Continuous nitrators;
- b. Centrifugal testing apparatus or equipment having any of the following characteristics:
 1. Driven by a motor or motors having a total rated horsepower of more than 298 kW (400 hp);
 2. Capable of carrying a payload of 113 kg or more; or
 3. Capable of exerting a centrifugal acceleration of 8 g or more on a payload of 91 kg or more;
- c. Dehydration presses;
- d. Screw extruders specially designed or modified for military explosive extrusion;
- e. Cutting machines for the sizing of extruded propellants;

- f. Sweetie barrels (tumblers) 1.85 m and over in diameter and having over 227 kg product capacity;
- g. Continuous mixers for solid propellants;
- h. Fluid energy mills for grinding or milling the ingredients of military explosives;
- i. Equipment to achieve both sphericity and uniform particle size in metal powder listed in 22 CFR 121.12 (a)(1);
- j. Convection current converters for the conversion of materials listed in 22 CFR 121.12(a)(10).

(The above would permit deletion of 1B018)

2E001

... 2B (except 2B018, ...)

2E002

... 2B (except 2B018, ...)

2E018 "Technology" as follows:

- a. "Technology" according to the General Technology Note for the "development", "production" or "use" of equipment controlled by 2B018 and for the "production" of commodities or software controlled by the U.S. Munitions List (22 CFR 121.1) or by ECCNs on the CCL with last two digits "18"
- b. "Technology" specific to the design of, the assembly of components into, and the operation, maintenance and repair of complete production installations even if the components themselves are not controlled

(To conform with WML 22 and with USML coverage of development or use technology for USML-listed commodities or software.)

8A018

- .a. ~~Closed and semi-closed circuit (rebreathing) apparatus for diving and underwater swimming, and specially designed components for use in the conversion of open-circuit apparatus to military use~~
(covered by USML Category XIII(c))
- b.1 Diesel engines of 1,500 hp and over with rotary speed of 700 rpm or over specially designed for submarines, and specially designed components therefor
(To conform with WML 9.b.1)
- b.2 Electric motors specially designed for submarines, i.e., over 1,000 hp. quick reversing type, liquid cooled, and totally enclosed, and specially designed components therefor
(To conform with WML 9.b.2)
- b.3 Nonmagnetic diesel engines, 50 hp and over, specially designed for military purposes: ~~(An engine shall be presumed to be specially designed for military purposes if it has nonmagnetic parts other than crankcase, block, head, pistons, covers, end plates, valve facings, gaskets, and fuel, lubrication and other supply lines, or its with nonmagnetic content exceeds in excess of 75 percent of total weight.)~~ mass and specially designed components therefor

- (To conform with WML 9.b.3)
- b.4 Submarine and torpedo nets and specially designed components therefor
(To conform with WML 9.d)
- b.5 ~~Components, parts, accessories, and attachments for the above~~
(WML 9 portion moved to b.1-4)

8D018

"Software" specially designed or modified for the "development," "production" or "use" of equipment controlled by 8A018

(To conform with WML 21.a. Also note that a separate ECCN 8D018 would bring this software under the controls described in 746.8(b)(1)(ii), as is probably intended.)

8E018

"Technology" according to the General Technology Note for the "development", "production" or "use" of items controlled by 8A018 or 8D018

(For consistency with WML 22. Also note that a separate ECCN 8E018 would bring this technology under the controls described in 746.8(b)(1)(ii) and 746.9(b)(1)(ii), as is probably intended.)

9A018

- b. Vehicles specially designed or modified for military ~~purposes~~ use ...
(To conform with WML 6)
- c. Pressure refuellers, pressure refueling equipment, ~~and~~ equipment specially designed to facilitate operations in confined areas; ~~and ground equipment, n.e.s., developed specially for military "aircraft" and helicopters, and specially designed parts and accessories, n.e.s.~~
(To conform with WML 10.f; the definition of "aircraft" includes helicopters)
- d. Pressurized breathing equipment specially designed for use in military "aircraft" ~~and helicopters~~
- e. Military parachutes ~~and complete canopies, harnesses, and platforms and electronic release mechanisms therefor, except such types as are in normal sporting use except~~ parachutes for pin point dropping of rangers or dropping of paratroopers, cargo parachutes, paragliders (drag parachutes, drogue parachutes for stabilization and attitude control of dropping bodies, e.g., recovery capsules, ejection seats, bombs), drogue parachutes for use with ejection seat systems for deployment and inflation sequence regulation of emergency parachutes, recovery parachutes for guided missiles, drones or space vehicles, or approach parachutes and landing deceleration parachutes, all of which are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls. (See 22 C.F.R. parts 120 through 130)
(To conform with WML 10.h.7; assumes WML 10.h.1-6 are covered by USML)
- f. Military instrument flight trainers, except for combat simulation; and components, ~~parts, attachments~~ and accessories specially designed for such equipment
(To conform with WML 14)

9D018

"Software" specially designed or modified for the "development, "production" or "use" of equipment controlled by 9A018

(To conform with WML 21.a)

9E018

"Technology" according to the General Technology Note for the "development", "production" or "use" of ~~equipment~~ items controlled by 9A018 or 9D018

Attachment 9

Harmonization with MTCR

Also see Attachment 1 for recommended changes in cross-references involving MT items. Also see Attachment 2 for unilateral MT controls to Iraq for 150 km range missiles.

This Attachment 9 contains recommendations concerning the Missile Technology Control Regime, or MTCR (referred to as MT on the CCL), divided into the following four parts:

1. Commodity jurisdiction
2. Subsystems
3. MT portions of Wassenaar-based ECCNs
4. MT only ECCNs

Recommended changes from existing texts are indicated by line-in underlining or ~~line-out strike-out~~.

1. Commodity jurisdiction

ITAR section 22 CFR 121.16 is an attempt to comply with a statutory mandate to indicate which items on the Missile Technology Control Regime Annex are subject to State jurisdiction. It is based on an out-of-date MTCR Annex and does not indicate which USML and/or CCL items correspond with each of the MTCR items. What follows is an analysis of which USML Category and/or which CCL ECCN appear to correspond with each current MTCR item.

In almost all cases, CCL language uses MTCR terminology. However, for most of the MTCR items controlled by ITAR, the USML uses different terminology. Therefore, there is room for doubt whether the ITAR administrators agree with the indicated USML Category references.

For some MTCR items no citation in either the USML or the CCL was found, either for the entire item or for part of the item. These are marked with a single asterisk in the following table and are discussed in more detail immediately after the table. Both agencies clearly claim jurisdiction for one MTCR item. This is marked with both USML and CCL citations and a double asterisk and is discussed at the end of the table under concurrent jurisdiction. It is recommended that priority attention be given to resolving jurisdictional questions regarding these single and double asterisk entries.

Some MTCR items with both USML and CCL citations are not marked with a double asterisk. These are covered in part by the USML and in a different part by the CCL.

| <u>MTCR General</u> | | <u>USML CCL</u> | |
|---------------------|---|-----------------|-------------|
| <u>Item</u> | <u>Description</u> | <u>Category</u> | <u>ECCN</u> |
| 1.A.1 | Rocket systems 500 kg 300 km | IV.a,b | |
| 1.A.2 | Unmanned airvehicle systems 500 kg 300 km | VIII.a | |
| *1.B.1 | Production facilities for 1.A | | |

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| *1.D.1 | Software for 1.B.1 | | |
| 1.D.2 | Coordination software | IV.i, VIII.i | |
| 1.E.1 | Technology for 1A; 1D2 | | IV.i, VIII.i |
| *1.E.1 | Technology for 1B1; 1D1 | | |
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| 2.A.1.a | Rocket stages for 1.A | IV.c,h | |
| 2.A.1.b.1 | Heat shields | | IV.c,h |
| 2.A.1.b.2 | Heat sinks | | IV.c,f,h |
| 2.A.1.b.3 | Electronic equipment | | XI.a.7 |
| 2.A.1.c | Rocket motors and engines | IV.c,h | |
| 2.A.1.d | Guidance sets | XII.d | |
| 2.A.1.e | Thrust vector control sub-systems | IV.c,h | |
| *2.A.1.f | Safing, arming, fuzing, firing | | |
| 2.B.1 | Production facilities for 2A1a-e | | 9B116, 9B007, 7B103, 7B001 |
| *2.B.1 | Production facilities for 2A1f. | | |
| 2.B.2 | Production equipment for 2A1a-e | | 9B115, 9B007, 2B018, 7B001 |
| *2.B.2 | Production equipment for 2A1f | | |
| 2.D.1 | Software for 2B1 | | 9D101, 7D101 |
| 2.D.2 | Software for 2A1c | IV.i | |
| 2.D.3 | Software for 2A1d | XII.f | |
| 2.D.4 | Software for 2A1b3 | XI.d | |
| 2.D.5 | Software for 2A1e | IV.i | |
| 2.D.6 | Software for 2A1f | IV.i | |
| 2.E.1 | Technology for 2A1a, b1,2, c,e,f; 2D2,5,6 | IV.1 | |
| 2.E.1 | Technology for 2A1b3; 2D4 | XI.d | |
| 2.E.1 | Technology for 2A1d; 2D3 | XII.f | |
| 2.E.1 | Technology for 2B1; 2D1 | | 7E101, 7E102 7E001 |
| 2.E.1 | Technology for 2B1 | | 7E002 |
| 2.E.1 | Technology for 2B; 2D1 | | 9E102, 9E001 |
| 2.E.1 | Technology for 2B | | 9E002 |
| 2.E.1 | Technology for 2B2 | | 2E018 |
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| 3.A.1 | Engines | IV.h,VIII.b | 9A001, 9A101 |
| 3.A.2 | Ramjet/scramjet/pulsejet/combined cycle engines | IV.h, VIII.b | |
| 3.A.3 | Rocket motor cases | IV.h | |
| 3.A.4 | Staging mechanisms | IV.c,h | |
| 3.A.5 | Liquid and slurry propellant control systems | | 9A106.d |
| 3.A.6 | Hybrid rocket motors | IV.h | |
| 3.A.7 | Radial ball bearings | | 2A001 |
| 3.B.1 | Production facilities for 3A; 3C | | 9B116, 9B001-4, |
| 3.B.2 | Production equipment for 3A, 3C | | 9B115, 9B001-4 |

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| 3.B.3 | Flow forming machines | | 2B109, 2B009 |
| 3.C.1 | Interior lining | IV.c,f,h | |
| 3.C.2 | Insulation | IV.c,f,h | |
| 3.D.1 | Software for 3B1 | | 9D101, 9D003 |
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| 3.D.2 | Software for 3A1,2,4,6 | IV.i | |
| 3.D.2 | Software for 3A1,4 | VIII.i | |
| 3.D.2 | Software for 3A1,5 | | 9D104 |
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| 3.E.1 | Technology for 3A1,2; 3D2 for 3A1,4 | VIII.i | |
| 3.E.1 | Technology for 3A1,5; 3B1,2; 3D2 for 3A1,5 | | 9E101, 9E102 |
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| 3.E.1 | Technology for 3B3, 3D1 for 3B3 | | 2E101, 2E001 |
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| 4.B.2 | Production equipment for item 4 solid | | 1B115.b, 1B018.a, 2B018 |
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| *4.C.1 | Composite double base propellants | | |
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| 4.C.2.b | UDMH | V.c.3.iv | |
| 4.C.2.c | aluminum powder | V.c.5 | 1C111.a.1 |
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| 4.C.2.d | zirconium powder | V.c.6.ii.B | 1C111.a.2, 1C011.a, 1C234, 1C007.d |
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| 4.C.2.e | boron or boron carbide | | 1C011.b |
| 4.C.2.f | high energy density fuel substances | V.b.3 | |
| 4.C.3 | perchlorates, chlorates, chromates | V.d.11 | |
| 4.C.4.a.1 | dinitrogen trioxide | | 1C111.a.3.a |
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| 4.C.4.a.3 | dinitrogen pentoxide | | 1C111.a.3.c |
| 4.C.4.a.4 | mixed oxides of nitrogen | | 1C111.a.3.d |

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| **4.C.4.a.5 | inhibited red fuming nitric acid | V.d.10 | 1C111.a.3.e |
| 4.C.4.a.6 | fluorine compounds | | 1C018.m |
| 4.C.4.a.6 | chlorine compounds | | 1C238 |
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| 4.C.4.b.2 | ADN | V.d.1 | |
| 4.C.4.b.3 | HMX | V.a.12.i | |
| 4.C.4.b.3 | RDX | V.a.20.i | |
| 4.C.5.a | CTPB | | 1C111.b.1 |
| 4.C.5.b | HTPB | V.e.7 | 1C111.b.2 |
| 4.C.5.c | GAP | V.e.6 | |
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| 4.C.6.a.1 | MAPO | V.f.10 | |
| 4.C.6.a.2 | BITA | V.f.14 | |
| 4.C.6.a.3 | Tepanol | V.f.17 | |
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| 4.C.6.a.5 | polyfunctional aziridine amides | V.f.14 | |
| 4.C.6.b | TPB | V.f.18 | |
| 4.C.6.c.1 | carboranes, decaboranes, pentaboranes | V.e.2 | |
| 4.C.6.c.2 | ferrocene derivatives | V.f.3 | |
| 4.C.6.c.2.a | catocene | V.f.3.ii | |
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| 4.C.6.d.1 | TEGDN | | 1C111.c.2 |
| 4.C.6.d.2 | TMETN | | 1C111.c.4 |
| 4.C.6.d.3 | BTTN | V.e.3 | |
| 4.C.6.d.4 | DEGDN | | 1C111.c.5 |
| 4.C.6.e.1 | 2-nitrodiphenylamine | | 1C111.c.3 |
| 4.C.6.e.2 | N-methyl-p-nitroaniline | V.e.16 | |
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| 4.E.1 | Technology for 4.B | | 1E101, 1E001, 1E018, 2E018 |
| 4.E.1 | Technology for 4C2a-f; 3; 4a4; 4b1-3; 5b,c; 6a,b; 6c1,2,4,5; 6d3; 6e2 | V.h | |
| 4.E.1 | Technology for 4C2c-e; 4a1-3; 5a,b,d,e; 6c3; 6d1,2,4; 6e1 | | 1E101, 1E001 |
| 6.A.1 | Composite structures | IV.f, XIII.d | 1A002, 9A110 |
| 6.A.2 | Pyrolyzed components | IV.f | |
| 6.B.1 | Production of structural composites | | 1B101, 1B001 |
| 6.B.2 | Nozzles for 6E3 processes | | 1B116 |
| 6.B.3 | Hot isostatic presses | | 2B104, 2B004 |
| 6.B.4 | Chemical vapor deposition furnaces | 2B105 | |
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| 6.C.2 | Pyrolized materials | IV.f | |
| 6.C.3 | Graphites bulk density | | 1C107.a |
| 6.C.4 | Graphites pyrolytic or fibrous reinforced | | 1C107.b |
| 6.C.5 | Ceramic composite materials | | 1C007 |
| 6.C.6 | Silicon carbide | | 1C107.c, 1C007.d |
| 6.C.7 | Tungsten | | 1C117, 1C226, 1C004 |
| 6.C.7 | Molybdenum | | 1C117 |
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| 6.C.9 | Titanium alloys | | 1C002 |
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| 6.E.1 | Technology for 6A1 | XIII.l | 9E101, 9E102 |
| 6.E.1 | Technology for 6A1,2; 6C2 | IV.i | |
| 6.E.1 | Technology for 6B or 6D | | 1E101 |
| 6.E.1 | Technology for 6B1 | | 1E001 |
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| 6.E.1 | Technology for 6B3,4,5; 6D | | 2E101, 2E001 |
| 6.E.1 | Technology for 6B3,4,5 | | 2E002 |
| 6.E.1 | Technology for 6C1.3-9 | | 1E001 |
| 6.E.1 | Technology for 6C3-9 | 1E101 | |
| 6.E.2 | Technology to regulate autoclaves or hydroclaves | | 1E103 |
| 6.E.3 | Producing pyrolytically derived materials | | 1E104 |
| 9.A.1 | Integrated flight instrument systems | | 7A103.b |
| **9.A.2 | Gyro-astro compasses | XII.d | 7A104, 7A004 |
| 9.A.3 | Accelerometers threshold, linearity | VIII.e, XII.d | 7A101, 7A001 |
| 9.A.4 | Gyros | VIII.e, XII.d | 7A102, 7A002 |
| 9.A.5 | Accelerometers or gyros | XII.d | 7A001.c, 7A002.b |
| 9.A.6 | Inertial equipment | VIII.e, XII.d | 7A103.a, 7A003 |
| 9.A.7 | Integrated navigation systems | | 7A103.c |
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| 9.B.1.b | Other specified equipment | 7B101, 7B003 | |
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| 9.B.2.d | Positioning tables | 2B121 | |

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| 9.B.2.e Centrifuges | | 2B122, 2B229 |
| 9.D.1 Software for 9A1,3-6 | XII.f | |
| 9.D.1 Software for 9A2-4,6 | | 7D002, 7D003 |
| 9.D.1 Software for 9A2-4,6; 9B1 | | 7D101 |
| 9.D.1 Software for 9A3,4,6 | VIII.i | |
| 9.D.1 Software for 9B2 | | 2D101, 2D018 |
| 9.D.2 Integration software for 9A1 | | 7D102.a |
| 9.D.3 Integration software for 9A6 | | 7D102.b |
| 9.E.1 Technology for 9A1,3-6; 9D1 for 9A1,3-6 | XII.f | |
| 9.E.1 Technology for 9A2; 9B1, 9D1 for 9A2, 9B1; 9D2,3 | | 7E101, 7E001 |
| 9.E.1 Technology for 9A2; 9B1 | | 7E002, 7E003 |
| 9.E.1 Technology for 9A3,4,6; 9D1 for 9A3,4,6 | VIII.i | |
| 9.E.1 Technology for 9B1 | | 2E018 |
| 9.E.1 Technology for 9B2; 9D1 for 9B2 | | 2E101 |
| 9.E.1 Technology for 9B2 | | 2E002 |
| 10.A.1 Flight control systems | IV.h | |
| 10.A.2 Attitude control equipment | IV.c,h | |
| 10.A.3 Flight control servo valves | | 9A106.d |
| 10.B.1 Test equipment for 10A | | 7B001, 2B018 |
| 10.D.1 Software for 10A | IV.i | |
| 10.D.1 Software for 10B | | 7D002, 2D018 |
| *10.E.1 Integrate fuselage, propulsion, lifting | | |
| 10.E.2 Integrate flight control, guidance, propulsion | IV.i | 7E104, 7E004.b.5 |
| 10.E.3 Technology for 10A1,2; 10D1 for 10A1,2 | IV.i | |
| 10.E.3 Technology for 10B1; 10D1 for 10B1 | | 7E101, 7E001, 2E018 |
| 10.E.3 Technology for 10B1 | | 7E002 |
| 11.A.1 Radar, including altimeters | XI,a,3 | 6A108.a, 6A008. 7A006 |
| 11.A.2 Passive sensors | XI.b | |
| 11.A.3 Global positioning satellite receivers | XV,c | |
| 11.A.4 Electronic assemblies *partly | XI.a.7 | 3A001.a.2.a |
| 11.D.1 Software for 11A1 | XI.d | 6D102, 6D002, 7D101 |
| 11.D.1 Software for 11A2 | XI.d | |
| 11.D.1 Software for 11A4 | XI.d | 3D101 |
| 11.D.2 Software for 11A3 | XV.f | |
| 11.E.1 Protection against EMP and EMI | | 7E102 |
| 11.E.2 Technology for 11A1; 11D1 for 11A1 | | 7E101, 7E001, 6E102, 6E101, 6E001 |
| 11.E.2 Technology for 11A1 | | 6E002 |

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| 11.E.2 Technology for 11A1,2,4; 11D1 for 11A1,2,4 | XI.d | |
| 11.E.2 Technology for 11.A.3; 11D2 | XV.f | |
| 11.E.2 Technology for 11A4; 11D1 for 11A4 | | 3E101 |
| 11.E.2 Technology for 11A4 | | 3E001 |
| 12.A.1 Apparatus for handling 1A | IV.c | |
| 12.A.2 Vehicle for handling 1A | IV.c | |
| 12.A.3 gravity meters | | 6A107, 6A007.b,c |
| 12.A.4 Telemetry | | 5A101 |
| 12.A.5 Tracking | | 6A108.b |
| 12.D.1 Software for 12A1,2 | IV.i | |
| 12.D.2 Software to process post-flight data | | 6D103 |
| 12.D.3 Software for 12A4 usable in 1A | | 5D101 |
| 12.D.3 Software for 12A5 usable in 1A | | 6D102 |
| 12.E.1 Technology for 12A1; 12D1 | IV.i | |
| 12.E.1 Technology for 12A3,5; 12D2; 12D3 for 12A5 | | 6E101 |
| 12.E.1 Technology for 12A3,5 | | 6E002 |
| 12.E.1 Technology for 12A4; 12D3 for 12A4 | | 5E101 |
| 13.A.1.a Computers temperature rated | | 4A101.a, 4A001.a.1 |
| 13.A.1.b Computers, ruggedized or radiation-hardened | | 4A101.b, 4A001.a.2 |
| 13.E.1 Technology for 13A | | 4E001 |
| 14.A.1.a Analog to digital converters ruggedized | XI.c | 3A101.a, 3A001.a.1.a, 3A001.a.2, 3A001.a.5.a |
| *14.A.1.b Analog to digital converters other | | |
| 14.E.1 Technology for 14A | XI.d | 3E101, 3E001 |
| 15.B.1 Vibration testing equipment | | 2B116, 9B006 |
| 15.B.2 Wind tunnels | | 9B105 |
| 15.B.3 Test benches | | 9B117 |
| 15.B.4 Environmental and anechoic chambers | | 9B106, 9B006, 1B018.b |
| 15.B.5 Accelerators | | 3A101.b |
| 15.D.1 Software for 15B1 | | 2D101 |
| 15.D.1 Software for 15B2,3,4 | 9D101 | |
| 15.D.1 Software for 15B5 | | 3D101 |
| 15.D.1 Software for 15B for testing 1A or 2A | | 1D018, 2D018, 9D004 |
| 15.E.1 Technology for 15B1; 15D1 for 15B1 | | 2E101, 2E001 |
| 15.E.1 Technology for 15B1 | | 2E002 |
| 15.E.1 Technology for 15B2,3,4; 15D1 for 15B2,3,4 | | 9E102, 9E001 |
| 15.E.1 Technology for 15B2,3,4 | | 9E002 |
| 15.E.1 Technology for 15B4; 15D1 for 15B4 | | 1E018 |

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| 15.E.1 Technology for 15B5; 15D1 for 15B5 | | 3E101, 3E102 |
| 15.E.1 Technology for 15B5 | | 3E001 |
| 16.A.1 Hybrid computers | XI.a.6 | |
| 16.D.1 Software modeling 1A or 2A | IV.i | |
| 16.E.1 Technology for 16A1 | XI.d | |
| 16.E.1 Technology for 16D1 | IVi | |
| 17.A.1 Reduced observables devices | | 1A101 |
| 17.B.1 Radar cross section measurement | | 6B108, 6B008 |
| 17.C.1 Reduced observables materials | | 1C101, 1C001 |
| 17.D.1 Reduced observables software | | 1D103 |
| 17.E.1 Technology for 17A1; 17C1; 17D1 | | 1E101 |
| 17.E.1 Technology for 17A1; 17C1 | | 1E001 |
| 17.E.1 Technology for 17B1; 17D1 for 17B1 | | 6E101, 6E001 |
| 17.E.1 Technology for 17B1 | | 6E002 |
| 18.A.1 Microcircuits radiation hardened against nuclear effects | XV.d | 3A001.a.1.a |
| 18.A.2 Detectors | | 6A102, 6A002, 6A003, 1A004.c |
| *18.A.3 Radomes | | |
| 18.E.1 Technology for 18A1 | | 3E101, 3E001 |
| 18.E.1 Technology for 18A2 | | 6E101, 6E001, 6E002 |
| 18.E.1 Technology for 18A3 | XI.d | |
| 19.A.1 Rocket systems 300 km | IV.a,b | |
| 19.A.2 Unmanned airvehicle systems 300 km | VIII.a | 9A012 |
| 19.A.3 Unmanned airvehicle to dispense aerosols | | 9A120 |
| 19.D.1 Coordination software for 19A1 | IV.i | |
| 19.D.1 Coordination software for 19A2 | VIII.i | 9D105, 9D001, 9D002 |
| 19.E.1 Technology for 19A1 | IV.i | |
| 19.E.1 Technology for 19A2 | VIII.i | 9E101, 9E102 |
| *19.E.1 Technology for 19A3 | | |
| 20.A.1.a Individual rocket stages usable in 19A | IV.c,h | |
| 20.A.1.b Rocket motors or engines usable in 19A | IV.h | |
| 20.B.1 Production facilities for 20A | | 9B116, 9B007 |
| 20.B.2 Production equipment for 20A | | 9B115, 9B007 |
| 20.D.1 Software for 20B1 | | 9D101, 9D001, 9D002 |
| 20.D.2 Software for 20A1b | IV.i | |

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| 20.E.1 Technology for 20A1; 20D2 | IV.i | |
| 20.E.1 Technology for 20B1,2; 20D1 | | 9E101. 9E102. 9E001 |
| 20.E.1 Technology for 20B1,2 | | 9E002 |

The following MTCR items, marked with a single asterisk, are not covered by corresponding wording on either the Commerce Control List or the State United States Munitions List:

1.B.1, "production facilities" specially designed for "missiles," and 1.D.1 and 1.E.1 software and technology for 1.B.1.

(Controlling the production of missiles was the central objective in establishing the MTCR in 1987. Its omission from U.S. controls can be remedied by adding "missiles" to 9B116. Related software and technology would then be covered by 9D101, 9E001, 9E002, and 9E102, with no wording changes in those ECCNs.)

2.A.1.f weapon or warhead safing, arming, fuzing, and firing mechanisms and 2.B.1 and 2.B.2 "production facilities" and "production equipment" for 2.A.1.f and 2.D.6 and 2.E.1 software and technology therefor.

(This can be remedied by adding 9A121 as a new ECCN for these mechanisms, in *Related Controls* noting that 9A121 is subject to DDTC jurisdiction (if true), and including 9A121 in a new definition of "missile subsystems" (see part 2 of this Attachment) to which reference would be made in 9B115 and 9B116.)

4.C.1 composite and composite modified double base propellants.

(This can be remedied by adding a new sub-item d. to 1C111.)

10.E.1 design "technology" for integration of air vehicle fuselage, propulsion system and lifting control surfaces, designed or modified for "missiles," to optimize aerodynamic performance throughout the flight regime of an unmanned air vehicle.

(This can be remedied by adding a new ECCN 7E105.)

11.A.4 electronic assemblies and components designed or modified for use in "missiles" and specially designed for military use and operation at temperatures in excess of 125°C.

(This can be remedied by adding a new sub-item c. to 3A101 and by adding to the MT portion of 3A001 "portion of 3A001.a.2.a also described in 3A101.c.")

14.A.1.b Analog-to-digital converters designed or modified for military use.

(This can be remedied by moving "designed to meet military specifications for ruggedized equipment" from 3A101.a heading to new 3A101.a.1 and adding new 3A101.a.2, as follows:

- 2 Designed or modified for military use and being any of the following types:
 - a. Analog-to-digital converter "microcircuits", which are "radiation-hardened" or have all of the following characteristics:

1. Having a quantization corresponding to 8 bits or more when coded in the binary system;
2. Rated for operation in the temperature range from below -54°C to above +125°C; and
3. Hermetically sealed; or
- b. Electrical input type analog-to-digital converter printed circuit boards or modules, having all of the following characteristics:
 1. Having a quantization corresponding to 8 bits or more when coded in the binary system;
 2. Rated for operation in the temperature range from below -45°C to above +55°C; and
 3. Incorporating “microcircuits” specified in 3A101.a.2.a.)

18.A.3 radomes.

(This could be remedied by adding a new sub-item c. to 6A108, as follows:

Radomes designed to withstand a combined thermal shock greater than $4.184 \times 10^6 \text{ J/m}^2$ accompanied by a peak over pressure of greater than 50 kPa, usable in protecting rocket systems and unmanned air vehicles against nuclear effects (e.g., Electromagnetic Pulse (EMP), X-rays, combined blast and thermal effects), and usable for “missiles.”)

There is one clear example of concurrent jurisdiction, marked with a double asterisk. The identical text of CCL 1C111.a.3.e “Inhibited red fuming nitric acid (IRFNA)” also appears on the USML in Category V.d.10. Clearly, one or the other should be deleted.

The following confusing 9A101 Related Controls text raises a jurisdictional issue:

9A101.b controls only engines for non-military unmanned air vehicles [UAVs] or remotely piloted vehicles [RPVs], and does not control other engines designed or modified for use in “missiles”, which are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121.)

9A101.b text is:

Engines designed or modified for use in “missiles”, regardless of thrust or specific fuel consumption.

Thus, the text of 9A101.b controls more than “engines for non-military unmanned air vehicles [UAVs] or remotely piloted vehicles [RPVs].” Perhaps the intent is to note that 9A101.b is subject to DDTC jurisdiction except for engines designed or modified for use in “missiles” which are also “for non-military unmanned air vehicles [UAVs] or remotely piloted vehicles [RPVs].” If so, that should be clearly stated. If not, the different intent should be clearly stated.

2. Subsystems

The MTCR Annex defines missile subsystems as those listed in 2.A.1. Some ECCNs refer to undefined subsystems of missiles (1A101, 1C101, 6B108, 9B105, and 9E101 Related Controls). The definitions of missile subsystems in some ECCNs omit portions of the MTCR definition

(9A110, 9B115, 9B116, and 9D103). Some ECCNs completely omit MTCR references to missile subsystems (2B116, 3A101.b, 3D101, 4A102, 9B106, and 9B117).

Similar discrepancies occur between CCL and MTCR definitions of missile propulsion components, equipment, and materials and other rocket systems.

Recommended remedies follow:

Add following new definitions of terms to 772.1:

-“Missile subsystems” (MTCR context) (Cat. 1, 2, 3, 4, 5, 6, 7, 9) - Items controlled by 7A117, 9A007.a, 9A105.a, 9A106.c, 9A108.c, 9A116, 9A121, the portion of 9A119 “usable” in “missiles”, or the portions of 9A006 or 9A008 also described in 9A106.c or 9A108.c

-“Missile propulsion components, equipment, or material”(MTCR context) (Cat.9)-Items controlled by 9A009, 9A011, 9A101, 9A106.b, 9A108, 9A109, 9A111, 9A117, 9A118, 9C101, 9C102, the MT portion of 9A001, or the portions of 9A006 or 9A008 also described in 9A106.b or 9A108

-“Other rocket subsystems” (MTCR context) (Cat. 9) - Items controlled by 9A105.b, 9A107.b, or 9A119.b

Revise ECCNs on the CCL as follows:

1A101 change “their subsystems” to “missile subsystems” (in double quotation marks)

1C101 change “their subsystems” to “missile subsystems” (in double quotation marks)

2B116 add to heading: usable for “missiles” or “missile subsystems”

3A101.b after “”accelerators” insert: usable for “missiles” or “missile subsystems”

3D101 at end of heading after “3A101.b” add:

usable for testing “missiles” or “missile subsystems” or the portion of 3A001.a.2.a controlled for MT reasons

4A102 after “missiles” insert: or “missile subsystems” (in double quotation marks)

6B108 change “their subsystems” to: “missile subsystems” (in double quotation marks)

9A110 change “or the subsystems controlled by entries 9A005, 9A007, 9A105.a, 9A106 to

9A108, 9A116 to 9A119" to:

“missile subsystems” (in double quotation marks)

add new item 9A121 to conform with MTCR 2.A.1.f:

Weapon or warhead safing, arming, fuzing, and firing mechanisms usable in “missiles”

9B105 change “their subsystems” to: “missile subsystems” (in double quotation marks)

9B106 after “anechoic chambers” insert: , usable for “missiles or “missile subsystems,”

9B115 change “systems, sub-systems, and components controlled by 9A004 to 9A009, 9A011, 9A101, 9A104 to 9A109, 9A111, 9A116 to 9A119” to:

"missile subsystems"; “missile propulsion components, equipment, or materials”; or
“other rocket subsystems”

9B116 change “systems, sub-systems, and components controlled by 9A004 to 9A009, 9A011, 9A012, 9A101, 9A104 to 9A109, 9A111, 9A116 to 9A119” to:

"missiles"; "missile subsystems"; "missile propulsion components, equipment, and materials"; or "other rocket subsystems"

9B117 after “rocket motors” insert: , usable for “missiles or “missile subsystems,”

9D001 change “9A (except 9A018, 9A990 or 9A991), 9B (except 9B990 or 9B991) or 9E003” to:

9A001 to 9A011, 9A106.b, 9B001 to 9B009, the portion of 9B116 for “other rocket subsystems”, or 9E003

9D002 change “9A (except 9A018, 9A990 or 9A991), 9B (except 9B990 or 9B991)” to:

9A001 to 9A011, 9B001 to 9B009, or the portion of 9B116 for “other rocket subsystems”

9E101 Related Controls change “missile systems and subsystems” to:

“missiles” or “missile subsystems”

3. MT portions of Wassenaar-based items

The CCL now completely omits several overlaps between MT and Wassenaar-based items, includes some which do not exist, and misstates others.

1A002

MT applies to "composite" structures or laminates that are specially designed for use in "missiles" or "missile subsystems".

(To conform with MTCR 8.A.1)

1B001

MT applies to ~~entire entry except 1B001.d.4 and .f~~ the following for the production of structural "composites" usable in "missiles": 1B001.a, b except tow placement machines, c, d.1-3, and e

(MTCR 6.B.1. is limited to equipment for the production of structural composites usable in "missiles";

MTCR 6.B.1.b does not cover 1B001.b tow-placement machines)

1C001

MT applies to ~~entire entry~~ items controlled by 1C001 for applications "usable" for "missiles" or "missile subsystems"

(To conform with MTCR 17.C.1.)

1C002

MT applies to portion of 1C002 also described in 1C118.

1C004

MT applies to portion of 1C004 also described in 1C117.

1C007

MT applies to ~~items described in 1C007.d (and .f when the dielectric constant is less than 6 at frequencies from 100-Hz to 10,000 MHz) for use in missile radomes~~ portion of 1C007.d also described in 1C107.

(For consistency with MTCR 8.C.3.)

1C010

MT applies to portion of 1C010.e also described in 9C110

1C011

MT applies to 1C011.a ~~and .b~~ and the following portion of .b: metal fuels consisting of 97 percent by weight of boron

1C238

Chlorine trifluoride

MT applies to entire entry

(Covered by MTCR 4.C.4.a.5)

1D001

MT applies to "software" for the ~~"development", "production", or "use"~~ of items controlled by 1B001 for MT reasons.

(MTCR 6.D.1. is limited to "use" software.)

1E001

MT applies to "technology" for items controlled by 1A002, ... 1C010, ... for MT reasons

1E002

MT applies to ~~1E002.e~~ portion of 1E002.e applicable to MT portion of 1C001 and to portions of 1E002.f applicable to MT portions of 1A002 or 1C007

2B004

MT applies to ~~entire entry~~ portion of 2B004 also described in 2B104.

(MTCR 7.B.2. does not include Wassenaar 2.B.4.b.3. control of a facility for hydrocarbon impregnation and removal of resultant gaseous degradation products.)

2B009

MT applies to spin-forming machines combining the functions of spin-forming and flow forming; and flow-forming machines ~~that meet or exceed the parameters of 2B009.a and 2B109~~ with more than two axes which can be coordinated simultaneously for contouring control and which are "usable in" the "production" of propulsion components and equipment (e.g., motor cases) for "missiles"

(MTCR 3.B.3.b "more than two axes which can be coordinated" vs. 2B009.a "two or more controlled axes")

2B018

MT applies to ~~specialized machinery, equipment, and gear for producing rocket systems (including ballistic missile systems, space launch vehicles, and sounding rockets) and unmanned air vehicle systems (including cruise missile systems, target drones, and reconnaissance drones) usable in systems that are controlled for MT reasons including their propulsion systems and components and pyrolytic deposition and densification equipment~~ portions of 2B018 also described in 1B115, 1B117, 7B001, 7B003, 7B101, 7B103, 9B007, 9B105, 9B106, 9B115, 9B116, or 9B117 for MT reasons

(MTCR 1.B.1 covers production facilities for only what is defined in "missiles"; MTCR 19 does not control production equipment for other rocket systems or unmanned air vehicles; pyrolytic deposition and densification is not the only MTCR-listed production equipment which overlaps ML 18)

2D001

MT applies to "software" for the "use" of equipment controlled by 2B004 and or 2B009 for MT

reasons

(EU interprets software in MTCR 7.D.1. to be limited to "use." Most MTCR software items specify "use" only. MTCR 7.D.1. does not specify development or production.)

2D018

MT applies to "software" for the "use" of equipment controlled by 2B018 for MT reasons; the portions of 2D018 also described in the portions of 7D101 for the portions of 2B018 also described in 7B001, 7B003, or 7B101 for MT reasons; the portions of 2D018 also described in the portions of 9D001-9D003 or 9D101 for the portions 2B018 also described in 9B007, 9B104, 9B106, 9B115-9B117 for MT reasons; and the portions of 2D018 also described in 7B103 or 9B116 (software is included in the definition of "production facilities").

(The only explicit MTCR "development" or "production" software is in 3.D.3. In addition 7.D.1. and 20.D.1 might be construed to cover "development" or "production" software. However, these three MTCR software items are for equipment which is not covered by the Wassenaar Munitions List.)

2E001

MT applies ... 2B018 ...

2E002

MT applies ... 2B018 ...

2E018

MT applies to "technology" for equipment controlled by 2B018 for MT reasons; the portion of 2E018 also described in the portions of 1E001 or 1E101 for 1B115 or 1B117; the portion of 2E018 also described in the portions of 7E001, 7E002, or 7E101 for 7B001, 7B003, 7B101, or 7B103 for MT reasons; and the portion of 2E018 also described in the portions of 9E001, 9E002, or 9E102 for 9B007, 9B105, 9B106, 9B115, 9B116, or 9B117 for MT reasons.

3A001

MT applies to 3A001.a.1.a. when usable in "missiles"; to portion of 3A001.a.2.a. also described in 3A101.c, and to portion of 3A001.a.5.a when "designed or modified" for military use, hermetically sealed and rated for operations in the temperature range from below -54°C to above +125°C also described in 3A101.a

(3A101.c would be a new sub-item to conform with MTCR 11.A.4. It would read:

"Electronic assemblies and components, not controlled by 3A001.a.2.a, designed or modified for use in "missiles" and specially designed for military use and operation at temperatures in excess of 125°C."

3A101.a would be revised to include all of MTCR 14.A.1, rather than just 14.A.1.b heading and 14.A.1.b.1.b and .c.)

6A007

MT applies to portion of 6A007.b and c when the accuracies in 6A007.b.1 and b.2 are met or exceeded described in 6A107

(For consistency with MTCR 12.A.3.)

6A008

MT applies to ~~items that are designed for airborne applications and that are usable in systems controlled for MT reasons~~ the portion of 6A008 also described in 6A108

(6A008 specifications differ in many respects from those in MTCR items 11.A.1. and 12.A.5.)

6B008

MT applies to ~~entire entry~~ portion of 6B008 described in 6B108

(For consistency with MTCR 17.B.1.)

6D001

MT applies to ~~“software” for equipment controlled by 6A008 or 6B008 for MT reasons.~~

(MTCR 11 and 12 do not cover development or production software; MTCR 17 does not cover any software for 17.B.1.)

6D002

MT applies to ~~“software” for equipment controlled by 6A008 or 6B008 for MT reasons.~~

(MTCR 17.D does not cover any software for 17.B.1.)

6D003

TSR: Yes, except for the following

~~(1) Items controlled for MT reasons; or (2) ...~~

(No portion of 6D003 is controlled for MT reasons.)

7A001

MT applies to ~~entire entry~~ portion of 7A001.a and b also described in 7A101 and to 7A001.c if continuous output

(MTCR 9.A.3. threshold and linearity differ from 7A001.a and b bias stability and scale factor stability; MTCR 9.A.5. is narrower than the comparable 7A001.c, being limited to continuous output)

7A002

MT applies to ~~entire entry~~ portion of 7A002.a also described in 7A102 and to 7A002.b if continuous output

(For consistency with MTCR 9.A.4 and MTCR 9.A.5.)

7A003

MT applies to ~~entire entry~~ portion of 7A003 also described in 7A103.a

(MTCR 9.A.6. is limited to equipment or systems using 9.A.3. or 9.A.5. accelerometers or 9.A.4. or 9.A.5 gyros, whereas 7A003 is not so limited)

7A005

MT applies to portion of 7A005 also described in 7A105

7A006

MT applies to ~~entire entry~~ portion of 7A006 also described in 7A106
(For consistency with MTCR 11.A.1.)

7B001

MT applies to ~~entire entry~~ equipment specially designed to be used for 7A116 or 7A117 or to be used with 7A004 or the MT portions of 7A001, 7A002, or 7A003

(The MT portions of 7A005 and 7A006 are omitted because MTCR 11 does not control any test equipment. 7A007 is omitted, because MTCR does not control such direction finding equipment.)

7B003

Equipment specially designed for the “production” of equipment controlled by 7A (~~except 7A994~~) 7A001 to 7A006, or 7A117, including items, or portions thereof, subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls

(7A101 to 7A104 are omitted, because MTCR 9.B.1 controls production equipment used “with”, not “for,” equipment specified in 9.A and this equipment is covered by 7B101. 7A105, 7A106, 7A107, and 7A115 are omitted because MTCR 11 does not control any production equipment.

7A116 is omitted, because MTCR 10.B.1. does not cover production equipment other than test, calibration, and alignment equipment.

7A117 is included to conform with MTCR 2.B.1 and 2.B.2.)

MT applies to ~~entire entry~~ equipment specially designed to be used for 7A117 or to be used with 7A004 or the MT portions of 7A001, 7A002, or 7A003

(The MT portions of 7A005 and 7A006 are omitted because MTCR 11 does not control any production equipment.)

7D001

“Software” specially designed or modified for the “development” or “production” of equipment controlled by 7A (~~except 7A994~~) or 7B (~~except 7B994~~) 7A001 to 7A006 or 7B001 to 7B003

~~MT applies to entire entry~~

Related Controls: ... (2) The “software” related to 7A003.b, 7A005, ~~7A007, 7A103, 7A105, 7A106, 7A115, 7A116, 7A117, or 7B103~~ ...

(MTCR 2, 9, 10, and 11 do not control development or production software.)

7D002

MT applies to ~~entire entry~~ portion of 7D002 also described in 7D101

(MTCR does not control “software” for uncontrolled equipment)

7D003

MT applies to ~~entire entry~~ portion of 7D003 also described in 7D002, 7D101, 7D102 or 7D103 for MT reasons

(MTCR does not control software pursuant to 7D003 specifications; but there may be some overlap between those specifications and MTCR controls.)

7E001

MT applies to ~~entire entry~~ "technology" for items controlled by 7A001 to 7A006, 7A101 to 7A107, 7B001 to 7B003, 7B101 to 7B104, 7D002, 7D003, or 7D101 to 7D103 for MT reasons

(MTCR does not cover technology 7D001 or for the non-MT portions of 7A001 to 7A006, 7B001 to 7B003, 7D002, or 7D003)

7E002

MT applies to ~~entire entry~~ "technology" for items controlled by 7A001 to 7A006, 7A101 to 7A106, 7B001 to 7B003, or 7B101 to 7B104 for MT reasons

(MTCR does not cover technology for the non-MT portions of 7A001 to 7A006 or 7B001 to 7B003)

7E003

MT applies to ~~entire entry~~ "technology" for equipment controlled by 7A001 to 7A004 for MT reasons

(MTCR does not cover technology for non-MTCR portions of 7A001 to 7A003)

7E004

MT applies to ~~entire entry~~ portion of 7E004.b.5 also described in 7E104

8D001

TSR: Yes, except for the following;

(1) ~~Items controlled for MT reasons; or~~
(No part of 8D001 is MT.)

8E001

TSR: Yes, except for the following;

(1) ~~Items controlled for MT reasons; or~~
(No part of 8E001 is MT.)

9A005

MT applies to portion of 9A005 also described in 9A105

9A006

MT applies to portion of 9A006 also described in 9A106 or 9A108

9A007

MT applies to portion of 9A007 also described in 9A107

9A008

MT applies to portion of 9A008 also described in 9A106 or 9A108

9A009

MT applies to portion of 9A009 also described in 9A109

9B001

MT applies only to equipment for engines that meet the characteristics described in 9A001 portion of 9B001 for "production equipment" or "production facilities" specially designed for "missile propulsion components, equipment, or materials"

(To conform with MTCR 3.B.1. and 3.B.2.)

9B002

MT applies only to equipment for engines that meet the characteristics described in 9A001 portion of 9B002 for "production facilities" or "production equipment" specially designed for "missile propulsion components, equipment, or materials"

(To conform with MTCR 3.B.1. and 3.B.2; see Attachment 2 for a definition of "missile propulsion components, equipment, or materials")

9B003

MT applies only to equipment for engines that meet the characteristics described in 9A001 portion of 9B003 for "production facilities" or "production equipment" specially designed for "missile propulsion components, equipment, or materials"

(To conform with MTCR 3.B.1. and 3.B.2.; see Attachment 2 for a definition of "missile propulsion components, equipment, or materials")

9B004

MT applies only to equipment for engines that meet the characteristics described in 9A001 portion of 9B004 for "production facilities" or "production equipment" specially designed for "missile propulsion components, equipment, or materials"

(To conform with MTCR 3.B.1. and 3.B.2.; see Attachment 2 for a definition of "missile propulsion components, equipment, or materials")

9B006

MT applies to portion of 9B006 also described in 2B116 or 9B106

(9B006 overlaps 2B116 and 9B106.)

9B007

MT applies to ~~entire entry~~ portion of 9B007 also described in 9B115 to 9B117

(9B007 is broader than MTCR 2.B.1, 2.B.2, 20.B.1. and 20.B.2, which are limited to equipment to produce specified types of rocket motors)

9D001

MT applies to "software" for equipment controlled by 9A106.a and .b or 9B116 for MT reasons

(MTCR does not cover "development" software (or any other software) for ablative liners (3.C.1 lining).)

9D003

MT applies to "software" ~~required~~ specially designed or modified for the "use" of FADEC for ~~gas turbine engines propulsions systems~~ controlled by 9A001, 9A005, 9A007, 9A009, 9A011, 9A101, 9A106, or 9A110 9A105, 9A107, 9A109, or 9A111 for MT reasons or equipment controlled by 9B001 to 9B005, 9B007, 9B105, 9B106, 9B115 to 9B117 for MT reasons.

(To conform with MTCR 3.D.1. and 3.D.2.)

9D004

MT applies to ~~entire entry~~ portion of 9D004.a. specially designed or modified for equipment controlled by 9B105 and portions of 9D004.b. and d. specially designed or modified for equipment controlled by the MT portion of 9A001 or by 9A101.

(To conform with MTCR 3.D.2. and 15.D.1.)

9E001

MT applies to "technology" for items controlled by 9A001, 9A005 to 9A012... 9B005, ... 9B115, ... 9D101, 9D103, 9D104, 9D105 for MT reasons

(To conform with MTCR 1.E.1., 2.E.1., 3.E.1., 12.E.1., 15.E.1., 19.E.1., and 20.E.1.;
MTCR does not cover 9B005 wind tunnel control systems)

9E002

MT applies to "technology" for items controlled by 9A001, 9A005 to 9A012, ... 9B005, ... 9B115, ... for MT reasons

(To conform with MTCR 1.E.1., 2.E.1., 3.E.1., 12.E.1., 15.E.1., 19.E.1., and 20.E.1.;
MTCR does not cover 9B005 wind tunnel control systems)

4. **Changes recommended in items controlled only for MT reasons**

1A102

Resaturated pyrolyzed carbon-carbon components designed for rocket systems and usable in rockets, missiles, and unmanned aerial vehicles with a range of 300 km or greater (to conform with MTCR 8.A.2.)

1B101

Equipment, ~~other than that~~ not controlled by ECCN 1B001, for the "production" of structural "composites", fibers, prepregs or preforms usable in "missiles", as follows, and specially designed components and accessories therefor (MTCR 6.B.1. is limited to equipment for the production of structural composites usable in "missiles")

1B115

Equipment, ~~other than that~~ not controlled in by 1B002, 1B018, or 1B102, or 2B018 for the "production" of propellant or propellant constituents, as follows, and specially designed components therefor

- a. ... for liquid propellants or propellant constituents controlled by 1C011.a, 1C011.b, 1C111, or ~~on the~~ U.S. Munitions List Category V.a.12.i, a.20.i, b.3, c.3.i-iv, c.5, c.6.i.A, c.6.ii.A, c.6.ii.B, d.1, d.2, d.10, d.11, e.2, e.3, e.6, e.7, e.16, f.3.i-iv, f.10, f.14, f.16, f.17, or f.18;
- b. ... for solid propellants or propellant constituents ~~described in~~ controlled by 1C011.a, 1C011.b, or 1C111, or ~~on the~~ U.S. Munitions List V.a.12.i, a.20.i, b.3, c.3.i-iv, c.5, c.6.i.A, c.6.ii.A, c.6.ii.B, d.1, d.2, d.10, d.11, e.2, e.3, e.6, e.7, e.16, f.3.i-iv, f.10, f.14, f.16, f.17, or f.18.

1B119

Fluid energy mills for grinding or milling propellant or propellant constituents ~~specified in~~ controlled by 1C011.a, 1C011.b, or 1C111 or ~~on the~~ U.S. Munitions List V.a.12.i, a.20.i, b.3, c.3.i-iv, c.5, c.6.i.A, c.6.ii.A, c.6.ii.B, d.1, d.2, d.10, d.11, e.2, e.3, e.6, e.7, e.16, f.3.i-iv, f.10, f.14, f.16, f.17, or f.18, and specially designed components therefor.

1C111

- b.1. ~~Carboxy~~ Carboxyl
- b.2. ~~Hydroxy~~ Hydroxyl -terminated polybutadiene (HTPB), ~~other than that~~ not controlled by the U.S. Munitions List (22 CFR 121.1 Category V(e)(7))

1E101

"Technology", not controlled by 1E001 or 1E002, ... "use" of items controlled by 1A002, 1A102, ... 1C010, ... for MT reasons (For consistency with MTCR 6.E.1. and 8.E.1)

3D101

“Software” specially designed or modified for the “use” of items controlled by 3A101.b. usable for testing “missiles” or “missile subsystems” or of the portion of 3A001.a.2.a. controlled for MT reasons

(To conform with MTCR 15.D.1. and 11.D.1)

3E101

“Technology” not controlled by 3E001 ... for the “use” of equipment or “software” controlled by ~~3A001.a.1 or .2~~, 3A001.a.1.a, a.2.a, or a.5.a, 3A101, or 3D101 for MT reasons.

3E102

“Technology” ... for the “development” of “software” controlled by ~~3E101~~ 3D101.

4A101

b. Designed as ruggedized ~~or “radiation hardened”~~
(4A001.a.2.a covers “radiation-hardened”)

4A102

“Hybrid computers” ...

Note 1: This control applies only when the equipment is supplied with software described in 7D103 or 9D103.

Note 2: The ‘modelling’ includes in particular the aerodynamic and thermodynamic analysis of the systems.

(To conform with MTCR 16.A.1.)

5E101

“Technology” ... for the “development”, “production”, or “use” of equipment or “software” controlled by 5A101 or 5D101

(To conform with MTCR 12.E.1.)

6A108

(MTCR does not include Related Controls part (1))

6D102

“Software” specially designed or modified for the “use” of equipment controlled by 6A008, 6A108, or 6B008 for MT reasons

(To conform with MTCR 11.D.1 and 12.D.3.)

6E101

“Technology” not controlled by 6E001 or 6E002 ... “use” of equipment or “software” controlled by 6A002, 6A007.b and .c, 6A008, 6A102, 6A107, 6A108, 6B108, 6D002, 6D102 or 6D103 for MT reasons

7A103

a. Inertial or other equipment using accelerometers or gyros controlled by 7A001; or 7A002

for MT reasons, or 7A101 or 7A102 and systems incorporating such equipment.
(To conform with MTCR 9.A.6.)

7B101

... designed or modified to be used with equipment controlled by ~~7A001-7A004~~ or 7A101-7A104, or the MT portions of 7A001-7A003

7B103

~~Specially designed~~ "production facilities" or "production equipment," not controlled by 7B001 or 7B003, specially designed for equipment controlled by 7A117

(To conform with MTCR 2.B.1. and 2.B.2.)

7D101

"Software" specially designed or modified for the "use" of equipment controlled by 7A001 to 7A004, 7A006, 7A101 to 7A104, 7A106, 7A115, 7A116, 7A117, 7B001, 7B002, 7B003, 7B101, 7B102 or 7B103 for MT reasons and "software" specially designed for the "use" of equipment controlled by 7A005 or 7A105 for MT reasons

(To conform with MTCR 2.D.1., 2.D.3., 9.D.1., 10.D.1., 11.D.1., and 11.D.2.)

7D102

b. Integration "software" specially designed for the equipment controlled by 7A003 or 7A103.a for MT reasons

(To conform with MTCR 9.D.2.)

7D103

"Software" specially designed for modelling, ~~or simulation, or design integration~~ of the "guidance sets" controlled by 7A117 ~~or for their design integration with "missiles"~~.

(To conform with MTCR 16.D.1.)

7E101

"Technology", not controlled by 7E001, 7E002, or 7E003, ... "use" of equipment or "software" controlled by ... 7D001, 7D002, 7D003, ... for MT reasons

7E104

Design "technology", not controlled by 7E004.b.5, ...

9A104

Rocket and unmanned air vehicle systems, as follows (see List of Items Controlled)(also see 9A120)(These items are subject to the export licensing authority of the Department of State, Directorate of Defense Trade Controls. See 22 CFR part 121)

Items:

a. Complete rocket systems (including ballistic missile systems, space launch vehicles, and sounding rockets) capable of delivering at least a 500 kg payload to a range of at least 300 km;

- b. Complete unmanned air vehicle systems (including cruise missile systems, target drones and reconnaissance drones), capable of delivering at least a 500 kg payload to a maximum range of at least 300 km
(To conform with MTCR 1.A.1. and 1.A.2.)

9A105

Liquid propellant rocket engines, not controlled by 9A005, as follows:

Items:

- a. Liquid propellant rocket engines, usable in “missiles”, having a total impulse capacity of 1.1 MNs or greater;
- b. Liquid propellant rocket engines, usable in rockets with a range capability of 300 km or greater, other than those controlled by 9A105.a, having a total impulse capacity of 0.841 MNs or greater.
(Item detail needed to conform with MTCR 2.A.1.c. and 20.A.1.b.)

9A106

Systems or components, ~~other than those not~~ not controlled by 9A006 or 9A008, ...

Unit: ~~Equipment and components in number; parts and accessories in \$ value~~

(MTCR 2.A.1.e, 3.A.3, 3.A.5, and 3.C.1 (and 9A106) do not control parts or accessories)

- a. ~~Ablative liners for thrust or combustion chambers~~ Interior lining usable for rocket motor cases in “missiles”;
(To conform with MTCR 3.C.1.)

9A107

Solid propellant rocket engines ~~motors~~, as follows, ...:

Items:

- a. Solid propellant rocket motors, usable in “missiles”, having a total impulse capacity of 1.1 MNs or greater; or
- b. Solid propellant rocket motors, usable in rockets with a range capability of 300 km or greater having a total impulse capacity of 0.841 MNs or greater.
(Item detail needed to conform with MTCR 2.A.1.c. and 20.A.1.b.)

9A108

~~Solid rocket propulsion components~~ Rocket motor cases, ‘insulation’ components and nozzles therefor, other than those not controlled by 9A008, usable in ~~rockets with a range capability of 300 km or greater~~ “missiles” (These items ...)

(To conform with MTCR 3.A.3.)

9A109

Hybrid rocket motors, ~~usable in rockets with a range capability of 300 Km or greater, other than these not~~ not controlled by 9A009, and specially designed components therefor, usable in “missiles”
(To conform with MTCR 3.A.6.)

9A110

Composite structures, laminates and manufactures thereof, ~~other than those not~~ controlled by entry 1A002, 1A102, or 9A010, specially designed for use in "missiles" or ~~the subsystems controlled by entries 9A005, 9A007, 9A105.a, 9A106 to 9A108, 9A116 or 9A119~~ "missile subsystems"

(To conform with MTCR 8.A.1, which covers composite structures, laminates, and manufactures thereof specially designed for use in MTCR 2.A. subsystems, which omit the portion of 9A005 not also described in 9A105.a and omit all of 9A007.b-e, 9A106.b, 9A107.b, 9A108, 9A117, 9A118, and 9A119.b, but which include 7A117 and "weapon or warhead safing, arming, fuzing, and firing mechanisms.")

9A116

Reentry vehicles, ~~usable in "missiles"~~, and equipment designed or modified therefor usable in "missiles", as follows (see List of Items Controlled): (These items ...)

Items:

- a. Heat shields, and components thereof, fabricated of ceramic or ablative materials;
- b. Heat sinks and components thereof fabricated of light-weight, high heat capacity materials;
- c. Electronic equipment specially designed for reentry vehicles.

(To conform with MTCR 2.A.1.b; the probable intent is to control reentry vehicles as well as the equipment therefor listed in a, b, and c, in which case MTCR should either delete the comma from before "as follows" or list reentry vehicles as another sub-item.)

9A118

Devices to regulate combustion ~~usable in engines of ramjet/scramjet/pulse jet/combined cycle engines~~ which are usable in ~~rockets with a range capability greater than 300 km or greater,~~ controlled by 9A011 or 9A111 "missiles" (These items ...)

(For consistency with MTCR 3.A.2.)

9A119

Individual rocket stages, usable in rockets with a range capability equal to or greater than 300 Km ~~or greater~~ ...

9A121

Weapon or warhead safing, arming, fuzing, and firing mechanisms usable in "missiles" (These items are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls. See 22 CFR part 121.)

(To conform with MTCR 2.A.1.f.; all parts of MTCR 2.A.1. must appear on the CCL in order to provide a basis for numerous cross references to "missile subsystems.")

9B105

Wind tunnels for speeds of Mach 0.9 or more usable for "missiles" ~~and their subsystems~~ or

"missile subsystems"

(MTCR 15.B.2. is limited to items usable for the subsystems listed in MTCR 2.A.)

9B106

Environmental chambers and anechoic chambers, usable for "missiles" or "missile subsystems," as follows:

(To conform with MTCR 15.B.4)

9B115

Specially designed "production equipment" for the ~~systems, sub-systems, and components~~ controlled by 9A004 to 9A009, 9A011, 9A101, 9A104 to 9A109, 9A111, 9A116 to 9A119 following:

Items:

- a. "missile subsystems";
- b. "missile propulsion components, equipment, or materials";
- c. "other rocket subsystems"

(To conform with MTCR 2.B.2., 3.B.2., and 20.B.2. "production equipment"; MTCR 2, 3, and 20 omit the portions of 9A005 and 9A006 not overlapping 9A105, the portion of 9A009 not overlapping 9A109, and all of 9A106, 9A007.b-e, and 9A008 but include 7A117, the MT portion of 9A001, and "weapon or warhead safing, arming, fuzing, and firing mechanisms", which is proposed to become new 9A121.)

9B116

Specially designed "production facilities" for the ~~systems, sub-systems, and components~~ controlled by 9A004 to 9A009, 9A011, 9A012, 9A101, 9A104 to 9A109, 9A111, 9A116 to 9A119 following:

Items:

- a. "missiles";
- b. "missile subsystems";
- c. "missile propulsion components, equipment, and materials"; or
- d. "other rocket subsystems"

(To conform with MTCR 1.B.1., 2.B.1., 3.B.1., and 20.B.1. "production facilities"; MTCR 1, 2, 3, and 20 omit 9A004, 9A007.b-e, 9A008, and 9A104, the portions of 9A005 and 9A006 not overlapping 9A105 or 9A106, and the portion of 9A009 not overlapping 9A109 but include "missiles," 7A117, the MT portion of 9A001, and "weapon or warhead safing, arming, fuzing, and firing mechanisms" proposed for new 9A121.)

9B117

Test benches and test stands for solid or liquid propellant rockets or rocket motors usable for "missiles" or "missile subsystems" having either of the following characteristics:

(MTCR 15.B.3. is limited to test equipment usable for "missiles" or "missile subsystems")

9D101

"Software" specially designed or modified for the "use" of goods controlled by 9B001 to 9B005, 9B007, 9B105, 9B106, 9B116 or 9B117 for MT reasons

(To conform with MTCR 1.D.1, 2.D.1, 3.D.1, 15.D.1, and 20.D.1.)

9D103

"Software" specially designed for modelling, simulation or design integration of "missiles", or ~~the subsystems controlled by 9A005, 9A007, 9A105.a, 9A106, 9A108, 9A116 or 9A119~~ "missile subsystems"

(To conform with MTCR 16.D.1.; MTCR 2 subsystems omit the portion of 9A005 not overlapping 9A105.a and omit all of 9A007.b-e, 9A106.a and .b, 9A107, 9A108.a and .b, 9A117, and 9A118 but include 7A117 and "weapon or warhead safing, arming, fuzing, and firing mechanisms" proposed for new 9A121)

9E101

"Technology" not controlled by 9E001 or 9E002 ... "development" or "production" of commodities or software controlled by 9A001, 9A005 to 9A011, 9A012, 9A101, 9A104 to 9A111 or 9A115 to 9A119, 9A121, 9C110, or "production" of 9D001 to 9D004, 9D101, 9D103, 9D104 or 9D105 for MT reasons

(To conform with MTCR 1.E.1., 2.E.1., 3.E.1., 12.E.1., 15.E.1., 16.E.1., 19.E.1., and 20.E.1 and with 9E001 and 9E002. Re 9D105, MTCR 19.E.1 does not control technology for 19.D.)

9E102

"Technology" ... for the "use" of space launch vehicles specified in 9A004, or commodities or software controlled by 9A001, 9A005 to 9A012, 9A101, 9A104 to 9A111, 9A115 to 9A119, 9A121, 9B001 to 9B004, 9B006, 9B007, 9B105, 9B106, 9B115, 9B116, 9B117, 9C110, 9D001 to 9D004, 9D101, 9D103, 9D104 or 9D105 for MT reasons.

Harmonization with NSG

Attachment 7 contains recommended changes in cross-references involving Nuclear Supplier Group (NSG) items, which are abbreviated NP on the CCL. Recommendations in this

Attachment 4-10 are divided into three parts:

1. NP portions of Wassenaar-based items;
2. NP portions of MTCR-based items
3. NSG-based items

1. NP portions of Wassenaar-based items

The CCL omits some NP portions of Wassenaar-based items and over-states or under-states the NP portions of others. 740.6(a) limits eligibility for TSR to items controlled for national security reasons only. This is logically interpreted to mean that the portions of Wassenaar-based items controlled for NP reasons are not eligible for TSR.

1A002

NP applies to ~~1A002.b.1 in the form of tubes with an inside diameter between 75 mm and 400 mm~~ composite structures also described in 1A202

(NSG 2.C.7.a specific modulus and specific tensile strength limits are higher than those in 1A002.b.1)

1B001

NP applies... ~~and coordinating and programming controls and precision mandrels for these filament winding machines~~

(1B001 covers neither coordinating and programming controls nor precision mandrels)

1C004

NP applies to portion of 1C004 also described in 1C226.

1C007

NP applies to portion of 1C007.d also described in 1C234.

1C011

NP applies to portions of 1C011 also described in 1C225, 1C228, 1C230, 1C234, or 1C239

1D001

NP applies to "software" specifically designed for the "~~development~~", "~~production~~" or "use" of items controlled by 1B001 for NP reasons.

(NSG 3.D.1 does not control "modified" software and does not control "development" or "production" software)

TSR: Yes, except N/A for MT or NP

1E001

TSR: Yes, except for the following:

(1) Items controlled for MT or NP reasons; or ...

1E002

NP applies to portion of 1E002.f applicable to NP portion of 1A002.

2B001

NP applies ~~2B001.a,b,c, and d, except (1) turning machines under 2B001.a with a capacity equal to or less than 35 mm diameter; (2) bar machines (Swissturn) limited to machining only bar feed through, if maximum bar diameter is equal to or less than 42 mm and there is no capability of mounting chucks. (Machines may have drilling and/or milling capabilities for machining parts with diameters less than 42 mm); or (3) milling machines under 2B001.b with x axis travel greater than two meters and overall "positioning accuracy on the x axis more (worse) than 0.30 mm-~~ to 2B001.d and to portions of 2B001.a,b,c also described in 2B201.

(Existing "NP applies" paragraph does not take into consideration that Wassenaar uses a 1997 standard, mandatory after December 3, 2000, whereas NSG uses a 1988 standard.)

2B004

NP applies to ~~entire entry except 2B004.b.3 and presses with temperatures exceeding 1,733 K, and pressure below 69 MPa~~ portion of 2B004 also described in 2B204

(2B004, unlike NSG 1.B.5, controls accessories)

2B006

NP applies to ~~2B006.a and b~~ 2B006.b.1.a, b.1.c, and b.2 and portions of 2B006.a and .b.1.b also described in 2B206

(NSG 1.B.3.a. and 1.B.3.b.2 use parameters which differ from those in 2B006.a. and b.1.b)

2B007

NP applies to portions of 2B007.b and 2B007.c and to specially designed controllers and "end-effectors" therefor also described in 2B207

(NSG 1.A.3 covers only end-effectors having specified characteristics)

2D001

NP applies ... and to specially designed "software" for the "use" of equipment controlled by 2B004, 2B006, 2B007, or 2B009 for NP reasons

(NSG 1.D.1 is limited to "use" software.)

TSR: Yes, except N/A for MT or NP

2D002

NP applies to ~~entire entry, except 2D002.b~~ the following portion of 2D002.a: "software" for any combination of devices or system enabling such device(s) to function as a "numerical control"

unit capable of controlling 5 or more interpolating axes that can be coordinated simultaneously for "contouring control"

Note 1: "Software" is controlled whether exported separately or residing in a "numerical control" unit or any electronic device or system.

Note 2: NP does not apply to "software" specially designed or modified by the manufacturers of the control unit or machine tool to operate a machine tool not controlled by 2B201.

TSR: Yes, except N/A for NP

2E001

CB applies to "technology" for equipment controlled by 2B350 ~~to 2B352~~ or 2B351

TSR: Yes, except N/A for MT or NP

2E002

TSR: Yes, except N/A for MT or NP

3E001

TSR: Yes, except N/A for MT or NP

4A001

~~NP applies unless a License Exception is available ...~~

(NSG does not control 4A001 computers.)

4A003

~~NP applies unless a License Exception is available. See ...~~

(NSG does not control such computers.)

4D002

~~NP applies unless a License Exception is available. ...~~

(NSG does not list such software)

4E001

~~NP applies unless a License Exception is available. ...~~

(NSG does not list such technology)

6A002

NP applies to portion of 6A002 also described in 6A202

6A003

NP applies to ~~items controlled in paragraphs 6A003.a.2, a.3 and a.4~~ portion of 6A003 also described in 6A203

(NSG 5.B.3, unlike 6A003.a.2, a.3, and a.4, includes a "rotating mirror" parameter)

6A005

NP applies ...

(j) para-hydrogen Raman shifters designed to operate at 16,000 nm output wavelength and at a repetition rate greater than 250 Hz with a pumping source "laser" controlled by 6A005 (to conform with NSG 3.A.2.i, per 6A005 Related Controls (3).)

6C004

NP applies to portions of 6C004 also described in 1C230, 1C231, or 1C234.

6D001

NP applies to "software" for equipment controlled by 6A005 for NP reasons (NSG 3.D.1 does not control software for 3.A.2)

6E001

TSR: Yes, except for the following:

(1) Items controlled for MT or NP reasons; or ...

6E002

TSR: Yes, except for the following:

(1) Items controlled for MT or NP reasons; or ...

9A010

NP applies to structures also described in 1A202

2. **NP portions of MTCR-based items**

1A102

NP applies to composite structures also described in 1A202.

1B101

NP applies to filament winding machines described in 1B101.a that are capable of winding cylindrical rotors having a diameter between 75 mm and 400 mm and lengths of 600 mm or greater and to coordinating and programming controls and precision mandrels for these filament winding machines portion of 1B101.a also described in 1B201

(NSG 3.B.4 is limited to machines "having motions for positioning, wrapping and winding fibers coordinated and programmed," rather than "of which the motions ... can be coordinated and programmed"; and NSG 3.B.4 is limited to machines "specially designed to fabricate composite structures or laminates from fibrous or filamentary materials", rather than simply being "designed" for that purpose (underlining added). 1B101 does not control precision mandrels.)

1C111

NP applies to portions of 1C111 also described in 1C225, 1C228, 1C230, or 1C234

1C118

NP applies to portion of 1C118 also described in 1C202.

1D101

NP applies to "software" specially designed for the "use" of items controlled by 1B101.a for NP reasons.

1E101

"Technology", not controlled by 1E001 or 1E002, ... "use" of items controlled by 1A002, 1A102, ... 1C010, ... for MT reasons

(For consistency with MTCR 6.E.1. and 8.E.1)

NP applies to "technology" for items controlled by 1A002, 1B001, 1B101, 1C116, 1D001, or 1D101 for NP reasons

(For consistency with NSG 2.E.1;

portions of 1A002 are covered by both MTCR and NSG)

3A101

NP applies to portion of 3A101.b also described in 3A201.c.

6A102

NP applies to portion of 6A102 also described in 6A202.

9A110

NP applies to composite structures also described in 1A202

3. NSG-based items**1A102**

NP applies to composite structures also described in 1A202.

1B101

NP applies to ~~filament winding machines described in 1B101.a that are capable of winding cylindrical rotors having a diameter between 75 mm and 400 mm and lengths of 600 mm or greater and to coordinating and programming controls and precision mandrels for these filament winding machines~~ portion of 1B101.a also described in 1B201

(NSG 3.B.4 is limited to machines "having motions for positioning, wrapping and winding fibers coordinated and programmed," rather than "of which the motions ... can be coordinated and programmed"; and NSG 3.B.4 is limited to machines "specially designed to fabricate composite structures or laminates from fibrous or filamentary materials", rather than simply being "designed" for that purpose (underlining added).

1B101 does not control precision mandrels.)

1B228

Related Controls: Equipment specially designed or prepared for the production of heavy water is Plants for the production, separation, or purification of heavy water, deuterium, and deuterium

compounds and specially designed or prepared assemblies and components for these plants are subject to the export licensing authority of the Nuclear Regulatory Commission ...

Related Definitions: ~~“Fine grain stainless steels” in this entry are defined to be fine grain austenitic stainless steels with an ASTM (or equivalent standard) grain size number of 5 or greater. N/A~~

...

c. Constructed of either:

1. ~~“fine grain s~~Stainless steels” of the 300 series with low sulfur content and with an austenitic ASTM (or equivalent standard) grain size number of 5 or greater; or
1. ~~e~~Equivalent materials which are both cryogenic and H₂-compatible ~~materials~~; and

1B231

b.2. Hydrogen isotope storage ~~and~~ or purification systems using metal hydrides as the storage, or purification medium

1C111

NP applies to portions of 1C111 also described in 1C225, 1C228, 1C230, or 1C234

1C210

“Fibrous ~~and~~ or filamentary materials” ...

- a. Carbon and aramid “fibrous ~~and~~ or filamentary materials” ... a “specific tensile strength” of 23.5×10^3 m or greater except ~~Aramid~~ aramid ...
- b. Glass “fibrous ~~and~~ or filamentary materials” ... ~~described in~~ controlled by ...

1C239

High explosives, ~~other than those controlled by the U.S. Munitions List, or~~ substances or mixtures containing more than 2% by weight thereof, of any of the following (see List of Items Controlled):

Related Controls: ... (2) ~~High explosives for military use~~ Sub-items a., b., c., and d. are subject to the export licensing authority of the U.S. Department of State, ~~Office~~ Directorate of Defense Trade Controls (see 22 CFR part ~~121.12~~ 121.1 Category V.a.2.i, a.14, a.21, and a.20.i)

Items: ~~The list of items controlled is contained in the ECCN heading~~

- a. Cyclotetramethylenetetranitramine (HMX) (CAS 2691-41-0);
- b. Cyclotrimethylenetrinitramine (RDX) (CAS 121-82-4);
- c. Triaminotrinitrobenzene (TATB) (CAS 3058-38-6);
- d. Hexanitrostilbene (HNS) (CAS 20062-22-0); or
- e. Any explosive with a crystal density greater than 1.8 gm/cm³ and having a detonation velocity greater than 8,000 m/s

1D201

“Software”, not controlled by 1D001 or 1D101, specially designed ~~or modified~~ for the “use” of items controlled by 1B201

1E201

"Technology" ... not controlled by 1E001 or 1E101, for the "use" of items controlled by ... 1B001.a, 1B101, ... 1C116, ... 1D001, 1D101 or 1D201 for NP reasons
(NSG covers parts of 1B001a, 1C116, 1D001, and 1D101)

1E203

"Technology" according to ~~the General Technology Note~~ "NSG Technology Controls" for the "development" of "software" controlled by 1D201
(Revised 1E201 would make 1E203 redundant)

2B201

Unit: ~~Equipment in nNumber; parts and accessories in \$ value~~

Related Definition: ~~N/A~~ "Positioning accuracy" of "numerically controlled" machine tools is to be determined and presented in accordance with this entry in conjunction with the requirements below:

- (a) Test conditions (ISO 230/2 (1988), paragraph 3):
- (1) For 12 hours before and during measurements, the machine tool and accuracy measuring equipment will be kept at the same ambient temperature. During the premeasurement time, the slides of the machine will be continuously cycled identically to the way they will be cycled during the accuracy measurements;
 - (2) The machine shall be equipped with any mechanical, electronic, or software compensation to be exported with the machine;
 - (3) Accuracy of measuring equipment for the measurements shall be at least four times more accurate than the expected machine tool accuracy;
 - (4) Power supply for slide drives shall be as follows:
 - (i) Line voltage variation shall not be greater than + or - 10% of nominal rated voltage;
 - (ii) Frequency variation shall not be greater than + or - 2 Hz of normal frequency;
 - (iii) Lineouts or interrupted service are not permitted.
- (b) Test Program (paragraph 4):
- (1) Feed rate (velocity of slides) during measurement shall be the rapid traverse rate; N.B.: In the case of machine tools which generate optical quality surfaces, the feed rate shall be equal to or less than 50 mm per minute;
 - (2) Measurements shall be made in an incremental manner from one limit of the axis travel to the other without returning to the starting position for each move to the target position;
 - (3) Axes not being measured shall be retained at mid-travel during test of an axis
- (c) Presentation of the test results (paragraph 2):
- (1) "Positioning accuracy" (A) and
 - (2) The mean reversal error (B).

Note: Stated positioning accuracy levels derived under the following procedures from measurements made according to ISO 230/2 (1988) or national equivalents may be used for each machine tool model if provided to, and accepted by, national authorities instead

of individual machine tests.

Stated "positioning accuracy" are to be derived as follows:

1. Select five machines of a model to be evaluated;
2. Measure the linear axis accuracies according to ISO 230/2 (1988);
3. Determine the accuracy values (A) for each axis of each machine. The method of calculating the accuracy value is described in the ISO 230/2 (1988) standard;
4. Determine the average accuracy value of each axis. This average value becomes the stated "positioning accuracy" of each axis for the model (A_x, A_y, ...);
5. Since 2B201 refers to each linear axis, there will be as many stated "positioning accuracy" values as there are linear axes;
6. If any axis of a machine tool not controlled by this entry has a stated "position accuracy" of 0.006 mm or better (less) for grinding machines, and 0.008 mm or better (less) for milling and turning machines, both according to ISO 230/2 (1988), then the builder should be required to reaffirm the accuracy level once every eighteen months.
 - a.1. ... according to ISO 230/2 (1988) ...
Note: ... b. ... according to ISO 230/2 (1988)
 - b.1. ... according to ISO 230/2 (1988) ...

Technical Notes:

1. Axis nomenclature shall be in accordance with International Standard ISO 841, "Numerical Control Machines - Axis and Motion Nomenclature".
2. Not counted in the total number of contouring rotary axes are secondary parallel contouring rotary axes the center line of which is parallel to the primary rotary axis.
3. Rotary axes do not necessarily have to rotate over 360 degrees. A rotary axis can be driven by a linear device, e.g., a screw or a rack-and-pinion.

2B206

Unit: ~~Equipment in n~~Number; ~~parts and accessories in \$~~ value

2B209

Unit: ~~Equipment~~ Machines and mandrels in number; ~~parts and accessories in \$~~ value

2B228

Rotor fabrication ~~and~~ or assembly equipment, ...

2E201

"Technology" according to ~~the General Technology Note~~ NSG "Technology Controls" not controlled by 2E001, 2E002, or 2E101 for the "development", "production", or "use" of equipment or "software" controlled by ... 2B004, ... 2B008, ... 2B104, 2B109, 2B116, ... 2D001, ... 2D101 2D201 or 2D202 for NP reasons

(The undefined expression "directly associated" in the "NSG Technology Controls" differs from the defined word "required" in the Wassenaar General Technology Note.)

3A229

Firing sets and equivalent high-current pulse generators (~~for detonators controlled by 3A232~~) as

follows ...

(NSG 6.A.2.b is not limited to firing sets for detonators controlled by 3A232)

b.8 ... ~~for use to operate~~ ...

3A233

Mass spectrometers ..., as follows (see List of Items Controlled), and ion sources therefor.

3E201

“Technology” ... not controlled by 3E001 for the “use” of equipment controlled by 3A001.e.2 or e.3, 3A201, 3A225 to 3A233 for NP reasons

6A203

Unit: Equipment and components in number; ~~parts and accessories in \$ value~~
(NSG 1.A.2, 5.B.3, and 5.B.4 do not control parts or accessories)

6A205

Unit: Equipment in number; ~~parts and accessories in \$ value~~

~~b. Tunable pulsed single mode dye laser oscillators capable of an average power output of greater than 1 W, a repetition rate greater than 1 kHz, a pulse less than 100 ns, and a wavelength between 300 nm and 800 nm.~~

(Existing 6A205.b is completely covered by 6A005.d.2.c)

b. Neodymium-doped (other than glass) lasers with an output wavelength between 1000 and 1100 nm incorporating frequency doubling to give an output wavelength between 500 and 550 nm with an average output power of greater than 40 W.

(New 6A205.b would cover NSG 3.A.2.c.2)

c. ... ~~except single mode oscillators~~

Note: 6A205.c. does not control single mode oscillators.

(Single-mode oscillators are covered by existing 6A205.b and by 6A005.d.2.c)

d. ...

Note: 6A205.d does not control the higher power (typically 1 to 5kW) industrial CO₂ lasers used in applications such as cutting and welding, as these latter lasers are either continuous wave or are pulsed with a pulse width greater than 200 ns.

| Recapitulation <u>NSG 3.A.2</u> | <u>6A005</u> | <u>6A205</u> |
|---------------------------------|------------------|--------------|
| a. Copper | a.2.a all | - |
| b. Argon | a.6 part | a. all |
| c.1.a single-mode | c.2.b.2.a.2 all | - |
| c.1.b multiple-mode | c.2.b.2.b.2 part | f. all |
| c.2 doubling | - | new b. |
| d. dye single-mode | d.2.c all | old b all |
| e. dye other | - | c. all |
| f. Alexandrite | c.1.b.2 all | - |
| g. carbon dioxide | a.4 part | d. all |

| | | |
|-------------------|-------------------------------|---|
| h. pulsed excimer | a.1.c.2 all | - |
| i. Raman | Related Definition (3) e. all | |

6A225

Unit: ~~Equipment in number; parts and accessories in \$ value~~

6A226

Unit: ~~Equipment in n_uNumber; parts and accessories in \$ value~~

6E201

“Technology” ... not controlled by 6E001 or 6E002 for the “use” of equipment controlled by 6A003.a.2, 6A003.a.3, 6A003.a.4, 6A005.a.1.e, 6A005.a.2.a, 6A005.e.1.b, 6A005.e.2.c.2, 6A005.e.2.d.2.b, 6A003, 6A005, 6A202, 6A203, 6A205, 6A225 or 6A226 for NP reasons
 ECCN Controls: ~~This entry only controls “technology” for “lasers” in 6A005 that are controlled for NP reasons.~~

(Addition of “for NP reasons” in the heading makes this “ECCN Controls” entry unnecessary)

Harmonization with AG and CWC

Attachment 7 contains recommended changes in cross-references involving Australia Group, or AG, (referred to as CB in the CCL) and Chemical Weapons Convention, or CWC, (referred to as CW in the CCL) items, including unilateral CB items and USML, DEA, EPA, CPSC, and FDA. This Attachment 11 is divided into two parts:

1. AG and CWC portions of Wassenaar-based items; and
2. AG- and CWC-Based Items

1. AG and CWC portions of Wassenaar-based items

740.6(a) limits eligibility for TSR to items controlled for national security reasons only. This is logically interpreted to mean that the portions of Wassenaar-based items controlled for CB reasons are not eligible for TSR.

1E001

TSR: Yes, except for the following:

- (1) Items controlled for MT, NP or CB reasons; or

2E001

CB applies to "technology" for equipment controlled by 2B350 ~~to 2B352~~ or 2B351

TSR: Yes, except N/A for MT, NP, or CB

2E002

TSR: Yes, except N/A for MT, NP, or CB

2. AG- and CWC-based items

1C350

License Requirement Notes ...

2. MIXTURES ...

b. A license is not required, except to Cuba, Iran, North Korea, Sudan, or Syria for ...

c. A license is not required, except to Cuba, Iran, North Korea, Sudan, or Syria for ...

4. TESTING KITS: ~~Certain m~~ Medical, analytical, diagnostic, and food testing kits containing small quantities of chemicals a maximum of 300 grams per chemical identified in this ECCN 1C350 as a CWC Schedule 2 or 3 chemicals are excluded from the scope of this ECCN and are controlled under ECCN 1C395 or ECCN 1C995.

(The 300 grams threshold for 1C350 controls should be specified in 1C350.)

Related Controls: ... See 22 CFR part ~~421~~ 121.1 Category XIV a.i-iii, a.3.i-iii, and c.1-4 and ~~421.7~~ for additional CWC Schedule 1 chemicals and Category XIV a.2, a.4.i, and c.5 for additional CWC Schedule 2 chemicals controlled by the Department of State. ...

- a.1 ... (CWC 1B(10))
- a.2 ... (CWC 1B(9))
- a.3 ... (CWC 1B(9))
- b.1 ... (CWC 2B(7))
- b.2 ... (CWC 2B(8))
- b.3 ... (CWC 2B(4))
- b.4 ... (CWC 2B(4))
- b.5 ... (CWC 2B(6))
- b.6 ... (CWC 2B(11))
- b.7 ... (CWC 2B(12))
- b.8 ... (CWC 2B(10))
- b.9 ... (CWC 2B(11))
- b.10 ... (CWC 2B(10))
- b.11 ... (CWC 2B(4))
- b.12 ... (CWC 2B(10))
- b.13 ... (CWC 2B(4))
- b.14 ... (CWC 2B(4))
- b.15 ... (CWC 2B(4))
- b.16 ... (CWC 2B(4))
- b.17 ... (CWC 2B(4))
- b.18 ... (CWC 2B(14))
- b.19 ... (CWC 2B(9))
- b.20 ... (CWC 2B(13))
- b.21 ... (CWC 2B(4))
- b.22 ... (CWC 2B(4))
- b.23 ... (CWC 2B(4))
- b.24 ... (CWC 2B(4))
- c.1 ... (CWC 3B(11))
- c.2 ... (CWC 3B(10))
- c.3 ... (CWC 3B(5))
- c.4 ... (CWC 3B(7))
- c.5 ... (CWC 3B(6))
- c.6 ... (CWC 3B(12))
- c.7 ... (CWC 3B(13))
- c.8 ... (CWC 3B(14))
- c.9 ... (CWC 3B(17))
- c.10 ... (CWC 3B(9))
- c.11 ... (CWC 3B(8))
- c.12 ... (CWC 3B(15))

1C351

Move the following from 1C351 or 1C991 Related Controls or 1C991 Related Definitions to 1C351 License Requirement Notes:

1. All vaccines and “immunotoxins”, as defined below, are excluded from the scope of this entry.
2. Certain “medical products” and “diagnostic and food testing kits”, as defined below, that contain biological toxins controlled under paragraph (d) of this entry, with the exception of toxins controlled ~~for CW reasons~~ under d.5 and d.6, are excluded from the scope of this entry. Biological toxins in any other configuration, including bulk shipments, or for any other end-uses are ~~controlled by~~ not excluded from the scope of ECCN 1C351 by this Note.
3. For the purposes of this entry, only saxitoxin is controlled under ...
4. “Medical products” containing ricin in the form of ... and saxitoxin identified by ... are controlled for CW reasons under 1C351.

Move the following from 1C991 Related Definitions to 1C351 Related Definitions:

Related Definitions: ... (3) For the purpose of this entry, “medical products” are ~~(1)~~(a) pharmaceutical formulations designed for human administration in the treatment of medical conditions; ~~(2)~~(b) prepackaged for distribution as medical products; and ~~(3)~~(c) approved by the Food and Drug Administration to be marketed as medical products. (4) For the purpose of this entry “diagnostic and food testing kits” are specifically developed, packaged and marketed for diagnostic or public health purposes.

(AG omits the CCL definitions)

1C352

Move the following from Related Controls to a License Requirements Note:
All vaccines are excluded from the scope of this entry.

1C354

Move the following from Related Controls to a License Requirements Note:
All vaccines are excluded from the scope of this entry.

1C355

Items:

- a.1.a. ... (CWC 2A(2))
- a.2.a. ... (CWC 2A(2))
- a.2.b. ... (CWC 2A(5))
- a.2.c. ... (CWC 2A(6))
- a.2.d. ... (CWC 2A(10))
- a.2.e. ... (CWC 2A(11))
- a.2.f. ... (CWC 2A(12))
- b.1.a. ... (CWC 3A(1))
- b.1.b. ... (CWC 3A(2))
- b.1.c. ... (CWC 3A(3))
- b.1.d. ... (CWC 3A(4))

b.2.a. ... (CWC 3A(15))

b.2.b. ... (CWC 3A(16))

1C395

Reason for Control: ~~CB~~, CW, AT

~~CB applies to entire entry. The Commerce Country Chart is not designed to determine licensing requirements for items controlled for CB reasons in 1C395. A license is required, for CB reasons, to export or reexport mixtures controlled by 1C395.a and test lots controlled by 1C395.b to States not Party to the CWC (destinations not listed in Supplement No. 2 to part 745 of the EAR).~~

Related Controls: (1) ... (2) ECCN 1C995 controls ... kits .. that contain ... 1C350.d and 1C991 contains such kits that contain 1C351.d (except d.5 or d.6). ...

1C991

Items: ...

- b. "Immunotoxins";
- c. "Medical products" ...
- d. "Medical products" ... except ... controlled ~~for CW reasons~~ under 1C351.d.5 and d.6; and
- e. "Diagnostic and food testing kits" ... except ... controlled ~~for CW reasons~~ under 1C351.d.5 and d.6

1E350

"Technology" ... for facilities designed or intended to produce chemicals controlled by 1C350 (1E350 is probably an empty box because of 1E001 coverage of technology for the production of 1C350 chemicals. If 1E350 is not an empty box, it would be helpful to indicate in what manner it supplements 1E001.)

~~1E351~~

~~"Technology" according to the "General Technology Note" for the disposal of chemicals or microbiological materials controlled by 1C350, 1C351, 1C352, 1C353, or 1C354~~
(AG does not list technology for disposal of chemicals or microbiological materials)

2B350

Related Controls Notes:

1. The controls in this entry do not apply to equipment that is (a) specially designed for use in civil applications ... and (b) inappropriate ... for use in storing, processing, producing or conducting and controlling the flow of chemical warfare agents or any of the chemical weapons precursors controlled by 1C350.
2. The objective of 2B350 should not be defeated by the transfer of any non-controlled item containing one or more controlled components where the controlled component or components are the principal element of the item and can feasibly be removed or used for other purposes.

N.B.: In judging whether the controlled component or components are the principal element, the following factors should be weighed: quantity, value, technological

know-how involved, and other special circumstances.

3. The objective of 2B350 should not be defeated by the transfer of a whole plant, on any scale, which has been designed to produce any CW agent or AG-controlled precursor chemical (see 744.6(a)(3)).

(Suggested Notes 2 and 3 are to conform with Australia Group texts.)

2B351

Toxic gas monitoring systems; and dedicated detectors ~~therefor~~, as follows (see List of Items Controlled)

(2B351 may be an empty box, because of ITAR Category XIV.f.2 controls. If not, it would be helpful to specify more clearly what it controls.)

Move (and revise) second sentence from Related Definitions to two Notes, as follows:

- Notes: 1. ~~The intent of this entry is to control~~ This entry controls ...
 2. ~~, rather than This entry does not control~~ those used for batch mode operation in laboratories.

2B352

Related Controls: ~~N/A~~ (1) Equipment for dissemination, detection, and identification of, and defense against, chemical agents and biological agents are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 2 CFR 121.1 Category XIV(f)). (2) See also 2B225,

(In 2B352.d "capable of" conforms with AG, even though EU uses "designed for")



Timothy Mooney
Office of Exporter Services, Regulatory Policy Division, Bureau of Industry and Security
Department of Commerce
14th St. & Pennsylvania Avenue, NW Room 2705
Washington, DC 20230

ATTN: Notice of Inquiry--CCL

October 24, 2007

Mr. Mooney,

The following is in response to the notice in the July 17th, 2007 (Volume 72, Number 136) Federal Register soliciting comments on the current structure of the Commerce Control List (CCL) in the Export Administration Regulations (EAR).

Use of "de minimis" Levels: Since many chemical substances that are controlled by the CCL are used as components of various chemical based mixtures, it seems logical that all of the chemical substances outlined in the CCL be given specific "de minimis" levels where they are regulated for export. At levels below this minimum, these substances could be self-classified as EAR 99. For instance, in ECCN 1C111, hydroxy-terminated polybutadiene (HTPB) along with several other polymeric substances are listed as being controlled, but no consideration is given for HTPB in a mixture. This is contrary to existing de minimis levels seen in other CCL entries, such as 1C350 (Australia Group-controlled precursor chemicals). Although the regulatory basis for control is different, it seems that the logic of making an exception for mixtures that contain lower levels of controlled chemicals should be applied throughout the entire CCL. We suggest that Commerce more clearly define parameters to exclude certain chemicals in mixtures based upon the difficulty of extractability and high cost associated with procuring controlled chemicals through the purchase of these mixtures, versus the cost of obtaining the pure chemical itself.

Controls for Missile Technology: In addition, BIS should consider only controlling large volumes of the substances controlled by certain ECCN's. For example, 1C011 and 1C111 are controlled for their entries' use as propellants and binders in missiles. High volumes are inherent to the usage of these materials for this purpose and a license exception for smaller volumes of the controlled substances; either as pure materials or parts of a mixture seems appropriate. This would support Commerce's stated goal of eliminating any inadvertent controls on non-critical items.

Use of Chemical Abstract Service (CAS) Numbers: Wherever chemicals are referenced in the CCL, every effort should be made to cite a corresponding Chemical Abstract Service (CAS) number. This is done periodically throughout the CCL but is not consistently implemented. The presence of CAS numbers, the most commonly accepted chemical identification system, would greatly reduce the burden needed for self-classification and license determination of controlled chemicals by members of the affected industries.

Coordination with the US Drug Enforcement Agency (DEA): The DEA controls many substances for export through its Chemical Control Program, as well as their Controlled Substances Schedules. Commerce has done a good job in coordinating their export control with other agencies, particularly the Department of State, however, there appears to be an opportunity to harmonize the CCL with the DEA's export control efforts. One possibility would be to add a list of cross-references in the CCL to the DEA regulations. This would create a more convenient mechanism to allow for ready comparison when making an investigation for compliance.

Thank you for consideration of these and any other responses received. The effort to improve the CCL and allow comments and input from interested members of the public is greatly appreciated.

Regards,

Daniel Shaw
Regulatory Affairs Specialist II
Henkel Corporation

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Regulatory Affairs Specialist II

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October 26, 2007

U.S. Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
Office of Exporter Services
14th St. and Constitution Ave. NW, Room 2705
Washington, DC 20230

RE: Request for Public Comments on a Systematic Review of the Commerce Control List. (72 Fed. Reg., No. 136, July 17, 2007, p. 39052)

Dear Sir or Madam:

Cadence Design Systems, Inc. welcomes the opportunity to comment on this Notice of Enquiry. Clarity and consistency in the CCL is essential to ensure that items intended for export restriction by BIS are properly understood to be controlled by the exporting community.

Thank you for your attention to the following comments:

1. CCL Layout

A) Using the ASCII format for online accessing of the CCL (and the EAR in general) is preferred since the dual-column layout shown in the .PDF version is difficult to read online. Unfortunately by virtue of the technology, the formatting created to make the entries easier to read is lost in the ASCII version. We recommend the CCL and EAR be changed to a single column format so that they can be more-easily read online using font-rich .PDF format.

B) Many CCL entries contain a combination of line items and notes that specify items both controlled or not controlled, entered seemingly in random order. Combining the exceptions, exemptions and "not controlled" entries together towards the front of each ECCN entry (with links to what ECCN would control the excepted goods or technology), would streamline the understanding of the entries.

C) Create a stand-alone section for Encryption. Combine the CCL entries along with ENC License Exception information, processes for submitting notifications or records, etc. into one section. And a flowchart diagram or bullet-point action list would be extremely useful in translating the multiple pages of instructions into visual form. Today there are too many separate areas one needs to check to ensure you've captured all of the detail, with too great a chance of missing a requirement or



exemption to this regulation. For instance to understand what is controlled or exempted by ECCN 5D002, the CCL entry advises you to reference country chart columns NS (1) and AT (1) in EAR §738Spir.; then §742.15(b)(1) and (b)(2); also §742 supplements 4, 5 and 6; §740.13(e) as well as §734. EAR §742 refers you to §740 Supplements 1 and 3 as well as §732.5. The §742 supplements advise you to reference §740.17(B) (3) and (b) (2) as well as §772. Don't forget to review §748 and §750 for information on submission and registration. I rest my case.

2. Anti-Terrorism (AT) Controls

Today as states have either been eliminated from the terrorist list for which AT controls imposed restrictions, or have been placed under effective embargo, the AT entries are superfluous for control purposes. Other than a few carve-outs to selected *Entities List* destinations, export restrictions placed on AT level classifications are identical to those imposed on EAR99 classified items. This unilateral US list should be eliminated. Doing so will bring focus and clarity to the regulations without loosening current restrictions.

3. Involve Stakeholders

I speak from experience. Working with BIS in the early 2000's, the EDA industry was able to update the decade-old CCL language, ensuring that the applicable entries contain terminology that industry users understand. We did not change restriction levels; rather working together we brought clarity to the language, updating the entry to reflect the significant changes and advancements in the industry in the period since the original CCL language was created. Working together we created a CCL entry that users trying to classify their EDA products find relevant to their environment, thus they can classify their products without fear of misinterpretation.

BIS should reach out to each industry affected by the CCL, working to ensure that the intent of each CCL entry is clearly defined in updated technical terms. In this way, a deep scrub of the CCL can be performed, ensuring that the intended items falling under a CCL are clearly identified, and discrepancies eliminated due to imprecise language.

Pointing to one such discrepancy, in 3A001 and 3A991 both sets of parameters listed below can catch the same product, as the technical parameters cited are on separate and ultimately contradictory scales;

3A001

A.5.b Digital to analog converters with a resolution of 12 bit or more, with "settling time" of more than 10 ns.

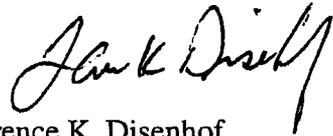
Bureau of Industry and Security
October 26, 2007
Page 3

3A991

- c. Analog to digital converters having any of the following:
- c.2 A resolution of 12 bit with an output rate greater than 5 million words per second;
- c.3 A resolution of more than 12 bit but equal to or less than 14 bit with an output rate greater than 500 thousand words per second,...

Again, I thank you for the opportunity to raise these issues.

Sincerely,



Laurence K. Disenhof
Group Director, Export Compliance
Cadence Design Systems, Inc.

Novellus Systems, Inc.
4000 North First Street
San Jose, CA 95134
TEL: (408) 943-9700
FAX: (408) 943-3422

Date: October 29, 2007



Mr. Timothy Mooney
Office of Exporter Services
Regulatory Policy Division
Bureau of Industry and Security
Department of Commerce
14th St. & Pennsylvania Avenue, NW
Room 2705,
Washington DC 20230

Attn: Notice of Inquiry – CCL

Re: Request for Public Comments on a Systematic Review of the Commerce Control List
72 Fed. Reg. 39052 (July 17, 2007) and 72 Fed. Reg. 51213 (Sept. 6, 2007)
Submitted via Email and First Class Mail

Dear Mr. Mooney,

Novellus Systems, Inc. appreciates this opportunity to provide comment to your office on Commerce Control List (CCL) changes, and welcomes a systematic review of the CCL.

Semiconductor Industry and Recommendation Scope

The Semiconductor industry is dynamic, with new technology advances every two years on average. Because of this, the ability to manage effective export control is challenging due to both technical as well as political changes. We believe our recommendations will provide appropriate level of controls, reduce the number of licenses, and support US economic interests, and provide visibility to exports.

The recommendation allows a new US License Exception to support 2B230 and 2B350 exports, which aligns the US Export Administration Regulation controls with Wassenaar. ECCNs in Category 3B and 3C will not align with Wassenaar completely, as the proposed US license exception will allow exports to Country Group B countries, while Wassenaar requires a license for some sub-category items.

Our recommendation follows several discussions with colleagues, engineers, and suppliers who believe the key areas to control are the lithography and technical data and software for "Production" and/or "Development" of the tools as well as the functioning, packaged chips themselves.

Recommendation Strategy and Overview

We don't view use of an existing License Exception such as "CIV" as a solution because significant regulatory modification is required, including expansion of the country list to include Country Group B locations such as Taiwan, Singapore, Malaysia, Thailand and India. As a solution CIV will not provide any relief to Category 3B related ECCNs 2B230 and 2B350, or visibility to semiconductor-related activity specifically.

Rather than change the 3B ECCN list, we believe a better approach (from a license exception view) would provide a method for government visibility while relaxing controls for the Semiconductor industry, through implementation of a new license exception, "SEM". This strategy minimizes regulatory change impact, and facilitates relaxation of Category 3B related spare parts, as well as provides our government agencies visibility to semiconductor-related activity of ECCNs which previously required a US export license.

Our recommendation includes a four prong approach:

- 1: Creation of a new License Exception "SEM" to manage Semiconductor and related equipment exports for Category 3B, 2B230, and 2B350
2. Decontrol Category 3C002, 3C003 and 3C004 wafers when disabled or non-functioning
3. New definition and re-instatement of Interpretation No. 3:
 - (a) "Specially Designed for" – define as proprietary design, used specifically with/for the ECCN it relates to, when the item is not controlled on its own merit.
 - (b) Reinstate 1999 Interpretation No. 3 for "Wire and Cable"
4. Participation in a new collaborative forum where semiconductor industry and government representatives can review and align technology and regulatory developments and impacts on a regularly scheduled basis.

Use of "SEM" will significantly reduce the license volume for the involved ECCNs, and aligns Category 2B230 and 2B350 controls with Wassenaar. These changes allow some relaxation for equipment and related spares specific to the semiconductor industries - which are not the source of control concerns. "EAR99" designation for non-functioning materials in Category 3C002, 3C003, 3C004 aligns with 3C001 controls.

To illustrate use of SEM and modification of the "List of Items Controlled" for the related ECCNs, I've included examples of the involved ECCNs. Regulatory language changes are shown below in **BLUE bold type** for ease of your review.

3B001 and 3B002 ECCN Change Recommendation

B. TEST, INSPECTION AND PRODUCTION EQUIPMENT

3B001 Equipment for the manufacturing of semiconductor devices or materials, as follows (see List of Items Controlled), and specially designed components and accessories therefor.

License Requirements

Reason for Control: NS, AT

Control(s) Country Chart

NS applies to entire entry NS Column 2

AT applies to entire entry AT Column 1

License Requirement Notes: See §743.1 of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions

LVS: \$500

GBS: N/A

SEM: "Yes"

CIV: "Yes"

2B230 ECCN Change Recommendation

2B230 "Pressure transducers" capable of measuring absolute pressures at any point in the range 0 to 13 kPa and having both of the following characteristics (see List of Items Controlled).

License Requirements

Reason for Control: NP, AT

Control(s) Country Chart

NP applies to entire entry NP Column 1

AT applies to entire entry AT Column 1

License Exceptions

LVS: N/A

GBS: N/A

SEM: "Yes"

CIV: "Yes"

List of Items Controlled

Unit: \$ value

Related Controls:

The controls in this entry do not apply when a 2B230 item is used on or in Category 3B equipment. See ECCNs 2E001 ("development"), 2E002 ("production"), and 2E201 ("use") for technology for items controlled under this entry.

*****Regulations continue no changes elsewhere*****

2B350 ECCN Change Recommendation

2B350 Chemical manufacturing facilities and equipment, except valves controlled by 2A226 or 2A292, as follows (see List of Items Controlled).

License Requirements

Reason for Control: CB, AT

Control(s) Country Chart

CB applies to entire entry CB Column 2

AT applies to entire entry AT Column 1

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: Equipment in number

Related Controls: The controls in this entry do not apply when any 2B350 item is used on Category 3B equipment, or equipment that is: ...

*****Regulations continue no changes elsewhere*****

3C ECCN Change Recommendation

Allow EAR99 eligibility for ECCN's 3C002, 3C003, and 3C004 when wafers are partially processed, non-functioning, or for analysis purposes. This can be accomplished easily by including language under "List of Items Controlled" (as found for ECCN 3C001):

List of Items Controlled

Unit: \$ value

Related Controls: "This entry does not control equipment or material whose functionality has been unalterably disabled are not controlled."

Related Definitions: III/V compounds are polycrystalline or binary or complex monocrystalline products consisting ...

We appreciate the ability to provide comment and recommendation for such an important effort. We look forward to actively participating in future related efforts. Please contact me for any questions you may have at 408-570-6223.

Sincerely yours,

Nicole Malcolm
Novellus Systems, Inc.
Sr. Manager, Trade Compliance



UNIVERSITY of NEW HAMPSHIRE

October 30, 2007

Timothy Mooney
Office of Exporter Services
Regulatory Policy Division
Bureau of Industry and Security
Department of Commerce
14th St. & Pennsylvania Avenue, NW, Room 2705
Washington, DC. 20230

ATTN: Notice of Inquiry—CCL

Dear Mr. Mooney:

On behalf of the University of New Hampshire, I am pleased to respond to the Bureau of Industry and Security (BIS) *Request for Public Comments on a Systematic Review of the Commerce Control List*. This public participation serves to demonstrate the nature and preponderance of sentiment among the exporting community and, as such, is an essential, complementary component to the work of the BIS Deemed Export Advisory Committee (DEAC).

The University of New Hampshire is committed to complying fully and completely with all U.S. export control laws and regulations, including those implemented through the Export Administration Regulations (EAR). Compliance with these necessary controls, however, has to be balanced against an educational institution's need to preserve a free and open exchange of ideas. Controls, like those imposed by the EAR, can certainly minimize the risk posed by malevolent uses of technology but will likely also have a deleterious effect on the nation's strategic technical advantage, because they fail to recognize the roles that open dialogue and collaboration play in scientific discovery.

The overall structure of the Commerce Control List (CCL) is too complex, and the listing of items is exhaustive to the point of being overwhelming. It is our experience that researchers using the CCL to determine an Export Control Classification Number (ECCN) are often frustrated by the process; they complain that the threshold for control is too low and that the technologies in question are readily available in foreign countries. They come away from the exercise regarding compliance as not only burdensome but unlikely to enhance national security. In order to serve the purpose of national security in a relevant

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manner, the CCL must be simplified, updated frequently, and focused on technologies that are significant both in terms of posing real security risks and only being available from either domestic or controlled foreign sources. An aggressive simplification of the CCL can serve to enhance U.S. national security by focusing resources on vital technologies and developing effective controls against those who look to procure them in violation of our laws.

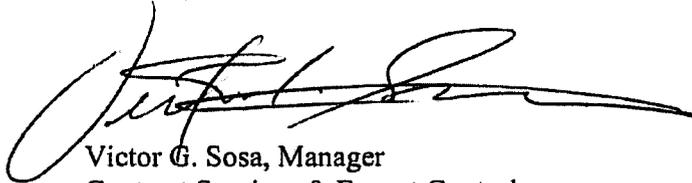
Deemed exports are of particular concern to the university community and the CCL and/or the EAR should be modified to ensure that knowledge transfer through the utilization of research-related tools and techniques is included under the fundamental research exclusion (FRE). State of the art equipment, materials, and know-how are often required to conduct fundamental research in a university setting, and knowledge transfers required for the conduct of research are not so separable from those required for publishable outcomes as the EAR currently implies. Controlling *any* information that can be realized from access to equipment that is available for sale to the public is unrealistic; research equipment can be readily purchased and used in laboratories in countries that don't follow our deemed export rules. Hence, we suggest deemed export controls should not apply to the use of equipment in fundamental research unless that use requires access to controlled information not made available with the sale of the equipment.

The CCL is flawed, ultimately, in the same manner that our national approach to controlling sensitive technology is flawed, generally. Rather than accepting that there are limits to what can be effectively controlled, we attempt to control everything that could *potentially* be used against us. As a consequence of this approach, we expend considerable time and resources managing technologies of little or no consequence – time and resources that could be used to build genuinely effective controls around especially critical technologies.

Fundamental research whose conduct raises national security concerns should be attended to in accordance with government policy under National Security Decision Directive (NSDD)-189 which provides universities latitude to engage in unrestricted information sharing while recognizing the government's right to establish strict controls based on legitimate national security concerns and an appropriately high standard of process, through classification rather than export controls.

We appreciate the opportunity to provide input and applaud the decision to improve compliance through a review of the CCL.

Sincerely,

A handwritten signature in black ink, appearing to read "Victor G. Sosa", with a long horizontal flourish extending to the right.

Victor G. Sosa, Manager
Contract Services & Export Controls



August 1, 2007

Sent via fax and email

Mr. Bernie Kritzer, Director
Office of National Security and Technology Transfer Controls
14th Street and Constitution Avenue, NW
U.S. Department of Commerce
Washington, D.C. 20230

Re: AeA Recommendations for Encryption Control Reform

Dear Bernie:

As BIS undertakes a formal review of the controls on encryption as well as its attendant technology, and also the Commerce Control List (CCL), as announced in the July 17, 2007 Federal Register Notice, AeA would like to take this opportunity to provide our specific recommendations in the area of encryption.

This topic is of great importance to many of the 2500 AeA member companies, especially our small and medium sized firms who are more severely impacted by complex and expensive internal control programs necessary to comply with the Export Administration Regulations.

After reviewing our comments attached to this letter, please feel free to contact me if you have any questions or if you would like additional detail from AeA.

You can reach me at: (202) 682 – 4433 or via e-mail at: Ken_Montgomery@aeanet.org.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ken Montgomery', is written over a light blue horizontal line.

Ken Montgomery
Director, International Trade Regulation

Cc: Ms. Catherine (Randy) Pratt



Recommendations for Encryption Control Reform

1. Eliminate reporting requirements.
2. Eliminate review requirements for mass market and ENC-unrestricted products.
3. Enact classification and control reforms, including elimination of controls on publicly accessible software and technology and on Open Cryptographic Interfaces.

AeA endorses the technical recommendations made by the Department of Commerce's Regulation and Procedures Technical Advisory Committee on Sept. 26, 2006, in particular as it identifies priority areas for specific, immediate action.

With this in mind, AeA makes the following general recommendations. **A list of detailed encryption recommendations is included as Attachment 1.**

Eliminate Reporting Requirements

Extensive semi-annual reporting continues to be required under EAR Section 740.17 (e) for cryptographic items shipped under License Exception ENC to all destinations except Canada.

This is a unilateral requirement, in the sense that no other member of the Wassenaar control regime demands it. From the business perspective, it is costly and time consuming to collect and report the data. However, the most compelling reason for eliminating this reporting requirement is risk of inadvertent error: under current penalty levels, mistakes made in such reporting can in principle be subject to up to \$50,000 each in civil penalties.

The burden for complying with these reporting requirements falls disproportionately on small, specialized exporters. Cryptographic functions are now found in a wide variety of software applications that would otherwise have little or no export controls. Many U.S. domestic producers of such products are often completely unaware of complex export control requirements as their products begin being shipped or downloaded across national borders. Often past violations show up during due diligence reviews as small companies are acquired by larger firms.

Initially, these requirements were intended to provide the National Security Agency (NSA) and the rest of the intelligence community with a picture of cross-national demand for cryptographic products and product flows. However, after a decade of such reporting,

this purpose has long since become redundant, and the data obtained is not always verifiable.

As the use of cryptographic functions has proliferated in the last ten years, so have products subject to reporting requirements. It is not clear whether at current levels NSA can use or even effectively review the mass of data that is being fed to it as a result of this outdated requirement.

AeA feels that the cost and risk to exporters of continuing these reporting requirements now far outweighs any theoretical intelligence benefits. We further urge that these reporting requirements be **eliminated**. Past attempts to create complex exception categories have only compounded the cost and risk of reporting.

Eliminate Review Requirements for Mass Market and ENC-Unrestricted Products

Most current encryption software, hardware, and components, as well as products including cryptographic functions, are subject to detailed review requirements in order to qualify for either mass-market status or for shipment under license exception ENC. AeA members feel that the utility of this requirement has largely eroded over time, and should be eliminated.

With all other parts of the U.S. export control system, including munitions control, exporters are permitted to self classify. Classification decisions by exporters are subject to review and verification at any time. Cryptographic products are unique in that most must be reviewed by U.S. Government agencies prior to becoming eligible for export.

This review requirement is unique among Wassenaar allies, which control the same list of products and which have substantial numbers of indigenous producers. As is the case with reporting requirements, this mandatory classification procedure may have had some justification when initially imposed ten years ago. However, since then it has become a mechanical requirement which has taxed resources not only among companies, but among the BIS and NSA staff that must process thousands of reviews of commercial products each year.

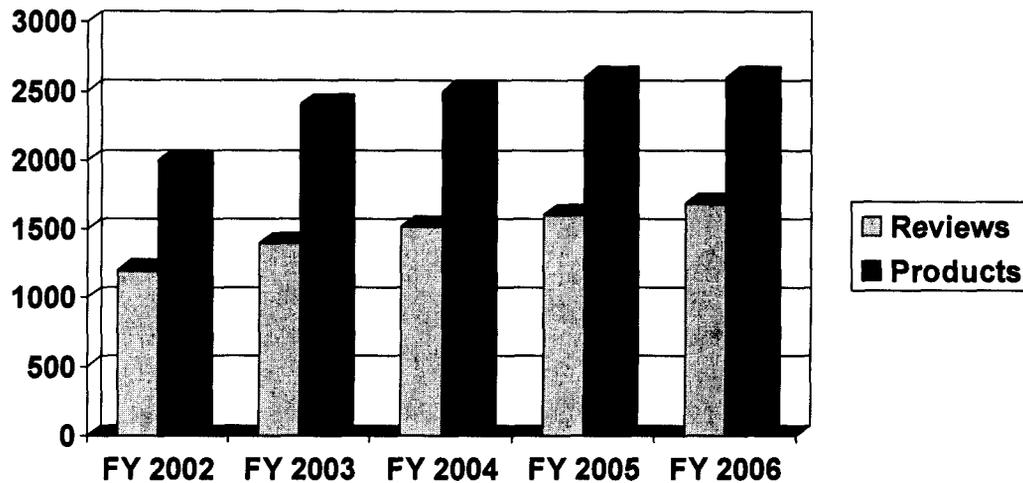
As Figure 1 below demonstrates, the number of reviews processed by BIS as well as the number of products affected by such reviews has increased substantially over the past five fiscal years. During this period reviews have increased by over 40%, and now constitute over a third of the total classifications issued by BIS for **all** dual-use products controlled by the Department of Commerce.

These increases have continued into the current ('07) fiscal year, and have resulted in a dramatic increase in backlogs for BIS and NSA reviews, consuming resources that are already tight. This backlog in turn translates into delays in issuing these mandatory classifications, and needless disruption in product introduction and shipment. In addition

the additional processing time required by BIS and NSA constitutes diversion of government resources from higher priority work.

Figure 1

BIS Encryption Reviews Fiscal Years 2002-2006



Source: BIS Annual Reports

Review requirements are repetitive, being required of essentially the same encryption function applied in different application software packages. As “different” has historically been defined as any change in code or functionality, software variants that are fundamentally similar but which have undergone improvements or modifications even in capabilities unrelated to encryption are required to undergo the same onerous review process.

Review requirements are also affecting an ever widening range of products, as basic encryption now appears in a very wide range of applications, including medical devices, operating systems, word processors and tape storage. Almost all modern software has encryption functions, virtually all of them of the same types that have been reviewed before in thousands of other products.

Many of the serious burdens that the current approach to review requirements have created are a direct result of the sea change that has occurred in the need for and use of encryption in commercial applications in the last decade. In order to adapt the system to

contemporary technological and market conditions, AeA urges that the review requirement be eliminated.

Enact Classification and Specific Control Reforms

a. Eliminate Controls on Publicly Accessible Software and Technology

Encryption is also unique in that items in the public domain, or that are generally available to the public, remain subject to the EAR, meaning that they retain controls to some destinations. Specifically, notifications requirements and controls remain on embargoed destinations.

These controls are again a legacy of encryption's pre-1997 history as a munitions item. At that time, steps were taken to prevent public release of cryptographic code on the grounds of their unique sensitivity. However, these conditions no longer hold, not only because of the great increase in the amount of encryption software available commercially, but also because of the large amount made publicly accessible subject to minimal controls since 1996.

While the EAR (reflecting original policy pronouncements), states that the reason for this unique treatment of publicly accessible software is that the national security concern is centered on what the code does, rather than what it says, this rationale would apply to many categories of controlled software. However, encryption is the unique category where such special controls apply.

The disruptive effect of these controls is greatly disproportionate to any national security value that they may now provide. Companies now actively pursue an "open source" strategy, in which they intentionally make their software publicly accessible via open source licenses. This is done so that their products may be quickly accepted by developer and other target groups. To the extent that cryptographic functions are an intrinsic feature of their products (e.g., operating systems), even residual controls on these open source uncontrollable products have disproportionate and significant competitive effects.

In order to bring controls on cryptographic software and technology in line with other controls, AeA recommends that the exemption to their removal from EAR jurisdiction be eliminated.

b. Grant Mass Market Treatment to Components and Related Software in Mass Market Products

Mass market treatment should be accorded to commercial components with cryptographic functionality (including related firmware/software/technology) that are designed and produced for use mass market products. If a PC, cell phone or other widely available product enjoys mass market status under the regulations, the components and related firmware/software/technology designed for such products should not be treated

differently. Such treatment is highly important and relevant because components are increasingly incorporating cryptographic functions to meet customer demands for security and to protect critical information infrastructure in general.

Semiconductors and other widely available commercial components of mass market products are inherently non-military and designed and intended to serve as the basic building blocks of the global information infrastructure. For example, the United States and the Wassenaar Arrangement have recognized the non-threatening nature of commercial processor components, removing them from civilian end use controls. Components are produced in high volumes for distribution all over the world. While not sold over the counter akin to the mass market products into which they are incorporated, commercial components are nevertheless generally available from worldwide distributors.

The civilian nature of these items is enhanced by the fact that many components comply with ISO, IEEE, FIPS and PKCS standards, which only support publicly available civilian end-use cryptographic algorithms. Typical applications for products containing such components include home/office networking and home/car access control.

Mass market treatment for components for products with mass market status was previously considered by the U.S. Government under the "retail" classification during the encryption regulation reform (1999-2002). Unfortunately, upon the publication of the final rule that revised the vernacular to "mass market," the ability to apply mass market treatment for components used in mass market products was not included.

Meanwhile, there is a significant un-level playing field with regard to the international treatment of components in mass market products. A number of countries treat these items as 5X992, while the U.S. treats them as 5X002. Such disparate treatment is contrary to the multilateral controls intended by all countries seeking similar export control goals, as well as how other countries apply the Mass Market Crypto Note for commercial components used in mass market items.

AeA therefore respectfully requests that the U.S. Government establish a policy of allowing mass market treatment for components and related firmware/software used in mass market products. This is consistent with the components-related policy we thought had been agreed by the U.S. Government. The policy should include:

1. Allowing self-classification under 5X992 of all mass market "items" without any one time review, including technology and software/firmware for mass market products.
2. Clarifying the scope of the mass market Cryptography Note and ensuring that its scope covers commercial semiconductors/integrated circuits and related software, firmware and technology.

c. *Eliminate controls on Open Cryptographic Interface ("OCI")*

The OCI restriction is a unilateral U.S. restriction not set forth in the Wassenaar Arrangement International List or other restrictions. The OCI restriction does not apply to open source products, of which there are now millions around the world. Open Source software has OCI by its nature and can be exported under License Exception TSU worldwide (except for AT only controlled destinations) with only a notification. Thus, the OCI restriction creates a competitive disadvantage for U.S. companies with proprietary software.

d. *Eliminate Controls on Open Crypto Aware*

Products that simply call on encryption but do not contain native encrypt coding should be exempt from notification and review. Requiring notification on handshake or calls to cryptography, referred to as "Crypto Aware" is burdensome since microwaves, hotel Mini bars, TVs, videogames, and other common household articles and commercial wireless communication devices can have these functionalities in today's domestic and export markets.

e. *Eliminate Controls on Dormant Encryption*

Exporters are currently required to complete a one time technical review for dormant encryption items prior to export under 5X992. Under the EAR, "dormant cryptography" refers to items which, at the time of export, contain embedded cryptographic parts or components which are rendered functionally inert or inactive by design. This dormant cryptography must be "activated" or "enabled" (typically using special components or software purchased separately) by the manufacturer before it can be used to encrypt data. AeA believes that dormant cryptography controls should be eliminated where cryptographic functionality in products like semiconductors is rendered inactive by design and can only be activated via proprietary software or other mechanisms, which are otherwise variously controlled under ECCN's such as 5X992 and 5X002.

f. *Expand the Coverage of EAR Part 740.17 to Cover Third Party Contractors*

The existing license exceptions set forth in sections 740.17(a)(1) and 740.17(b)(1) should be expanded to include any third party contractors used by the parent company or their foreign subsidiary as long as the specific conditions set forth under the license exception are met. Because the current exception allows technology transfers to individuals/persons who are "contractors" or "interns", as those terms are currently defined in the EAR, certain legal entities/juridical persons should be afforded the same treatment under the regulations, subject to the license exception conditions of Part 740.17, i.e., the contractor is only permitted to avail itself of the technology for internal purposes, and hence cannot share the technology with another party, unless such a party is afforded the same status. Further, the contractor must only use the technology for the sole benefit of the U.S. company and its foreign subsidiaries and in compliance with the terms and conditions imposed on the contractor by such entities. Finally, any product developed by such entities and its contractor using the transferred technology would

remain subject to the encryption regulations.

Attachment 1: Specific Priority Recommendations for Streamlining Encryption Controls

Note: Recommendations taken from the September 29, 2006, RPTAC letter are in italics.

Reporting Requirements

1. Eliminate EAR 740.17(e) reporting requirements.

Review Requirements

1. Eliminate review requirements for mass-market and ENC-unrestricted products, including specially-designed components.

Classification and Control Issues

1. Eliminate controls (i.e. EAR jurisdiction) over publicly available encryption software and technology.
2. Narrow the U.S. definition of mass-market to conform to Wassenaar Cryptography Note 3.
3. Classify short-range wireless products and secure network management products as 5X992.
4. Eliminate review of electronic transfer of information that is copyright protected under the current Note 3 for Digital Rights Management.
5. Eliminate review for bundling of products that have been previously classified. This would apply to products bundled for marketing purposes, rather than for those that have undergone a fundamental change.
6. Eliminate review for products that contain decryption functions only.
7. Eliminate the notification requirement for Crypto-Aware products/products that call on encryption including those that have no Crypto code.
8. Eliminate requirements to notify BIS when exporting beta test software under License Exception TMP.
9. Dormant cryptography controls should be eliminated where cryptographic functionality in products like semiconductors is rendered inactive by design and can only be activated via proprietary software or other mechanisms.
10. The existing license exceptions set forth in sections 740.17(a)(1) and 740.17(b)(1) should be expanded to include any third party contractors used by the parent company or their foreign subsidiary as long as the specific conditions set forth under the license exception are met.
11. *Eliminate vestiges of the "virtual ITAR" provisions included in the 1996 controls (e.g., restrictions on technical assistance, de minimis eligibility, foreign availability ineligibility, etc.).*

- 12. Eliminate restrictions on open cryptographic interfaces in proprietary encryption products.*
- 13. Treat specially designated components and software for mass-market items as mass-market 5X992 items rather than ENC-restricted.*
- 14. Classify ENC-unrestricted 740.(b)(3) eligible hardware and software under ECCN's 5A992 and 5D992.*
- 15. Eliminate ECCN 4A001.b and 4D003.c as redundant and confusing.*



October 31, 2007

Sent via email

U.S. Department of Commerce
Bureau of Industry and Security
Regulatory Policy Division
Office of Exporter Services
14th St. and Constitution Ave. NW, Room 2705
Washington, DC 20230

RE: Request for Public Comments on a Systematic Review of the Commerce Control List. (72 Fed. Reg., No. 136, July 17, 2007, p. 39052)

Dear Sir or Madam:

AeA (formerly the American Electronics Association) welcomes the opportunity to comment on this Notice of Enquiry. As the means for identifying the technological structure of US controls, a concise, easy to use CCL is critical to the operation of company internal control programs. In addition, the content of the list, in terms of its scope and coverage, must be up to date and meet accepted norms of controllability, clarity and potential for meeting specific control objectives.

The following comments will address these dimensions, focusing on products and technologies that have particular impact on AeA members.

1. CCL Layout

Due to the need for accurate and up to date technical descriptions, an increasing proportion of export specialists now refer to the CCL in its online version. The dual-columned layout derived from the print version makes reference to the online data onerous. AeA members strongly recommend that the online version of the CCL (as the EAR in general) be changed to a single column format.

2. Anti-Terrorism (AT) Controls

The technical thresholds embodied in AT controls were, in the early 1990's, adopted from control levels formerly employed by COCOM. For many years they did serve the

purpose of providing an alternative control structure for certain countries designated as terrorist or state sponsors of terrorism. However, over the years these states have either been eliminated from the terrorist list, or have been effectively placed under embargo. As a result, AT entries serve no useful purpose.

In those few areas where AT controls may apply, they are discriminatory, as they are based on technological relationships which no longer exist or encompass all products in a given category. A case in point is computers: the control threshold is so low that all systems in production are caught.

AT entries in the CCL have long since outlived their usefulness, and should not be used as an alternative set of technological thresholds for either current or proposed controls. AeA members urge that they be eliminated from the list.

Category 3 - Electronics

Wireless Telephony

Category 3 should be amended with a new note at the front of the entire section that exempts commercial wireless telephony modules, components, and peripherals from control.

The rationale for such a request is that the world is moving rapidly towards very broad bandwidth wireless networks running at 2.5G, 3G and even 4G in the next 5 years. At the same time, commercially licensed wireless bands are moving well above the 43.5 GHz upper limit expressed in 3A001b.4, extending all the way into short-range 60, 70, and even 90 GHz private networks. The American made chips, amplifiers, synthesizers, PCBs, and transceivers to enable and lead this movement need to be freely exportable. The class is inefficiently limited by the 43.5 GHz controls.

Further, as semiconductor devices continue to scale down and chip manufacturers attempt to add more functionality into less silicon area, a larger number of circuits are being included into a single piece of silicon. To that end, BIS should amend the CCL by providing exporters with greater clarification to the classification of this integrated silicon versus stand-alone circuits.

As an example, one piece of integrated silicon may contain a number of circuits which could be classified as 3A001A5B, 3A991C2 and 3A991C3, if they were stand alone devices. However when such analog-to-digital and digital-to-analog devices, as classified in the above-referenced ECCNs, are incorporated into an integrated silicon solution, the end-user does not have access to both their inputs and outputs of the circuits, within the integrated silicon. This lack of access to both the inputs and outputs shifts such converters from under the above mentioned ECCNs. Therefore, AeA recommends BIS provide a Technical Note in Category 3 which expressly clarifies for the exporter that when accomplishing a classification of items subject to Category 3, Category 3 items are classified according to the classification of the integrated silicon, and not according

the potentially numerous circuits with varying performance parameters which may be classified as 3A001 and 3A991 if they were stand-alone devices. In addition, AeA respectfully requests that BIS add a Technical Note within Category 3 which outlines which technical parameters/features must be externally accessible in order to be classified within the respective ECCNs.

Category 4- Computers

AeA members call for a fundamental refocus of Category 4 controls with particular focus on 4A003 and 4E001.

Controls on general-purpose scalar computers have their roots in industrial-base controls that developed during the Cold War. However, after more than 60 years, general purpose computing has become a fundamentally civilian technology, and should finally be treated as such in the context of multilateral export controls.

While great progress has been made in revising the thresholds upward to accommodate increases in technology, target countries like the PRC that are not the subject of total embargo are becoming major players in computer development and are achieving performance levels far in advance of the current .75 WT threshold.

While the performance of individual machines may be subject to debate, China consistently places ten or more systems into the Top 500 computers worldwide, many using decontrolled switches and off the shelf microprocessors that can now be shipped to non-military end-users in China regardless of performance level. An example is the Dawning 4000A, which has been rated at over 10 teraflops and is built from AMD microprocessors linked with a Myrinet switch. In addition, companies such as Lenovo and Langchou have or are in the process of developing high performance systems - some in collaboration with non-US computer companies.

In terms of hardware, AeA members support an increase of the 4A003 control threshold to 3 WT, with eventual elimination of controls on scalar systems. 3 WT is the level identified on the 2006 Militarily Critical Technologies List as "critical."

We would note that in addition to system controls at 3 WT, substantial existing controls on computer equipment would also continue to apply, including:

- Special purpose products caught in 4A categories other than 4A003;
- Systems incorporated into other controlled items;
- ITAR-controlled systems,
- Systems above .5 WT destined for military end-use in China, and
- All systems destined for proliferation end-use.

In terms of technology, the current multi-tiered system found in 4E001 is excessive in relation to even existing hardware limits, and serves as a useless deterrent to collaborative development efforts around the world. As technology levels such as the .04 and .1 WT are tied to hardware, they are difficult to apply to collaborative research. Known hardware availability already indicates that the know-how required to build much larger systems already exists in the PRC.

AeA strongly urges that this restrictive, complex system be abandoned in favor of a single .5 WT threshold for development and production technology, which would be consistent with military end-use controls recently imposed on the PRC.

Category 5 - Information Security

AeA has examined cryptographic controls in detail, and has developed a list of both conceptual recommendations and specific changes in parameters. These were included in a letter to BIS on August 1, 2007. A copy of that letter is attached to this submission. AeA proposes that BIS take immediate action on those changes that do not require Wassenaar approval.

AeA members appreciate the opportunity to provide this initial input into the CCL review process, and stand ready to work with BIS in its ongoing effort to reform the control list.

Sincerely,



Ken Montgomery
Director, International Trade Regulation



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October 31, 2007

The Honorable Carlos Gutierrez
Secretary of Commerce
Department of Commerce
Fourteenth Street and Constitution Ave, NW
Washington, DC 20230

Dear Secretary Gutierrez,

Thank you for your leadership at the Department of Commerce and work to keep our country's businesses globally competitive in a rapidly evolving economy. The Department's Bureau of Industry Security (BIS) recently announced a request for comments regarding the Commerce Control List (CCL) in the Export Administration Regulations (EAR). TechNet appreciates the opportunity to provide input for its member companies.

Historically, encryption has been viewed as a critical military application. However, with the advent of commercial networking, many technologies and software including encryption are publicly available around the world. Encryption has evolved to be a feature in even the most generic commercial and personal software, and is increasingly a feature in commercial hardware.

TechNet members recognize that the nation's export control objectives play a critical role in safeguarding U.S. national security, preventing acts of terrorism and furthering other important national interests. However, shortcomings in the current system can adversely impact U.S. companies' ability to compete in global markets. As currently implemented, the controls are complex, expensive and disproportionately burden small and medium sized businesses. TechNet offers the following specific comments which will improve the export control system.

1. Reform and streamline "one time technical review" requirements

In the information technology industry, principal export controls apply to software and hardware products that use encryption for "information security" purposes. Often such products are classified as a controlled item as part of the Commerce Control List. The products may not be exported to any country except Canada without an export license from BIS unless the product's software has been "qualified" for export under an export license exemption (ENC).

To qualify a product for export without ENC, the exporter must file a "one time request for technical review" with BIS and the National Security Agency. Following this request there is a thirty day waiting period before the software or hardware product in question is approved for export. Difficulties arise when any functionality to the encryption is changed. The company must then go through this process again. Also, this requirement applies to a company that uses a third party component embedded in a software package

or hardware product - even if the company that produced the software or hardware has completed the technical review process for the product. TechNet proposes to:

- A) Allow export of "standard" commercial software and hardware with encryption functionality under ENC, without "one time technical review."

Under this proposal software or hardware would be classified as "standard," if it derives its encryption functionality solely from publicly available encryption algorithms. This product would not be subject to the thirty day waiting period or the "one time technical review."

- B) Allow export of commercial software and hardware that derives its encryption functionality from third party products without "one time technical review."

Under this proposal if a product has already undergone a "one time technical review" the exporter would not need to complete this process again.

2. Remove Open Cryptographic Interface (OCI) Controls

The existing US control requirement for products with OCI capability is unilateral in nature and applies to proprietary vs. open source products. This requirement should be eliminated for two reasons. First, the unilateral aspect of the control places US companies at a competitive disadvantage, given the broad capability of non-US companies to produce OCI-based products without similar export control constraint. Second, the OCI control on proprietary products is ineffective and discriminatory, since open-source products with encryption capability are widely available in high volumes throughout the world.

3. Streamlining administrative process with respect to acquired companies

An additional issue that we would like to see BIS address deals with the acquisition of small and medium sized companies. Sometimes a company is confronted with a situation where the company it has acquired has not met its legal export compliance obligations and products with encryption capabilities have been exported without proper authorization. The current process to resolve this dilemma takes 90-120 days and the acquiring company is often contractually obligated to furnish their foreign customers with support and maintenance.

BIS could address this situation by streamlining the administrative process to resume service and support. Specifically, TechNet proposes that either an acquired or acquiring company be allowed to take the following steps:

- A) The software or hardware company would voluntarily file and disclose prior violations
- B) The software or hardware company would request a "one time technical review" to qualify the product under ENC
- C) The software or hardware company would notify BIS that it intends to provide support for previously exported products and declares that its customers are not located in embargoed or restricted countries. The company would then wait a predetermined amount of time at the end of which the review must be completed. If the company has not been notified of outstanding issues or concerns after a set amount of time, then they could provide service.



Thank you for your consideration and for requesting input from the companies that are impacted by these regulations. Please do not hesitate to contact me if you have any questions or if I may be of any assistance to you in the future.

Sincerely,

A handwritten signature in black ink that reads "Lezlee Westine". The signature is written in a cursive, flowing style.

Lezlee Westine
President & CEO



October 31, 2007

VIA ELECTRONIC MAIL

U.S. Department of Commerce
Bureau of Industry and Security
Office of Exporter Services
Regulatory Policy Division
14th Street and Pennsylvania Avenue, NW
Washington, DC 20230

Attention: Notice of Inquiry--CCL
Timothy Mooney, Room 2705

Dear Mr. Mooney:

The Computer Coalition for Responsible Exports ("CCRE") is submitting these comments in response to the notice of inquiry published by the Bureau of Industry and Security ("BIS") concerning *Request for Public Comments on a Systematic Review of the Commerce Control List*. Fed Reg. 39052 (July 17, 2007).

CCRE members included the following companies and associations: Applied Materials, Dell, Hewlett-Packard, IBM, Intel, Sun Microsystems, Unisys, Information Technology Industry Council and AeA.

The decision by BIS to initiate a systematic review of the Commerce Control List (CCL) offers a critically important opportunity to review the scope of U.S. export controls and to make adjustments to ensure their effectiveness by targeting the controls at truly sensitive products and technology.

In undertaking its review, CCRE believes it essential for BIS to give great weight to several important factors. First, there is a growing body of evidence that export controls are the most effective when they are targeted at truly sensitive technologies and are strictly adhered to by all supplier nations.

Second, the Wassenaar Arrangement, which is the primary multilateral arrangement for controlling the export of dual use goods, represents a multilateral consensus on what should and can be effectively controlled. Under Wassenaar, the United States and other member countries have agreed that before a product or technology is subjected to dual use export controls it should

be evaluated rigorously against the following criteria: (1) foreign availability outside participating countries, and (2) the ability to control effectively the export of the goods. (Based on these criteria, the Wassenaar Arrangement has established a list of "Sensitive" Items and a list of "Very Sensitive" Items.)

Computer Hardware. Computers are not included on either Wassenaar List. The fact that computers are not included on either the "Sensitive" Items List or the "Very Sensitive" Items List represents a considered decision by Wassenaar members, including the United States, that computers are not "key elements directly related" to "development, production use or enhancement of advanced conventional military capabilities whose proliferation would significantly undermine the objectives of the Wassenaar Arrangement".

The Wassenaar decision not to subject computer hardware to dual use export controls is also a reflection of the fact that computing power is no longer susceptible to effective control, a fact long recognized by the Defense Department. In 2001, the Department of Defense issued a report that explicitly recognized that performance based controls "no longer restrict foreign access to high performance computing."¹ According to the DOD Report, "cluster technology, open source software, and improved component interoperability enable users to easily integrate commodity hardware into large high performance computer systems." In recognition of this technology reality, the DOD Report recommended that performance-based export controls on computer hardware be "removed" and that the focus of controls should shift to protecting critical software applications.

In the six years since the DOD Report, microprocessor technology has advanced further to the point where today's commodity laptops have the same computing power as the multimillion-dollar supercomputers used in the 1990s. The availability of mass-market high-speed networking equipment has also stimulated development of high performance clusters of commodity microprocessors, which now dominate the Top 500 list of Supercomputers.

These facts, especially when taken together, give BIS an indisputable basis for deciding to remove computer hardware from the CCL. However, if BIS decides not to remove commercial computer hardware from the CCL, it should conform the CCL's control threshold with the level identified as "critical" on the Militarily Critical Technologies List (MCTL). The 2006 MCTL identified computers above 3.0 WT as "critical". If BIS decides on this course of action, it should include a process to reconcile the CCL to any future changes in the MCTL.

Commercial Computer Technology. CCRE recognizes that there are legitimate national security concerns at this time that may justify keeping commercial computer technology on the CCL. CCRE does, however, recommend that BIS bring the control threshold for commercial computer technology into line with new technological and regulatory developments by raising the control threshold for commercial computer technology to 0.5 WT.

The latest version of the Wassenaar "Sensitive" List identifies technology for the development and production of computers above 0.1 WT as needing to be subject to dual use control and

¹ Defense Science Board, *Export Control of High Performance Computing: Analysis and Alternative Strategies*, February 2, 2001.

“special vigilance”. Rapidly advancing technology and the new control level for military end use in China (0.5 WT) have made the 0.1 WT control threshold obsolete.

During the process leading to the new 0.5 WT control threshold for military end use in China, BIS agreed with the evidence submitted by the U.S. computer industry that the capability to produce computers up to the 0.5 WT was available from countries outside the Wassenaar system – in particular China. Under these circumstances, technology to produce commercial computers up to the 0.5 WT threshold simply can not be controlled effectively by the Wassenaar countries, including the United States.

Finally, because commercial computer technology will remain on the CCL, it is essential for BIS to continue to work with the computer industry to develop a new intra-company license system that recognizes the realities of the global economy and the ability and commitment of U.S. computer companies to protect sensitive technology.

Software. In order to ensure a rational export control system, CCRE believes it is essential that software controls be adjusted to conform to these new hardware and technology control thresholds.

Country Coverage. The CCL affords favorable treatment to America’s Cold War allies but reflects unwarranted discrimination against other countries that are now important strategic and trading partners with the United States. The BIS initiative to reform the CCL offers a unique opportunity to revise the CCL country groupings to update U.S. national security interests and to reflect significant changes in the global economy.

First, License Exception APP should be amended to permit the export of controlled technology to all Tier 1 Members without regard to a WT limit. Tier 1 countries do not pose a national security or proliferation risk and should be treated as full economic trading partners – not national security threats. Moreover, scarce export enforcement resources should be focused on those countries that pose a real significant security threat to the U.S. national security interests.

Second, consideration should be given to moving the following countries from Tier 3 to Tier 1: Egypt, India, Israel, Jordan, Kuwait, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Ukraine, and United Arab Emirates.

End-User Screening. In order to bring the export control system into line with global technology reality, BIS needs to evaluate end-user screening requirements for mass-market products and technology (EAR99). The current system raises significant cost-benefit questions. For example, the current system requires US companies to screen thousands of minor transactions that involve the servicing of laptops.

Encryption. CCRE has several recommendations to reform the CCL with respect to Encryption. First, the requirement for semi-annual reporting under EAR Section 740.17 (e) for cryptographic items shipped under License Exception ENC to all destinations except Canada should be eliminated for several important reasons. (1) No other Wassenaar members require such reporting. (2) The reports no longer effectively enable the intelligence community to determine cross-national demand for cryptographic products and product flows due to the wide spread use

of cryptographic functions in widely available software applications that would otherwise have little or no export controls. (3) The cost of collecting and reporting the data now substantially outweigh any benefits. (4) The risk of inadvertent error is preventing the development and use of new cryptographic technology.

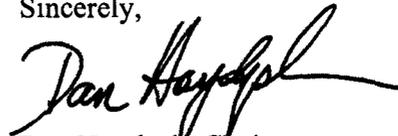
Second, consideration should also be given to eliminating the review requirements for mass market and ENC-Unrestricted Products. This control currently requires detailed reviews by the U.S. government for encryption software, hardware, and components, as well as products including cryptographic functions, in order to qualify for either mass-market status or for shipment under license exception ENC. This is a unilateral control imposed only by the U.S. within the Wassenaar system, which gives a substantial number of indigenous producers in our Wassenaar partners a competitive advantage. Moreover, the requirement has become redundant, time consuming and is overwhelming BIS and NSA due to basic encryption being included in an ever-widening range of applications, including medical devices, operating systems, word processors and tape storage. Encryption controls need to recognize that most modern software now includes encryption functions, and virtually all of them have already been reviewed.

Third, CCRE also endorses the reforms submitted by AeA on August 1, 2007 ("*AeA Recommendations for Encryption Control Reform.*") These reforms include:

- Eliminating Controls on Publicly Accessible Software and Technology
- Granting Mass Market Treatment to Components and Related Software in Mass Market Products
- Eliminating controls on Open Cryptographic Interface ("OCI")
- Eliminating Controls on Open Crypto Aware
- Eliminating Controls on Dormant Encryption
- Expanding the Coverage of EAR Part 740.17 to Cover Third Party Contractors

If you have any questions, please contact Kara Calvert at kcalvert@itic.org or (202) 626-5722.

Sincerely,



Dan Hoydysl, Chairman

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November 1, 2007

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VIA HAND DELIVERY

Mr. Timothy Mooney
Office of Exporter Services
Regulatory Policy Division
Bureau of Industry and Security
Department of Commerce
14th Street & Pennsylvania Avenue, NW
Room 2705
Washington, DC 20230

Re: Response to Notice of Inquiry – CCL
Docket No. 070619210-7211-01
Docket No. 070619210-7489-02

Dear Mr. Mooney:

On behalf of Ticona Polymers, Inc. ("Ticona") we hereby submit the following comments in response to the Bureau of Industry and Security's ("BIS") *Request for Public Comments on a Systematic Review of the Commerce Control List* in order to draw attention to inconsistencies in the way that certain polymer products are treated and described on the Commerce Control list ("CCL").¹ Ticona respectfully suggests differences in the levels of controls supplied to similar polymer products are incongruous given the ready availability of the referenced polymers or their substitutes and the degree of interchangeability between the products for the applications to which they are applied. Additionally, notwithstanding the disparity in the treatment of similar polymer products, Ticona notes that the nomenclature provided for in the CCL under Export Control Classification Number ("ECCN") 1C008.b is unnecessarily ambiguous and confusing.

¹ See 72 Fed. Reg. 39052 (July 17, 2007); see also, 72 Fed. Reg. 51213 (September 6, 2007).

I. Background

Ticona is a leading global supplier of engineering resins. Ticona produces innovative materials that are used in a wide range of applications in automotive, appliance, medical, and information and communications technology, consumer electronics and other consumer and industrial segments.

One of Ticona's most important product lines is its liquid crystal polymer, Vectra® LCP ("VLCP"). Ticona maintains 15 different grades of its VLCP polymers, and distributes them in either their "neat," or pure form; or compounded with glass fibers or fillers other than glass fibers to form a polymer product that best meets the needs of the particular customer application.

Ticona generally compounds LCP with glass fibers, minerals and other polymer products. Ticona produces over 30 different compounded VLCP products. Compounding is generally an irreversible process; one can not readily separate the LCP polymer from the additives once the product is compounded.

Vectra LCP products are high temperature, high strength, high flow materials that are effective for molding thin-walled parts at very short cycle times. These characteristics make VLCP an ideal material for the production of small and light-weight electrical and electronic components and connectors needed to produce the miniaturized devices demanded by the consumers of information technology, communications and consumer electronics products. Ticona's VLCP products are used in connectors, sockets for computers and other electronic and electrical devices, parts for headphone devices, shutter plate assemblies for the commercial camera industry, and cellular telephone equipment, just to name a few.

LCP was, at one time, considered to be a "high end plastic." It is now considered to be quite common. The monomers that are used to produce LCP are generally available from manufacturers throughout the world including several producers in China. The polymerization technology is also commonly known and, in some instances, available without the need to license the intellectual property, as many basic patents have expired.

Since these products have world-wide appeal, Ticona has a far-reaching distribution system comprised of a network of related companies to assist it in ensuring that Ticona products reach authorized end-users in the global LCP marketplace. The export of certain LCP products is currently controlled in accordance with the provisions of ECCN 1C008.b,² which

² ECCN 1C008.b provides, in pertinent part:

1C008 Non-fluorinated polymeric substances, as follows (see List of Items Controlled).

b. Thermoplastic liquid crystal copolymers having a heat distortion temperature exceeding 523 K (250 °C) measured according to ISO 75-3 (2004), or national equivalents, with a load of 1.82 N/mm² and composed of:

b.1. Any of the following:

b.1.a. Phenylene, biphenylene or naphthalene; or

applies to thermoplastic liquid crystal copolymers having heat distortion temperatures ("HDT") exceeding 250°C and certain other characteristics.

LCP competes against several other polymer products. A chief competitor is Polyether Ether Ketone ("PEEK"). PEEK is generally considered to be the market leader. Many of its physical properties as well as its ability to be used in the production of electrical and electronic components is superior to that of LCP. As a result, PEEK generally commands a premium price.

The website of a leading PEEK manufacturer, Victrex, with offices in the United States, states that the PEEK high performance polymer is a linear aromatic polymer that is semi-crystalline and widely regarded as the "highest performance thermoplastic available."³ Victrex further states that its PEEK is the "choice for a wide range of defence applications."⁴ Indeed, on its website, Victrex states that its PEEK is "approved for use by the U.S. Department of Defense per military specification MIL-P-46183" and offers an exceptional combination of properties giving the defense industry reduced weight through metal replacement.⁵

Until recently, PEEK was classified under ECCN 1C008 subject to the same level of export controls as currently apply to LCP. The restrictions on the shipment of PEEK, however, were recently liberalized. As a result, PEEK enjoys an international competitive advantage over LCP notwithstanding its superior physical properties and premium price.

II. PEEK and LCP are Similarly Situated Products

On September 7, 2006, the BIS announced a Final Rule to implement changes made to the CCL. Among the changes was the amending of ECCN 1C008 by removing PEEK from 1C008 because continued NS control could no longer be justified.⁶ BIS moved PEEK to a new ECCN, ECCN 1C998, in order to maintain control over PEEK and PEEK's associated technology for anti-terrorism reasons.

-
- b.1.b. Methyl, tertiary-butyl or phenyl substituted phenylene, biphenylene or naphthalene; and
 - b.2. Any of the following acids:
 - b.2.a. Terephthalic acid;
 - b.2.b. 6-hydroxy-2 naphthoic acid; or
 - b.2.c. 4-hydroxybenzoic acid;

³ See http://www.victrex.com/en/peek_poly/peek_poly.php, last visited October 30, 2007

⁴ See http://www.victrex.com/en/market_app/defense.php, last visited October 30, 2007.

⁵ *Id.*

⁶ See 71 Fed. Reg. 52956, 52957 (September 7, 2006).

If control of PEEK is no longer justified for NS control reasons, then it stands to reason that Ticona's VLCP product, which is currently classified under ECCN 1C008 but which has similar, and in some areas, identical or even inferior, characteristics and physical properties, should not be controlled for NS reasons. The recent changes to the CCL, however, results in a liberalization of the controls applicable to PEEK while maintaining relatively tight controls on VLCP. This disparity of treatment places Ticona at a competitive disadvantage against the domestic and foreign producers of PEEK.

As the attached Relative Thermal Index ("RTI") chart based on values obtained from Underwriters Laboratories ("UL") shows, the RTI values of PEEK and the T-130 brand VLCP are identical at 1.5 mm and 3.0 mm with the exception that the RTI Mechanical Impact ("RTI-MI") of T-130 is slightly lower than the RTI-MI of PEEK, thereby making PEEK a superior product to T-130.⁷ Further the Heat Distortion Temperature ("HDT"), the most critical property for connector and electrical and electronics applications of PEEK and LCP, of PEEK is superior to that of VLCP T-130, *see* the Key Property Comparison chart, yet PEEK is not controlled under the same stringent NS control requirements of 1C008 while the VLCP, T-130, is.⁸ Based on the fact that PEEK, a product that is superior in performance to Ticona's T-130, has been removed from 1C008, it seems incongruous to continue the control of certain LCPs whose performance characteristics are equal to PEEK.

Ticona respectfully suggests that this incongruity may be rectified by either removing LCP from 1C008 or increasing 1C008's threshold HDT from 250° C to 315° C. The HDT of PEEK. By doing so, companies with LCPs whose characteristics and physical properties are inferior or equivalent to those of PEEK, will not be subject to controls that exceed those applicable to PEEK.

III. Foreign Availability of LCP and LCP-like Products No Longer Justifies NS Control

As announced on September 7, 2006, the BIS determined that the foreign availability of PEEK was such that control for NS reasons was no longer justified. Like PEEK, LCP is manufactured throughout the world in large quantities and is, therefore, available from many different markets that compete directly with United States manufacturers. Indeed, LCP or LCP-like competitive products are being manufactured and sold in the United Kingdom and

⁷ See Attachment 1, RTI Published Data from UL Website. Supporting documentation for the content of this chart is available at: Attachment 2, *UL Online Certifications Directory: QMFZ2.E1611131 - Victrex MFG LTD*, available at <http://database.ul.com> (last visited October 17, 2007); Attachment 3, *UL Online Certifications Directory: QMFZ2.E83005 - Ticona Vectra Business Line*, available at <http://database.ul.com> (last visited October 17, 2007).

⁸ See Attachment 4, Key Property Comparison - Published Data. Documents supporting the content of this chart are attached at Attachments 2-3.

Japan. Less than two weeks ago, Sumitomo Chemical Co., Ltd. ("Sumitomo") announced that it was expanding its neat resin production capacity for its LCP from "an annual 7,000 tons to 9,200 tons."⁹ In the same article, Sumitomo announced that a new facility was being built in China for the production of neat LCP resin as well as LCP compounds. The facility is scheduled for completion by January 2009. Sumitomo noted that the high demand for its Sumikasuper LCP sparked these two changes since LCP is "increasingly replacing plastics that have been conventionally used."¹⁰ Sumitomo estimates that the completion of these facilities projects will enable it to meet 30% of its projected 2009 global demand for LCP compounds.¹¹

It is quite clear that the foreign availability of PEEK and LCP products is such that control of U.S.-made LCP products is no longer necessary. LCP is regularly being used in place of other plastics that have been traditionally used by manufacturers of electrical connectors and components. Competing materials may be traded without being subjected to substantial export control requirements. Additionally, LCP products are regularly manufactured by foreign manufacturers. In order to level the playing field with respect to LCP products that are widely available in industrialized countries, the NS controls on LCPs should be lifted.

IV. Inconsistencies in 1C008 Leads to Inadvertent Capture of Non-critical Products

Finally, while as discussed above, it is proper to remove LCP products from 1C008 classification, Ticona notes that the language of the CCL is unnecessarily confusing with respect to the description of the products that are intended to be covered by 1C008.b. The literal interpretation of 1C008.b is very confusing in that it implies that the polymers covered are a combination of poly(arylenes) and aromatic polyesters. We are not aware of any commercial products that meet these parameters at this time.

Patents on LCPs are usually written by describing the aromatic core ("phenylene," "naphthalene," "biphenylene") that contains the 2 functional groups necessary to make a polymer. We suggest, therefore, that should BIS determine that LCP must still be controlled under 1C008 notwithstanding the above discussion, the nomenclature should be modified to read:

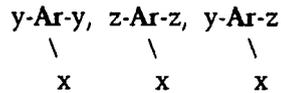
- b. Thermoplastic liquid crystal polymers where the naked polymer has a heat distortion temperature (HDT) exceeding 523° K (250° C) measured according ISO 75-3 (2004), or

⁹ See *Sumitomo Chemical to Expand Liquid Crystal Polymers Production*, JCN Newswire (October 18, 2007) available at http://www.japancorp.net/article.Asp?Art_ID=15815, (last visited October 31, 2007).

¹⁰ *Id.*

¹¹ *Id.*

national equivalents, with a load of 1.82 N/mm² and produced by condensation polymerization of one or more difunctional aromatic monomers described by:



b.1 where the aromatic group can be unsubstituted (Ar^1) or substituted (Ar^2)

b.1.a Ar^1 = Phenylene, biphenylene, or naphthalene ($x = \text{H}$); or

b.1.b Ar^2 = Phenylene, biphenylene or naphthalene and x = methyl, tertiary-butyl or phenyl

b.2 where the functional groups are

b.2.a y = hydroxyl (-OH) or amino (-NH₂)

b.2.b z = carboxyl (-CO₂)

V. Conclusion

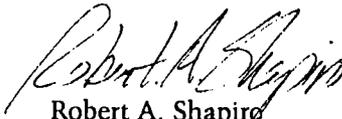
As discussed above, the description of the products covered by ECCN 1C008.b is confusing and does not clearly communicate the intent of the drafters. Read literally, the language does not cover any products that are currently being produced. Notwithstanding this ambiguity, the CCL has been interpreted to cover certain LCP products within ECCN 1C008.b that are commercially similar to products that have since been removed from that heading of the CCL. The continued maintenance of LCP on the CCL, therefore, places U.S. manufacturers of the product at a competitive disadvantage as compared to the producers of LCP in other countries and the producers of competing products both home and abroad. For the reasons set forth above, Ticona respectfully suggests that 1C008.b's definition be modified to exclude LCPs from its coverage or, by increasing 1C008.b's threshold HDT from 250° C to 315° C.

Timothy Mooney
Office of Exporter Services
November 1, 2007
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Please do not hesitate to contact the undersigned with any questions.

Very truly yours,

Thompson Coburn LLP

By 
Robert A. Shapiro

RAS/BC

Attachments

ATTACHMENT 1

RTI Published Data from UL Website

| RTI @ 1.5mm | | 30% GF PEEK | High Temp. 30% GF LCP |
|-------------|-------|-----------------|--------------------------|
| Property | Units | Victrex 150GL30 | Vectra T130 |
| RTI Elec | °C | 240 | 240 |
| RTI Imp | °C | 220 | 180 |
| RTI Str | °C | 240 | 240 |

| RTI @ 3.0 mm | | 30% GF PEEK | High Temp. 30% GF LCP |
|--------------|-------|-----------------|--------------------------|
| Property | Units | Victrex 150GL30 | Vectra T130 |
| RTI Elec | °C | 240 | 240 |
| RTI Imp | °C | 220 | 180 |
| RTI Str | °C | 240 | 240 |

*RTI most critical property

-RTI values when compared to PEEK are the same at 1.5mm and 3.0mm with the exception that Vectra T130 is slightly lower at RTI Imp.

ATTACHMENT 2



**QMFZ2.E161131
Plastics - Component**

Additional information regarding this certification can be found in UL's iQ Family of Databases (www.ul.com/iq).
NEW -- for additional information concerning the individual material, click on the material designation.

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Plastics - Component

See General Information for Plastics - Component

VICTREX TECHNOLOGY CENTRE
HILLHOUSE INTERNATIONAL
THORNTON CLEVELEYS, LANCS FY5 4QD UNITED KINGDOM

E161131

| Material Dsg | Color | Min. Thk mm | Flame Class | H | | R T I | | H D | | |
|---|--------|-------------------|----------------|---|---|-------|------|-----|---|---|
| | | | | W | A | Elec | Mech | V | 4 | C |
| | | | | I | I | Imp | Str | T | 9 | T |
| Polyetheretherketone (PEEK), "Victrex PEEK", furnished as pellets. | | | | | | | | | | |
| 90G, 90P | NC | 1.5 | V-0 | - | - | 50 | 50 | 50 | | |
| Polyetheretherketone (PEEK), "Victrex PEEK", furnished as sheets. | | | | | | | | | | |
| TL20 | NC | 0.025-0.028 | VTM-1 | - | - | 50 | 50 | 50 | | |
| TL40 | NC | 0.10-0.11 | VTM-1 | - | - | 50 | 50 | 50 | | |
| Polyetheretherketone (PEEK), "Victrex PEEK", furnished as pellets. | | | | | | | | | | |
| 150CAYY | NC | 0.5 | V-0 | - | - | 50 | 50 | 50 | | |
| 150GLXX | NC, BK | 0.5 | V-0 | - | - | 50 | 50 | 50 | | |
| 450CAYY | NC | 0.5 | V-0 | - | - | 50 | 50 | 50 | | |
| 450GLXX | NC, BK | 0.5 | V-0 | - | - | 50 | 50 | 50 | | |
| 90CAYY | NC | 0.5 | V-0 | - | - | 50 | 50 | 50 | | |
| 90GLXX | NC, BK | 0.5 | V-0 | - | - | 50 | 50 | 50 | | |
| Polyetheretherketone (PEEK), "Victrex PEEK", furnished as pellets, powder. | | | | | | | | | | |
| 150CA30 | BK | 0.75 | V-0 | 0 | 4 | - | 170 | 220 | | |
| | | 1.5 | V-0 | 0 | 3 | - | 200 | 220 | | |
| | | 3.0 | V-0 | 0 | 4 | - | 200 | 240 | | |
| 150FC30, 450FC30 | | | | | | | | | | |
| | BK | 0.75 | V-0 | 0 | 3 | - | 180 | 220 | | |
| | | 1.5 | V-0 | 0 | 4 | - | 180 | 240 | | |
| | | 3.0 | V-0 | 0 | 4 | - | 180 | 240 | | |

| | | | | | | | | | | | |
|--|--------|-------------|-------|---|---|-----|-----|-----|---|---|---|
| 150G, 151G, 150P | | | | | | | | | | | |
| | NC | 0.75 | - | 3 | 2 | 260 | 180 | 220 | 3 | 5 | 4 |
| | | 1.5 | V-0 | 2 | 2 | 260 | 180 | 240 | | | |
| | | 3.0 | V-0 | 1 | 1 | 260 | 180 | 240 | | | |
| 150GL30 | | | | | | | | | | | |
| | NC, BK | 0.75 | V-0 | 0 | 4 | 240 | 180 | 220 | 2 | 5 | 4 |
| | | 1.5 | V-0 | 0 | 4 | 240 | 220 | 240 | | | |
| | | 3.0 | V-0 | 0 | 4 | 240 | 220 | 240 | | | |
| 381G, 380P | | | | | | | | | | | |
| | NC | 0.75 | - | 3 | 2 | 260 | 180 | 220 | 3 | 5 | 4 |
| | | 1.5 | V-0 | 2 | 2 | 260 | 180 | 240 | | | |
| | | 3.0 | V-0 | 1 | 1 | 260 | 180 | 240 | | | |
| 450CA30 | | | | | | | | | | | |
| | BK | 0.41 | - | 0 | 4 | - | - | - | | 5 | 4 |
| | | 0.75 | - | 0 | 4 | - | 180 | 220 | | | |
| | | 1.5 | V-0 | 0 | 4 | - | 200 | 220 | | | |
| | | 3.0 | V-0 | 0 | 4 | - | 200 | 240 | | | |
| 450G, 450P | | | | | | | | | | | |
| | NC | 0.41 | - | 3 | 2 | - | - | - | 3 | 5 | 4 |
| | | 0.75 | - | 3 | 2 | 260 | 180 | 220 | | | |
| | | 1.5 | V-0 | 0 | 1 | 260 | 180 | 240 | | | |
| | NC, BK | 3.0 | V-0 | 0 | 1 | 260 | 180 | 240 | | | |
| 450GL30 | | | | | | | | | | | |
| | NC, BK | 0.41 | - | 0 | 4 | - | - | - | 2 | 5 | 4 |
| | | 0.75 | - | 0 | 4 | 240 | 180 | 220 | | | |
| | | 1.5 | V-0 | 0 | 4 | 240 | 200 | 240 | | | |
| | | 3.0 | V-0 | 0 | 4 | 240 | 220 | 240 | | | |
| Polyetheretherketone (PEEK), "Vicat PEEK", furnished as sheets. | | | | | | | | | | | |
| Amorphous Film | | | | | | | | | | | |
| | NC | 0.025 | VTM-0 | 5 | 4 | 200 | - | 220 | 4 | 5 | 3 |
| | | 0.075 | VTM-0 | 5 | 4 | 200 | - | 220 | | | |
| | | 0.125 | VTM-0 | 4 | 1 | 220 | - | 220 | | | |
| APTIV 1000 | | | | | | | | | | | |
| | NC | 0.014-0.280 | HB | - | - | 50 | 50 | 50 | | | |
| | | 0.50-0.75 | V-1 | - | - | 50 | 50 | 50 | | | |
| Oriented Semi-Crystalline Film | | | | | | | | | | | |
| | NC | 0.025 | VTM-0 | 5 | 4 | 200 | - | 220 | 3 | 5 | 3 |
| | | 0.075 | VTM-0 | - | - | 200 | - | 220 | | | |
| | | 0.125 | VTM-0 | 4 | 1 | 220 | - | 220 | | | |
| Polyetherketone (PEK), "Vicat PEK", furnished as pellets. | | | | | | | | | | | |
| 22GL(a) | NC | 1.5 | V-0 | - | - | 50 | 50 | 50 | | | |
| G22, P22 | NC | 1.5 | V-0 | - | - | 50 | 50 | 50 | | | |
| G45, P45 | NC | 1.5 | V-0 | - | - | 50 | 50 | 50 | | | |

(a) - represents a two digit number indicating the glass fiber content from 10% to 50% inclusive.

XX - represents a two digit number indicating the glass fiber content from 10% to 60% inclusive.

YY - represents a two digit number indicating the carbon fiber content from 10% to 50% inclusive.

Marking: Company name and material designation on container, wrapper or finished part.

Last Updated on 2007-10-09

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ATTACHMENT 3



**QMFZ2.E83005
Plastics - Component**

Additional information regarding this certification can be found in UL's IQ Family of Databases (www.ul.com/iq).
NEW -- for additional information concerning the individual material, click on the material designation.

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Plastics - Component

See [General Information](#) for Plastics - Component

TICONA
VECTRA BUSINESS LINE
8040 DIXIE HWY
FLORENCE, KY 41042 USA

E83005

| Material Dsg | Color | Min. Thk mm | Flame Class | H | | RTI | | H | D | | | |
|---|--------|-------------------|----------------|---|---|------|------|-----|---|---|---|---|
| | | | | W | A | Elec | Mech | V | 4 | C | | |
| | | | | I | I | Imp | Str | T | 9 | T | | |
| | | | | | | | | | | R | 5 | I |
| LCP/PPS, "Vectra". | | | | | | | | | | | | |
| V133XL | NC, BK | 0.75 | V-0 | - | - | 130 | 130 | 130 | | | | |
| | ALL | 1.5 | V-0 | - | - | 130 | 130 | 130 | | | | |
| Liquid Crystal Polymer (LCP), thermotropic aromatic polyester, "Vectra", furnished as pellets. | | | | | | | | | | | | |
| A115 | NC, BK | 0.44 | V-0 | - | - | 130 | 130 | 130 | 2 | 5 | 4 | |
| | | 0.85 | V-0 | - | - | 240 | 220 | 220 | | | | |
| | | 1.5 | V-0 | 2 | 4 | 240 | 220 | 220 | | | | |
| | | 3.0 | V-0 | 1 | 4 | 240 | 220 | 220 | | | | |
| A130(+), MT1310 | | | | | | | | | | | | |
| | NC, BK | 0.20 | V-0 | - | - | 130 | 130 | 130 | 0 | 5 | 4 | |
| | | 0.38 | V-0 | 4 | 4 | 130 | 130 | 130 | | | | |
| | ALL | 0.85 | V-0 | 4 | 4 | 240 | 220 | 220 | | | | |
| | | 1.5 | V-0 | 2 | 4 | 240 | 220 | 220 | | | | |
| | | 3.0 | V-0 | 1 | 4 | 240 | 220 | 220 | | | | |
| | NC | 1.5 | V-0, 5VA | 2 | 4 | 240 | 220 | 220 | | | | |
| A130E | NC | 0.75 | V-0 | 1 | 1 | 130 | 130 | 130 | 0 | 5 | 4 | |
| | | 1.5 | V-0 | 1 | 1 | 130 | 130 | 130 | | | | |
| | | 3.0 | V-0 | 0 | 1 | 130 | 130 | 130 | | | | |
| A150 | NC, BK | 0.45 | V-0 | - | - | 130 | 130 | 130 | 0 | 4 | 3 | |
| | | 0.75 | V-0 | - | - | 220 | 220 | 220 | | | | |

| | | | | | | | | | | | |
|-------------------|--------|------|----------|---|---|-----|-----|-----|---|---|---|
| | NC | 1.5 | V-0, 5VA | 1 | 4 | 220 | 220 | 220 | | | |
| | | 3.0 | V-0, 5VA | 1 | 4 | 220 | 220 | 220 | | | |
| | | 6.0 | V-0, 5VA | 0 | 4 | 220 | 220 | 220 | | | |
| A230 | BK | 0.43 | V-0 | - | - | 130 | 130 | 130 | | | |
| A410 | NC, BK | 0.45 | V-0 | - | - | 130 | 130 | 130 | 0 | 5 | 3 |
| | | 1.5 | V-0 | 1 | 4 | 130 | 130 | 130 | | | |
| | | 3.0 | V-0 | 1 | 4 | 130 | 130 | 130 | | | |
| | | 6.0 | V-0 | 0 | 4 | 130 | 130 | 130 | | | |
| A420 | BK | 0.91 | V-0 | - | - | 130 | 130 | 130 | | | |
| | | 1.5 | V-0 | - | - | 130 | 130 | 130 | | | |
| | | 3.0 | V-0 | - | - | 130 | 130 | 130 | | | |
| A422 | BK | 0.45 | V-0 | - | - | 130 | 130 | 130 | | | |
| | | 0.81 | V-0 | - | - | 130 | 130 | 130 | | | |
| A430 | NC, BK | 0.43 | V-0 | - | - | 130 | 130 | 130 | | | |
| A435 | NC | 0.44 | V-0 | - | - | 130 | 130 | 130 | 0 | 5 | 3 |
| | | 0.90 | V-0 | 2 | 1 | 130 | 130 | 130 | | | |
| | | 1.7 | V-0 | 1 | 2 | 130 | 130 | 130 | | | |
| | | 3.0 | V-0 | 0 | 2 | 130 | 130 | 130 | | | |
| A515 | NC | 0.38 | V-0 | - | - | 130 | 130 | 130 | 0 | 5 | 4 |
| | | 1.5 | V-0 | 2 | 4 | 130 | 130 | 130 | | | |
| | | 3.0 | V-0 | 1 | 4 | 130 | 130 | 130 | | | |
| A530 | NC, BK | 0.38 | V-0 | - | - | 130 | 130 | 130 | 0 | 4 | 3 |
| | | 1.5 | V-0 | 1 | 4 | 130 | 130 | 130 | | | |
| | NC | 3.0 | V-0, 5VA | 0 | 4 | 130 | 130 | 130 | | | |
| A540 | NC, BK | 0.38 | V-0 | - | - | 130 | 130 | 130 | | | |
| A625 | BK | 0.45 | V-0 | - | - | 130 | 130 | 130 | | | |
| A700 | BK | 0.42 | V-0 | - | - | 130 | 130 | 130 | | | |
| A900, A950 | NC, BK | 0.42 | V-0 | 2 | 4 | 240 | 220 | 220 | 2 | 5 | 4 |
| | | 1.5 | V-0 | 2 | 4 | 240 | 220 | 220 | | | |
| | | 3.0 | V-0 | 1 | 4 | 240 | 220 | 220 | | | |
| B130 | NC, BK | 0.43 | V-0 | - | - | 130 | 130 | 130 | | | |
| B230 | BK | 0.46 | V-0 | - | - | 130 | 130 | 130 | | | |
| B950 | NC | 0.43 | V-0 | - | - | 130 | 130 | 130 | | | |
| C115 | NC | 0.44 | V-0 | - | - | 130 | 130 | 130 | 0 | 6 | 4 |
| | | 0.81 | V-0 | 3 | 4 | 240 | 200 | 220 | | | |
| | | 1.5 | V-0 | 2 | 4 | 240 | 200 | 220 | | | |
| | | 3.0 | V-0 | 1 | 4 | 240 | 200 | 220 | | | |

| C130(+), C130M | | | | | | | | | | | |
|-----------------------|--------|------|----------|---|---|-----|-----|-----|---|---|---|
| | ALL | 0.38 | V-0 | 4 | 4 | 130 | 130 | 130 | 0 | 5 | 4 |
| | | 0.75 | V-0 | 1 | 4 | 240 | 220 | 220 | | | |
| | NC | 1.5 | V-0, 5VA | 1 | 4 | 240 | 220 | 240 | | | |
| | | 3.0 | V-0, 5VA | 0 | 4 | 240 | 220 | 240 | | | |
| C150 | NC, BK | 0.45 | V-0 | - | - | 130 | 130 | 130 | 0 | 5 | 3 |
| | | 0.84 | V-0 | - | - | 220 | 200 | 220 | | | |
| | | 1.5 | V-0 | 2 | 4 | 220 | 200 | 220 | | | |
| | | 3.0 | V-0 | 1 | 4 | 220 | 200 | 220 | | | |
| C550 | NC | 1.5 | V-0 | - | - | 130 | 130 | 130 | | | |
| C810 | NC | 0.33 | V-0 | - | - | 130 | 130 | 130 | | | |
| | | 0.75 | V-0 | - | - | 130 | 130 | 130 | | | |
| C950 | NC | 0.81 | V-0 | 3 | 4 | 240 | 200 | 220 | 0 | 6 | 4 |
| | | 1.5 | V-0 | 2 | 4 | 240 | 200 | 220 | | | |
| | | 3.0 | V-0 | 1 | 4 | 240 | 200 | 220 | | | |
| D130M | NC, BK | 0.75 | V-0 | - | - | 130 | 130 | 130 | | | |
| E130 | NC, BK | 0.38 | V-0 | - | - | 130 | 130 | 130 | 3 | 5 | 4 |
| | BL | 0.75 | V-0 | 3 | 4 | 240 | 220 | 220 | | | |
| | | 1.5 | V-0 | 1 | 4 | 240 | 220 | 240 | | | |
| | | 3.0 | V-0 | 0 | 4 | 240 | 220 | 240 | | | |
| E130i(+8) | NC, BK | 0.20 | V-0 | - | - | 130 | 130 | 130 | 0 | 5 | 4 |
| | ALL | 0.75 | V-0 | 2 | 4 | 240 | 220 | 240 | | | |
| | | 1.5 | V-0 | 1 | 4 | 240 | 220 | 240 | | | |
| | | 3.0 | V-0 | 0 | 4 | 240 | 220 | 240 | | | |
| E140i(+1) | BK | 0.43 | V-0 | - | - | 130 | 130 | 130 | 0 | 5 | 3 |
| | NC, BK | 0.75 | V-0 | 2 | 4 | 240 | 220 | 240 | | | |
| | | 1.5 | V-0 | 1 | 4 | 240 | 220 | 240 | | | |
| | | 3.0 | V-0 | 0 | 4 | 240 | 220 | 240 | | | |
| E150i(+5) | NC, BK | 0.43 | V-0 | - | - | 130 | 130 | 130 | 0 | 5 | 3 |
| | | 0.75 | V-0 | 0 | 4 | 240 | 220 | 240 | | | |
| | | 1.5 | V-0 | 0 | 4 | 240 | 220 | 240 | | | |
| | | 3.0 | V-0 | 0 | 4 | 240 | 220 | 240 | | | |
| E471i(+6) | NC, BK | 0.75 | V-0 | - | - | 130 | 130 | 130 | | | |
| | ALL | 1.5 | V-0 | - | - | 130 | 130 | 130 | | | |
| | | 3.0 | V-0 | - | - | 130 | 130 | 130 | | | |
| E473i | BK | 0.75 | V-0 | - | - | 130 | 130 | 130 | | | |
| | NC | 1.5 | V-0 | - | - | 130 | 130 | 130 | | | |
| | | | | | | | | | | | |

| | | | | | | | | | | | |
|--------------------|-------------------|-----------------|----------------|--------------|--------------|----------------|----------------|----------------|-----|---|---|
| E530i | NC, BK | 1.5 | V-0 | 1 | 4 | 130 | 130 | 130 | 0 | 7 | 3 |
| | | 3.0 | V-0 | 0 | 4 | 130 | 130 | 130 | | | |
| E820i | NC | 1.5 | V-0 | 0 | 4 | 130 | 130 | 130 | 0 | 4 | 4 |
| | | 3.0 | V-0 | 0 | 4 | 130 | 130 | 130 | | | |
| E820IPD | NC | 0.86 | V-0 | 2 | 4 | 130 | 130 | 130 | 0 | 4 | 3 |
| | | 1.5 | V-0 | 1 | 4 | 130 | 130 | 130 | | | |
| | | 3.0 | V-0 | 0 | 4 | 130 | 130 | 130 | | | |
| H130(+) | NC, BK | 1.5 | V-0 | 0 | 4 | 240 | 220 | 220 | 0 | 4 | 4 |
| | | 3.0 | V-0 | 0 | 4 | 240 | 220 | 220 | | | |
| H140(+) | NC, BK | 1.5 | V-0 | 0 | 4 | 240 | 220 | 220 | 0 | 4 | 4 |
| | | 3.0 | V-0 | 0 | 4 | 240 | 220 | 220 | | | |
| H840 | NC | 1.5 | V-0 | - | - | 130 | 130 | 130 | | | |
| L115 | BK | 0.86 | V-0 | - | - | 130 | 130 | 130 | | | |
| | NC | 1.5 | V-0 | - | - | 130 | 130 | 130 | | | |
| L130(+) | BK | 0.22 | V-0 | - | - | 130 | 130 | 130 | 3 | 4 | 4 |
| | | ALL | 0.84 | V-0 | 1 | 2 | 240 | 200 | 220 | | |
| | | 1.5 | V-0 | 1 | 2 | 240 | 200 | 220 | | | |
| | | 3.0 | V-0 | 0 | 2 | 240 | 200 | 220 | | | |
| L130XL(+) | ALL | 0.84 | V-0 | 1 | 2 | 240 | 200 | 220 | 3 | 4 | 4 |
| | | 1.5 | V-0 | 1 | 2 | 240 | 200 | 220 | | | |
| | | 3.0 | V-0 | 0 | 2 | 240 | 200 | 220 | | | |
| L140 | NC, BK | 0.84 | V-0 | 1 | 2 | 220 | 220 | 220 | 0 | 5 | 4 |
| | | 1.5 | V-0 | 1 | 1 | 220 | 220 | 220 | | | |
| | | 3.0 | V-0 | 0 | 0 | 220 | 220 | 220 | | | |
| LCP 335 | BK | 1.2 | V-0 | - | - | 130 | 130 | 130 | | | |
| LKX 1146 | BK | 0.38 | V-0 | - | - | 130 | 130 | 130 | | | |
| LKX 1147 | BK | 0.38 | V-0 | - | - | 130 | 130 | 130 | | | |
| RD 1040 | BK | 0.75 | V-0 | - | - | 130 | 130 | 130 | | | |
| | NC | 1.5 | V-0 | - | - | 130 | 130 | 130 | | | |
| T130(+) | NC, BK | 0.25 | V-0 | | | 130 | 130 | 130 | 3 | 4 | 3 |
| | | 0.4 | V-0 | 4 | 3 | 130 | 130 | 130 | | | |
| | | 0.88 | V-0 | 2 | 3 | 240 | 180 | 220 | | | |
| | | 1.5 | V-0 | 0 | 3 | 240 | 180 | 240 | | | |
| | | 3.0 | V-0 | 0 | 3 | 240 | 180 | 240 | | | |
| T140 | ALL | 0.42 | V-0 | - | - | 130 | 130 | 130 | 3 | 5 | 3 |
| | | 0.75 | V-0 | 3 | 3 | 130 | 130 | 130 | | | |
| | | 1.5 | V-0 | 2 | 3 | 130 | 130 | 130 | | | |
| | | | | | | | | | | | |

| | | | | | | | | | | | |
|---|------------|------|-----|---|---|-----|-----|-----|---|---|---|
| | | 3.0 | V-0 | 0 | 3 | 130 | 130 | 130 | | | |
| T150 | NC, BK | 0.42 | V-0 | - | - | 130 | 130 | 130 | 0 | 5 | 3 |
| | | 0.75 | V-0 | 3 | 0 | 130 | 130 | 130 | | | |
| | | 1.5 | V-0 | 2 | 0 | 130 | 130 | 130 | | | |
| | | 3.0 | V-0 | 0 | 0 | 130 | 130 | 130 | | | |
| V140 | NC, BK, GY | 0.38 | V-0 | - | - | 130 | 130 | 130 | | | |
| V143 | NC | 0.42 | V-0 | - | - | 130 | 130 | 130 | | | |
| W101D-2(+) | BK | 0.75 | V-0 | 1 | 4 | 240 | 200 | 200 | | | 4 |
| | | 1.5 | V-0 | 1 | 4 | 240 | 200 | 200 | | | |
| | | 3.0 | V-0 | 0 | 4 | 240 | 200 | 200 | | | |
| W130D-2(+) | BK | 0.75 | V-0 | 1 | 4 | 240 | 200 | 200 | | | 4 |
| | | 1.5 | V-0 | 1 | 4 | 240 | 200 | 200 | | | |
| | | 3.0 | V-0 | 0 | 4 | 240 | 200 | 200 | | | |
| Liquid Crystal Polymer (LCP), thermotropic aromatic polyester, conductive, "Vectra", furnished as pellets. | | | | | | | | | | | |
| A725 | BK | 0.83 | V-0 | 0 | - | 130 | 130 | 130 | | | |
| | | 1.5 | V-0 | 0 | - | 130 | 130 | 130 | | | |
| | | 3.0 | V-0 | 0 | - | 130 | 130 | 130 | | | |
| Liquid Crystal Polymer (LCP), "Vectra", furnished as pellets. | | | | | | | | | | | |
| E130G | NC, BK | 0.75 | V-0 | - | - | 130 | 130 | 130 | | | |
| S135(g)(f2) | NC, BK | 0.28 | V-0 | 4 | 0 | 130 | 130 | 130 | 3 | 5 | 4 |
| | | 0.8 | V-0 | 3 | 0 | 130 | 130 | 130 | | | |
| | | 1.5 | V-0 | 1 | 0 | 130 | 130 | 130 | | | |
| | | 3.0 | V-0 | 1 | 0 | 130 | 130 | 130 | | | |
| T840 | NC | 0.75 | - | 2 | 0 | 130 | 130 | 130 | 0 | 7 | 3 |
| | | 1.5 | V-0 | 2 | 0 | 130 | 130 | 130 | | | |
| | | 3.0 | V-0 | 1 | 0 | 130 | 130 | 130 | | | |
| Liquid Crystal Polymer (LCP), "Vectra". | | | | | | | | | | | |
| E480I(+1) | BK | 0.43 | V-0 | - | - | 130 | 130 | 130 | 0 | 5 | 3 |
| | NC, BK | 0.75 | V-0 | 2 | 4 | 240 | 220 | 240 | | | |
| | | 1.5 | V-0 | 1 | 4 | 240 | 220 | 240 | | | |
| | | 3.0 | V-0 | 0 | 4 | 240 | 220 | 240 | | | |
| E540I (+7) | ALL | 1.5 | V-0 | 2 | 0 | 130 | 130 | 130 | 0 | 4 | 3 |
| | | 3.0 | V-0 | 1 | 0 | 130 | 130 | 130 | | | |
| V143XL | BK | 0.38 | V-0 | - | - | 130 | 130 | 130 | | | |

(+) - Virgin and regrind up to 50% by weight incl. have the same basic material characteristics.

(+1) - Virgin and regrind up to 25% by weight incl. have the same basic material characteristics. In addition 26 to 50% have the same characteristics at a min 1.5mm except the RTI w/ imp property is 180C.

(+4) - Virgin and regrind up to 50% by weight incl. have the same basic material characteristics except for the unaged impact property.

(+5) - Virgin and regrind up to 75% by weight incl. have the same basic material characteristics.

(+6) - Virgin and regrind up to 50% by weight incl. have the same basic material characteristics for colors natural and black.

(+7) - Virgin and regrind up to 25% by weight incl. have the same basic material characteristics. In addition, 26 to 50% by weight incl. have the same basic material characteristics except for HWI at any thickness and HAI below 0.88 mm.

(+8) - Virgin and regrind up to 50% by weight inclusive have the same properties in all colors to the min. thickness of 1.5 mm except for the RTI w/Imp which is 180C. Also, virgin and regrind up to 50% by weight inclusive have the same flammability properties in the NC and BK colors to the min. thickness of 0.20 mm.

(f2) - Subjected to one or more of the following tests: Ultraviolet Light, Water Exposure or Immersion in accordance with UL 746C, where the acceptability for outdoor use is to be determined by UL Inc.

(g) - Virgin and regrind up to 25% by weight incl. have the same basic material characteristics. Also, virgin and regrind up to 50% by weight inclusive have the same characteristics for the deflection under load, mechanical strength and impact properties.

NOTE - Material designations may be suffixed by D-1, D-2 or D-3 indicating specific colors. These products are also produced and marketed by Ticona GmbH, Postfach 1561, 65444 Kelsterbach, Germany.

Marking: Company name or tradename "VECTRA" and material designation on container, wrapper or finished part.

Last Updated on 2007-10-15

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ATTACHMENT 4

Key Property Comparison - Published Data

| Property | Test Method | Units | 30% GF PEEK Vectrex 150GL30 | High Temp. 30% GF LCP Vectra T130 |
|--------------------------|-------------|-------------------|--------------------------------|---|
| Tensile Strength @ Break | ISO 527 | MPa | 156 | 140 |
| Tensile Elongation | ISO 527 | % | 1.9 | 1.5 |
| Tensile Modulus | ISO 527 | MPa | 11,400 | 16,000 |
| Flexural Strength | ISO 178 | MPa | 220 | 210 |
| Flexural Modulus | ISO 178 | MPa | 9,700 | 15,400 |
| Notched Izod Impact | ISO 180/A | kJ/m ² | 8.8 | 20 |
| HDT @ 1.8 MPa | ISO 75 | °C | 315 | 300 |
| Dielectric Constant | IEC 250 | - | 3.7 | 3.6 |
| Dielectric Strength | ASTM D149 | kV/mm | 19 | 44 |

-HDT most critical property for connector and E&E applications

-PEEK is superior in HDT to Vectra T130 and PEEK is not export regulated but Vectra T130 is export regulated

KELLEY DRYE
COLLIER SHANNON

DIRECT LINE: (202) 342-8841
EMAIL: emcclafferty@kelleydrye.com

November 1, 2007

ELECTRONIC MAIL DELIVERY

Mr. Timothy Mooney
Office of Exporter Services
Regulatory Policy Division
Bureau of Industry and Security
Department of Commerce
14th Street & Pennsylvania Ave., NW
Room 2705
Washington, DC 20230

Re: Recommendations for Proposed Changes to Commerce Control List
Category 2 Export Control Classification Numbers Affecting the Fluid
Handling Industry

Dear Mr. Mooney:

On behalf of a number of manufacturers of fluid handling equipment that are members of the Hydraulic Institute/Valve Manufacturers Association (HI/VMA) Export Control Task Force, we appreciate the opportunity to offer recommendations regarding certain changes and clarifications to the Commerce Control List (CCL) categories for fluid handling and processing equipment, particularly Export Control Classification Number (ECCN) 2B350. These comments are submitted in response to the Bureau of Industry and Security's (BIS) Federal Register notice requesting public comments for its systematic review of the CCL. See Request for Public Comments on a Systematic Review of the Commerce Control List, 72 Fed. Reg. 39052 (July 17, 2007). These comments are timely, as the agency extended the deadline for comments to November 1, 2007 in a September 6, 2007 notice. See 72 Fed. Reg. 51213 (Sept. 6, 2007).

The companies offering these recommendations understand that changes to certain CCL language may require consultations with multilateral export control groups. A number of the clarifications recommended below, however, might be accomplished by the additional of

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definitions and other technical clarifications to the controls that could be implemented by BIS without interagency or multilateral consultations. We would welcome an opportunity to discuss these comments and recommendations with the agency in more detail.

Recommendations

1. Add a definition of "seal-less centrifugal pump" to the regulations (perhaps in the Related Definitions subsection under the List of Items Controlled, or in Part 772) to clarify the scope of the control on seal-less pumps in ECCN 2B350. We believe an approach based on the Hydraulic Institute's definition of "seal-less centrifugal pump" would clarify the scope of ECCN Category 2B350.

Suggested language: "Seal-less Centrifugal Pump: A pump design in which the impeller shaft is directly driven by either a canned induction motor or by a synchronous or an asynchronous magnetic drive. The design does not use a dynamic (mechanical) shaft seal as a primary containment device. In seal-less pumps, static seals contain the product being pumped. Centrifugal pumps shipped with a single dynamic seal or without a dynamic seal installed are not considered seal-less centrifugal pumps."

As the agency is aware, there are other non-centrifugal pump types that are seal-less. This suggested definition for seal-less centrifugal pumps is not intended to affect the classification of such pumps.

2. In ECCN 2B350, we recommend changing the language from "Multiple-seal" to "Multiple-seal (on each shaft sealing interface) . . ." Some pumps have 2 separate shaft outputs from the "wet end" of the pump (one on each end of the pump's wet end) and a single seal on each end of the shaft. These pumps do not qualify as "multiple seal" pumps in the sense intended by the regulation since each shaft end effectively has a single seal. Such pumps are not any more useful in handling chemical weapons precursors than a standard "single seal" pump with one shaft output as they offer safety protection only at the level of a single seal pump (because each shaft sealing interface/end only has a single seal). In fact, such pumps are often used for water handling.

3. Consider increasing clarity by including quantity references in the materials section of 2B350. Currently, it is not clear to some in the industry if a trace amount of a controlled material, 10%, 25%, 50%, or more of a controlled material triggers the 2B350 control. This change would also help prevent confusion regarding the meaning of the term "alloy." Clarifying that the controlled material must make up the most prevalent material (by weight) in an alloy (or plastic mixture

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containing fluoropolymer) would help clarify this issue and would be consistent with the definition of alloy found in Category 1 of the CCL.

E.g.:

Titanium or alloys containing titanium in greater amounts (by weight) than any other material.

Zirconium or alloys containing zirconium in greater amounts (by weight) than any other material

4. ECCN 2B350.i lists "Ferrosilicon" as a "controlled" material. Ferrosilicon is a very brittle material and no practical working pump could be made of ferrosilicon. High silicon iron steel, which contains certain amounts of ferrosilicon, in contrast, is a material that is sometimes used to make chemical handling equipment. We suggest removing the term "ferrosilicon" from the list of materials and replacing it with "high silicon iron steel". Additionally, we suggest specifying a percentage of ferrosilicon content in high silicon iron steel that triggers the control.

5. The agency should clarify the meaning of the term "rotor" in ECCN 2B350.i. This term is used by some in the industry to refer to a shaft attached to an impeller in a centrifugal pump and also to a shaft with the impeller and bearings installed. It is also used for certain gear pump components. It is not clear that this term is meant to be interpreted in this way, or whether the reference is to a vacuum pump part.

6. ECCN's 2A226 and 2A292 apply CB2 controls if the subject valve also meets the criteria for classification under ECCN 2B350. The language implementing the CB2 control in 2A226 and 2A292 is a source of some confusion in the industry. The categories might be clarified by removing the ECCN 2B350 references from those two ECCN's and by adding a technical note stating that valves that also meet the 2B350 control criteria are also subject to CB2 controls under ECCN 2B350.

7. Valve size for products controlled under ECCN's 2A226 and 2B350 is addressed using the term 'nominal' size. Under ECCN 2A292, however, the size criterion is described as "a pipe size connection of 200 mm (8 in.) or more *inside diameter*." The agency should consider using the same size criteria for valves, or should explain why sizes are referred to as 'nominal' in some classifications and 'inside diameter' in others.

8. The CCL indicates 'pipe size connection of 200 mm (8 in) or more inside diameter' under 2A292. It is unclear whether the intent is to consider the 'inlet' size of the valve or the larger of the inlet or outlet connection. Other ECCN's, such as 2A226, clearly indicate '*For valves with*

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different inlet and outlet diameters, the nominal size refers to the smallest diameter'. It would help to have the same clarifying language in both ECCN categories. In addition, in paragraph 9, 2B999.f – consider changing the word 'dimension' to 'size.' This term is more common in the valve industry and it appears elsewhere in the CCL.

9. Currently, 2B999.f. reads, "Monel equipment, including valves, piping, tanks and vessels". Valves of a certain dimension with all wetted parts of Monel typically could potentially be classified under ECCN 2B350, but the language in 2B999 specifically calls out Monel and indicates that those valves should be classified in 2B999.f. We request that BIS provide guidance regarding the interrelationship between these categories.

10. 2B350.g and i both refer to "all surfaces that come in direct contact with the chemicals(s) being processed" ("processed or contained" in the case of valves) being made from the "following materials." We request that the agency clarify what it considers to fall into this "wetted parts" category given the relatively wide variety of parts that could potentially be considered "wetted parts," including "O" rings, fasteners, and other components in various product configurations.

11. Some members perceive an inconsistency in CCATS classifications regarding valves with carbon steel bodies or casings and stainless steel internals. Some are classified as EAR99 while others are classified as 2B999.g. In addition, certain pumps with motors over 5 horse power for industrial use are sometimes classified as EAR99 and other times as 2B999. One suggestion for resolving this on the valve side is for the agency to change the unilateral control language in 2B999.g to clarify that the valve body/casing and internals of a valve must be made of 304 or 316 stainless steel for classification in 2B999.

12. Regarding the stainless steel sub-paragraphs in 2B999 (.g and .n respectively), both 304SS and 316SS are austenitic (and in fact all 2xx or 3xx grades are austenitic). If the intent is to control only austenitic SS, then maybe (.g) and (.n) can be combined? Perhaps (.g) might read: "Austenitic stainless steel (including 304 and 316) valves, piping, tanks and vessels" and then (.n) can be eliminated.

13. "Wear coatings" of 2B350 controlled materials that are designed to wear off products after a few uses should not trigger classification in the 2B350 control category. Other very thin coatings of controlled materials do not necessarily qualify a product as appropriate for handling the chemicals in 1C350. At times, such coatings are used for protection during transportation and for similar purposes. We recommend that the agency consider the following change in language in 2B350 as an approach to this issue:

"Fluoropolymers with a minimum thickness of .125 inch."

14. We request that the agency work to clarify the related controls language in 2B350, which states:

Related Controls: The controls in this entry do not apply to equipment that is: a.) specially designed for use in civil applications (e.g., food processing, pulp and paper processing, or water purification); AND b.) inappropriate, by the nature of its design, for use in storing, processing, producing or conducting and controlling the flow of chemical weapons precursors controlled by 1C350.

The industry believes that virtually all of the equipment that is currently controlled under ECCN 2B350 is specially designed for use in civil applications. Thus, industry would like further guidance from the agency concerning what characteristics the agency believes would make these industrial products "inappropriate, by the nature of its design, for use in storing, processing, producing or conducting and controlling the flow of chemical weapons precursors.

15. In ECCN 2B350.g. consider clarifying the valve control language as follows: Valves *with sufficient stem seal protection*, with nominal sizes greater than 1.0 cm ($\frac{3}{8}$ in.), and casings (valve bodies) or preformed casing liners with designed for such valves, in which all surfaces that come in direct contact with the chemical(s) being processed or contained are made from any of the following materials:" The industry would particularly welcome an opportunity to discuss a change that would clarify this stem seal protection language.

* * *

As indicated, we realize that a number of these requests for clarification may not require changes to the ECCN categories through a multilateral process. In our view, suggestions 1, 2, 4, 13 and 15 may require coordination at an international level. The remaining issues could potentially be resolved through the issuance of advisory opinions or through other technical and definitional changes to the regulations that, as indicated above, might be accomplished without multilateral coordination.

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We look forward to a continuing dialogue with BIS regarding all of the issues raised in these comments. We also thank the agency again for the opportunity to provide these comments. If BIS has any comments or questions concerning this submission, please contact the undersigned.

Very truly yours,

A handwritten signature in black ink, appearing to read 'E. McClafferty', with a long horizontal flourish extending to the right.

Eric McClafferty
Counsel to the Hydraulic Institute/Valve
Manufacturers Association Export Control
Task Force

William Primosch

Acting Vice President

International Economic Affairs

November 1, 2007

Mr. Timothy Mooney
Bureau of Industry and Security
Regulatory Policy Division
Office of Exporter Services
U.S. Department of Commerce Room 2705
14th St. and Constitution Avenue, N.W.
Washington, DC 20230

RE: Request for Public Comments on the Systematic Review of the Commerce Control List (CCL)—Notice of Inquiry CCL

Dear Mr. Mooney:

I write on behalf of the National Association of Manufacturers (NAM), the nation's largest multi-sector industry association, in response to the Notice of Inquiry seeking comments on a systematic review of the Commodity Control List (CCL) (Federal Register Notice E7-17639, July 17, 2007). **The NAM believes that both the CCL and the policies relevant to its application need significant reassessment and updating to account for changes in the global marketplace and adverse impact that unnecessary controls are having on U.S. industry. A central recommendation is that the Commodity Control List and export controls more broadly should be re-focused on genuinely sensitive products and technologies that affect U.S. national security and critical foreign policy goals.**

Overview

The NAM recognizes the important role export controls play in protecting our national security and the need to prevent countries and entities of concern from obtaining technologies that pose significant risks to the United States. At the same time, we believe advancing our national security and economic goals are not mutually exclusive. To be effective in both areas, however, export controls and the CCL should strive to control only those products and technologies that are cutting-edge and genuinely sensitive in terms of their military applications.

Manufacturing Makes America Strong

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The CCL is now used to control over 2,400 dual-use items including products and technologies that may require a license for export as well as for foreign nationals to access these items in the United States. Rapid advances in technology and the growing sophistication of industry in both developed and emerging economies, however, have made controls on many CCL items ineffective and obsolete. Items once easily controlled because they could be sourced only in the United States or from a few multilateral regime partner countries are now more widely available in the global marketplace. In the meantime, U.S. industry is adversely affected not only because it loses commercial opportunities abroad but also because it cannot leverage the competitive advantages of an efficient global supply chain and access to foreign technical talent.

Up until now, the CCL has been reviewed on a piecemeal basis. Although minor changes in the CCL have been made as the international regime control lists are revised, generally the CCL has not kept pace with the development of new products and technologies and the growing availability of controlled items from a variety of foreign sources. The Technical Advisory Committees are periodically tasked with submitting suggestions to BIS on changes to the CCL. These suggestions, in turn, may or may not be incorporated into the CCL. The entire CCL, however, has not been systematically reviewed for over a decade.

Both the structure of the CCL and underlying export control policies are in urgent need of reassessment and updating. Where the controls have no tangible benefit for U.S. national security or direct impact on important U.S. foreign policy interests, they should be appropriately modified or eliminated. The remainder of this letter provides comments and recommendations on the four areas identified in the Federal Register Notice. NAM member companies will separately comment on specific CCL items that no longer warrant control. Our comments and recommendations will address structural issues related to the CCL and policies and procedures related to its application. We also highlight the importance of harmonizing the CCL with multilateral lists and ensuring a consistent application of both.

Comments and Recommendations

Inquiry Area #1 The overall structure of the CCL, including suggestions for how the structure of the CCL may be changed to better advance U.S. national security, foreign policy, and economic interests

As an overall comment, the structure of CCL is problematic because it is too inclusive and difficult to navigate. Determining what is covered by the CCL is complex and confusing even for individuals well versed and knowledgeable of export controls. This makes it extremely difficult for manufacturers to interpret the CCL and how it applies to their products. Many companies must seek legal or other expert assistance to determine if the items they want to export are controlled. Small and medium-sized enterprises are at a particular disadvantage because their lower export volumes allow them to devote fewer resources to administrative overhead that export controls entail. But even in large exporting companies, the cost of ensuring

export compliance is a heavy financial burden that affects their global competitiveness and ability to pursue other important business goals, such as research and development. In short, the current structure of the CCL is a significant disincentive to manufacturers to export dual-use products and explore opportunities in foreign markets.

The complexity of the CCL also adversely affects U.S. manufacturers in other ways and acts as a *de facto* trade barrier. Many foreign companies find the system too difficult and costly to navigate and consequently simply refrain from doing business with American companies in areas involving real or potential dual-use products and technologies even though the U.S.-sourced items are superior to others available in the global marketplace. Our members believe that they are losing substantial commercial opportunities—likely in the billions of dollars—because of the reaction of foreign companies to the complexity of the CCL.

The NAM recommends several structural changes to simplify the CCL and make it more “user friendly” while also serving U.S. national security and foreign policy interests.

1. Instituting a sunset provision for items controlled on the CCL

Under the current structure, items are rarely removed or added to the CCL despite the rapid evolution of technology and technical specifications of dual-use products. Items on the CCL should be limited to genuinely sensitive and cutting-edge items only. An automatic sunset provision would help to ensure discipline in justifying the continuing inclusion of items on the CCL as technology changes. Items placed on the CCL should be removed from the list after a fixed number of years unless a continuing threat to national security can be explained and justified. We recommend a sunset period of four years. To accomplish this task, we further recommend the establishment of an interagency committee under Commerce Department leadership to review items subject to decontrol and the appointment by the Secretary of Commerce of private sector experts in each of the ten CCL categories to advise the committee.

2. Creating a simplified “multinational list” and “national list”

Under the current structure, exporters have to run their products against the multilateral control list (national security controls), the U.S. national list of unilateral controls and an amorphous “mixed list” that contains items controlled under both the international regimes and the U.S. national list. To simplify the process, we recommend maintaining only two lists—a multilateral list and a national list of unilateral controls. This distinction would remove much of the ambiguity in the system and help manufacturers understand what items are controlled and for what reasons.

3. Reevaluate application of the “country charts” and “reasons for control”

The current structure for CCL controls includes five country charts and numerous reasons why an item may be controlled to a specific country. We recommend reformulating the country charts to include only anti-terrorism and national security controls. Under this formulation only country charts for “Terrorist Countries” and “China” are needed. The new OFAC regulation on Sudan illustrates the need to reduce confusion on the “reasons for control.” Under the new regulations, exports to specific regions in Sudan are permissible while exports to other regions violate the controls. This type of complexity presents extraordinary challenges of administration for U.S. exporters. Simplification of the country charts and reasons for control would alleviate some of the intrinsic complexity and help to ensure accurate compliance.

4. Creating a “positive list” for EAR99 items

Currently if an item is not controlled by the CCL, it is defaulted as “subject to the CCL.” Every item manufactured in the U.S. is potentially subject to export controls if exported to a country of concern. Instead of the all-inclusive “subject to the CCL,” we recommend creating a positive list of items that fall under the EAR99 designation. This recommendation accords with a risk-based approach and the principle of controlling only those items that are genuinely sensitive and necessary for national security. It makes little sense for the U.S. government to devote its limited resources to controlling the export of everyday consumer items (e.g., even pencils) as it does under the category of EAR99. Creating a positive list of EAR99 items would free resources for the government and exporters to focus on those items that are genuinely sensitive.

Inquiry Area #2 Types of items that should be listed on the CCL and the appropriate levels of controls to be placed on those items, taking into account technology levels, markets, and foreign availability;

Foreign Availability

As a general rule, only genuinely sensitive dual-use items that are not widely available in the global marketplace should be subject to export controls. Current policy and practice, however, do not take into account how foreign availability has changed in the marketplace. Many sophisticated dual-use products and technologies are now widely available in foreign markets, even in countries of concern. In determining what items to control, therefore, the U.S. government should carefully assess foreign availability and the opportunities for acquiring items from alternative sources. The very fact that more foreign businesses advertise their products as “U.S. component and material free” suggests that there are growing alternatives to acquiring dual-use items and that efforts to unilaterally control them are ineffective. Controls on widely available products adversely affect U.S.-based manufacturers and serve no objective national security purpose.

Foreign availability determinations are more important than ever, and the regulations need to reflect this changed environment. Although foreign availability is addressed in the regulations, its influence has waned over the years as interpretations by other agencies have greatly reduced its applicability. The NAM recommends that BIS reinvigorate the foreign availability determination process with a view to reducing the scope of the CCL. The recently published "China Rule" set a useful precedent for reducing controls based on foreign availability. We urge that the same criteria used to review the 47 ECCNs covered by the China Rule also be used to scrub the entire CCL. As one of its main tasks, the new Office of Technology Evaluation should focus on changing global availability and how this affects the usefulness of export controls and the operations of U.S. exporters.

In addition, we recommend the following changes to increase the effectiveness of foreign availability determinations:

1. Apply foreign availability to both National Security and Foreign Policy controls. The Export Administration Act (EAA) in section (4)(c) states that "the President should not impose export controls for foreign policy or national security purposes on the export from the United States of goods or technology which he determines are available... from sources outside the U.S." However, under § 768.1(b) of the Export Administration Regulations (EAR), it states that foreign availability is only assessed against national security controls. We recommend expansion of §768.1(b) to bring it into conformity with scope of authority authorized under the EAA and thus include foreign policy controls. The EAR needs to be updated to reflect the current state of globalized manufacturing, a condition that wasn't relevant when the regulations were first published.

Also, absent countervailing human rights or anti-terrorism concerns, items controlled under unilateral controls (i.e., foreign policy controls) should be decontrolled when foreign availability or indigenous production is determined in the country of concern. Unilateral controls on items that are sold without restriction by many other countries should be eliminated unless they can be rigorously justified as meeting vital foreign policy interests.

2. Use a definition of "comparable quality" that is consistent across all U.S. agencies Under the current regulation, an item is of comparable quality if the item possesses characteristics specified on the CCL and is alike in key characteristics. Instead of using the "comparable quality" standard, some U.S. agencies have held foreign availability determinations to the higher standard of "identical product." That standard clearly contravenes the intention set in the regulation. We recommend that Commerce and the other agencies work together to set a common standard for determining "comparable quality" that conforms more closely to the language of the regulation. Under the current "identical product" standard, very few products are considered to have foreign availability. U.S. companies making products of comparable quality to foreign products are unable to compete against foreign competitors who are not subject to the same stringent controls.

3. Consider foreign availability from multilateral regime members.

The current process for determining foreign availability puts U.S. exporters at a competitive disadvantage vis-à-vis their foreign competitors and does not prevent the countries of concern from obtaining comparable products. Specifically, foreign availability determinations do not consider availability from countries that participate in the multilateral regimes. This approach to foreign availability assumes that all dual-use items controlled by the United States are also controlled by our regime partners in the same way. This is not the case. Even though the CCL and international lists are now very similar, many items restricted by the United States are available in Wassenaar member countries because of differences, for example, in licensing administration, compliance and enforcement procedures, technical interpretation of the lists and application of re-export rules.

Under the previous CoCom regime (Coordinating Committee for Multilateral Export Controls) that governed dual-use exports during the Cold War, the United States could veto licenses and prevent its defense partners from exporting dual-use items when there were disagreements on what should be controlled. This is not possible in the current multilateral regimes, which require unanimity in deciding what items should be controlled. As a result, items subject to U.S. controls are now more readily available in other countries, and this reality needs to be acknowledged in the current foreign availability process. We recommend, therefore, that foreign availability from regime partners also be considered as a deciding factor in determining if the item or technology should be controlled.

Unilateral Controls

Foreign policy controls, or unilaterally applied controls, are intended to advance a variety of important foreign policy goals related to both U.S. defense and non-defense interests. They encompass issues of regional stability, human rights, anti-terrorism, missile technology, crime controls, and chemical and biological warfare. Over time, however, these controls have become less effective, and industry has been harmed by their unilateral application.

Unilateral controls by their very nature are less effective because other countries not applying the controls can provide access to the products. These controls, therefore, should meet higher standards for justification than multilateral controls. The government should maintain only those unilateral controls that are critical for U.S. national interests.

While some unilateral controls may be necessary in specific cases, a review of both policy and practice on unilateral regulations is overdue. As part of the assessment of current and proposed unilateral controls, U.S. agencies should consider the following questions:

1. What is the specific purpose of the control?
2. Does the control achieve that purpose?
3. What is the economic impact of the control?

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4. Does the benefit of control outweigh the harm to industry?

Unilateral controls that are failing to achieve their stated purpose or resulting in economic costs that outweigh objective benefits should be eliminated or at the very least modified.

Inquiry Area #3 Any updates to the CCL item descriptions that would enable the descriptions to better reflect the intent of the multinational controls and to eliminate any overly broad descriptions that inadvertently capture non-critical items that are not controlled by other countries

Many CCL product descriptions are unclear and confusing. They should be updated to better reflect the intent of the multilaterally agreed controls, provide clarity to exporters and eliminate overly broad "accident of definition" coverage that captures non-critical items which other countries do not control. The lack of clarity in CCL descriptions makes compliance difficult even for well intentioned exporters and also causes uneven enforcement of the regulations.

For example, controls on process equipment lack clarity and specificity. ECCN 1B999.c requires a license to export "industrial process control hardware/systems designed for power industries, n.e.s." to North Korea or Iraq. This control appears to be straightforward, but for manufacturers it is not clear what "designed for" means. Does it mean "specially designed" for a particular use, or does it merely mean "capable of?" Does it apply to hardware, software or both? Often, software turns multi-purpose control equipment into something that is designed for a specific use. However, if it is the software that is controlled, there is the additional issue that the corresponding software entry only requires a license for North Korea, not Iraq. Then, what does "system" encompass? Is it just the digital control equipment? Does it include the measuring equipment (meters, sensing devices, etc.)? Does it include the regulating equipment (valves, etc.)? Both of the latter are of course essential to "process control." And all of this is for equipment that is not subject to ANY multilateral controls. These products are freely available from other sources. This is just one example of many that members of the NAM can provide on the lack of clarity within the CCL.

Product and technology clarity is particularly important now that enforcement penalties have increased without changes to the EAR. There is an urgent need, then, for BIS to update and improve product descriptions. By minimizing "inadvertently captured non-critical items" in the licensing process, BIS will be able to devote more of its limited resources to items and technology that pose a threat to national security.

Inquiry Area #4 Coordination and harmonization of controls on items covered by the multilateral regimes, such as the Wassenaar Arrangement

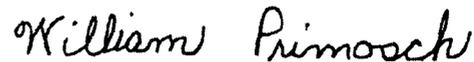
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Another source of ambiguity over export controls and product coverage is the confusing variety of control lists. For example, exporters need to understand several different lists and how they relate to one another, including the national security list, , unilateral foreign policy controls, the annexes to the lists and the various Wassenaar lists. Businesses in regime partner countries, particularly the European Union (EU), find it difficult to navigate the lists and interpret how they relate to one another.

To be effective, the U.S. list and annexes, the multilateral regime lists and the allied countries lists must be harmonized to focus on a narrow set of products and technologies that are genuinely militarily critical. Greater harmonization of the lists would help to ensure more accurate compliance and also reduce costs for exporters who must frequently seek expert advice to navigate this complex system. We recommend that the U.S. government use the Wassenaar "Sensitive List" as a starting point to narrow the scope of the controls and achieve greater harmonization with our allies.

Thank you for the opportunity to provide comments and recommendations on improving on the Commerce Control List. The NAM supports export controls as an important tool for protecting U.S. national security. But to serve broad U.S. national interests, we believe the controls need to be better focused on protecting those genuinely militarily critical technologies and allow U.S.-based manufacturers to compete more effectively in the global marketplace.

Sincerely,



William Primosch



November 1, 2007

Timothy Mooney
Office of Exporter Services
Regulatory Policy Division, Bureau of Industry and Security
U.S. Department of Commerce
14th Street & Pennsylvania Avenue, N.W.
Room 2705
Washington, DC. 20230

ATTN: Notice of Inquiry -- CCL

Re: Request for Public Comments on a Systematic Review of the
Commerce Control List (72 Fed. Reg. 39052)

Dear Mr. Mooney:

The Semiconductor Industry Association ("SIA") is pleased to respond to the request for comments on the Commerce Control List ("CCL") in the Export Administration Regulations ("EAR"). In particular, SIA offers comments on encryption control reform, the definition of "specially designed" in the CCL and the elimination of export controls on flash memory.

SIA is the leading voice for the semiconductor industry and has represented U.S. semiconductor companies since 1977. SIA member companies comprise more than 85 percent of the U.S. semiconductor industry.

Encryption Control Reform

Semiconductor manufacturers are increasingly embedding encryption functionality into their commercial, civil semiconductor devices. This presents a difficult challenge for both the government and the U.S. semiconductor industry as semiconductor devices that are largely decontrolled under Category 3 or are EAR99 face the risk of being captured under Category 5 controls due to the inclusion of encryption. The capture of these devices under Category 5 would heavily burden the U.S. semiconductor industry and greatly increase the workload of the Bureau of Industry and Security ("BIS"). As high-volume, commercial integrated circuits increasingly qualify under Category 5, they will become variously subject to a number of onerous licensing, notification and/or reporting requirements not encountered in existing classifications outside of Category 5. The prospect of this collision threatens to chill U.S. hardware security innovation and disrupt long-standing global distribution models. This will not only adversely impact

U.S. research and development, but also provide advantage to foreign competitors who do not face such export control barriers.

In order to avoid an impending re-control of high-volume, commercial semiconductor devices, BIS should undertake a review of encryption controls as they apply to such devices and promulgate new measures to ensure that no new barriers to the global distribution of integrated circuits are implemented. Consistent with this end, SIA recommends the following encryption control reforms.

Grant mass market treatment to commercial components and related firmware and software that are designed and intended to be used in mass market products. SIA believes that mass market treatment should be granted to commercial components that are intended to be used in a mass market product, as well as to components that are distributed and sold on a mass market basis. If a civilian, commercial product such as a personal computer or mobile phone is granted mass market status under the EAR, then the associated components and related hardware, software and technology embedded in that product should receive the same treatment. In any case, semiconductors generally available to the public through any means of distribution should be deemed to have mass market status. Semiconductors are typically sold through various channels, including distributors who make these devices available to almost everyone.

Mass market treatment for these components is very important to the U.S. semiconductor industry as companies are increasingly embedding cryptographic functionality into their products to meet consumer demands for security. These civilian, commercial components are manufactured and sold in high volumes in many locations around the world and serve as the foundation of information technology products.

There is a significant discrepancy in how the United States and Wassenaar signatories treat components in mass market products. SIA understands that a number of countries treat components as Export Control Classification Number ("ECCN") 5X992, which is controlled only for antiterrorism ("AT") reasons, while the United States treats them as ECCN 5X002, which is controlled for national security ("NS"), AT and EI reasons and is eligible for the civil end-user ("CIV") exemption set forth in EAR § 740.5. This discrepancy is contrary to the principle of multilateral export controls and inconsistent with how other countries apply the Cryptography Note for commercial components used in mass market items.

In sum, BIS should establish a policy of allowing mass market treatment for components that are: (1) intended for use in mass market products; and/or (2) generally available to the public through any means of distribution. The policy should grant such mass market to treatment to related firmware and software. It should also allow exporters to self-classify all mass market items, technology and software and firmware under ECCN 5X992 without a U.S. government review. and related firmware and software.

Revise the definition of mass market to remove any doubt over coverage of “mass market” distribution channels that may not be viewed as retail selling points. U.S. semiconductor manufacturers sell their products in high volumes to large computer makers and original equipment manufacturers, but also directly to system integrators, distributors and resellers. It is not uncommon for a distribution network to include thousands of individual channels. In fact, many semiconductors can be purchased by almost anyone from a variety of on-line distributors. Commercial integrated circuits, in short, are widely available on the world market.

According to the Cryptography Note in CCL Category 5, in order to qualify as “mass market,” items must, in part, be “Generally available to the public by being sold, without restriction, from stock at retail selling points....” It is important for this description to clearly encompass the realities of the sales and distribution channels of the semiconductor industry.

SIA therefore requests that BIS remove the word “retail” from the current description or revise the description in such a way to include the many semiconductor products that are sold via outlets that may not be perceived as retail in nature, even though these products are “mass market” in every meaningful sense of the term.

Eliminate Review Requirements in EAR §742.15 for Mass Market and ENC-Unrestricted Products. BIS should eliminate the detailed review requirement for encryption software, hardware, components and cryptographic functions that must now be conducted prior to an item being granted either mass-market status or for shipment under license exception ENC.

The EAR allow exporters to self-classify items with the caveat that classification of items is subject to review by BIS. This system has generally worked to the satisfaction of both industry and BIS. However, many cryptographic products require a lengthy review by U.S. government agencies prior to becoming eligible for export. The review requirement imposed on U.S. companies exporting cryptographic items is unilateral and not required by other Wassenaar Arrangement members.

Additionally, the encryption review requirements are repetitive and imposed on essentially the same encryption functionality applied in different applications, including variations of software that are fundamentally the same but which have undergone improvements or modifications in capabilities unrelated to encryption features. As basic encryption is now utilized in an increasing number of applications, the encryption review requirement now impacts a wide range of civilian, mass market products such as integrated circuits, computer operating systems and memory storage devices. Virtually all of these products incorporate the same types of encryption algorithms that have previously been reviewed by BIS. Additional reviews of the same products and encryption algorithms provide little or no benefit and merely delay exports.

Reclassify unpackaged semiconductor die that contain encryption.

Unpackaged semiconductor die that contain encryption should be reclassified as ECCN 5A992, not ECCN 5A002 as is the case today. The encryption present in unpackaged die, in either undiced wafer or individual die form, is not enabled or even accessible. The encryption in semiconductor products cannot be enabled until after the die are packaged for connection into an end product. The encryption in unpackaged die cannot be made accessible, much less enabled, without knowledge of the confidential, proprietary information required to correctly assemble each die into final packages -- specifically the pad ring and the substrate/leadframe diagrams.

The substrate/leadframe diagrams are essential to understanding the chip functions that are controlled by the pads located on the die and how each of those pads is connected in the package substrate to the exterior connection pins or balls of the packaged device. Without these diagrams, the only way to correctly connect the die into a useable package would be through trial and error. Given the complexity of today's semiconductor devices, where it is not uncommon to have die with over 500 connection points, a person trying to determine how to correctly package the die would have to try as many as 500,500 combinations. The probability of choosing the right order of connections between the die pads and the substrate/leadframe is virtually nil and would require untold numbers of unpackaged die.

Inasmuch as the Commerce Department has determined that encryption commodities/software need not be controlled as ECCN 5A002 if the means to activate the encryption is tightly controlled, the same policy should apply to wafers. In the case of wafers, the pad ring and the substrate/leadframe diagrams are required to enable the encryption. Thus, the wafers should also not be controlled under the EAR.¹

Eliminate the one-time technical review prior to the export of dormant encryption items. Currently, exporters must complete a one-time technical review prior to the export of dormant encryption items under ECCN 5X992. SIA believes that this review should be eliminated in cases where cryptographic functionality is rendered inactive by design and can be activated only via proprietary software or other mechanisms that are controlled under ECCN's 5X992 and 5X002.

Revise the Definition of "Specially Designed"

Despite the lack of a formal definition in the CCL, "specially designed" is generally taken to mean intentionally created for use and capable of being used with a particular commodity. The scope of "specially designed" is particularly significant for the semiconductor industry since it directly affects the extent of controls for components and, hence, virtually all semiconductor devices.

¹ See EAR § 742.15.b.4.

SIA urges BIS to apply the definition of specially designed as set forth in section 3.(a) of the Missile Technology Control Regime (“MTCR”) to all of the CCL:

“Specially designed” describes equipment, parts, components or “software” which, as a result of “development”, have unique properties that distinguish them for certain predetermined purposes. For example, a piece of equipment that is “specially designed” for use in a missile will only be considered so if it has no other function or use. Similarly, a piece of manufacturing equipment that is “specially designed” to produce a certain type of component will only be considered such if it is not capable of producing other types of components.²

The MTCR definition of “specially designed” would remedy what has become in practice a confusing and overreaching definition of specially designed.

Eliminate Export Controls on Flash Memory

SIA requests that the U.S. government eliminate export controls on flash memory devices. The current controls found in Category 3 are unilateral and not imposed by the United States’ Wassenaar Arrangement allies. SIA has long contended that imposing unilateral export controls on widely available products is an exercise in futility. If the United States chooses to maintain what are increasingly unilateral controls on these items, the effect will be to cede competitive advantage and foreign market share to foreign companies.

Typographical Correction

In a Federal Register Notice published on July 26, 2005 (70 Fed. Reg 43041), a correction was made to a typographical error in the text of ECCN 3A002.b. According to the Notice, a comma was to be removed from between the terms “frequency synthesizer” and “electronic assemblies.” However, the comma is still present between the two terms in the online version of the CCL.³ The inclusion of the comma wrongfully expands the scope of the ECCN entry.

* * *

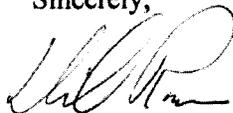
² Missile Technology Control Regime Equipment, Software and Technology Annex. March 23, 2007.

³ http://www.access.gpo.gov/bis/ear/ear_data.html

Timothy Mooney
November 1, 2007
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SIA appreciates the opportunity to comment on the proposed rule and looks forward to continuing its cooperation with BIS on this subject. Please feel free to contact the undersigned if you have questions regarding these comments.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Rose', written in a cursive style.

David Rose
Chairman
SIA Export Controls Committee

GE

Kathleen Lockard Palma
Counsel, International Trade Regulation

November 1, 2007

Via Email: publiccomments@bis.doc.gov

Timothy Mooney
Office of Exporter Services, Regulatory Policy Division
Bureau of Industry and Security
Department of Commerce
14th St. & Pennsylvania Ave, NW, Room 2705
Washington, DC 20230

ATTN: Notice of Inquiry—CCL

Dear Mr. Mooney:

The General Electric Company ("GE") appreciates the opportunity to submit written comments in response to BIS' Request for Public Comments on a Systematic Review of the Commerce Control List (72 Fed. Reg. 39,052 (July 17, 2007) ("Notice").

GE is a diversified technology, manufacturing, media, and financial services company that ranks among the oldest and largest in the United States. Today, GE operates through six business verticals that produce goods and services ranging from aircraft engines, power generation, water processing, and security technology to medical imaging, business and consumer financing, television, film and internet-based content. GE has operations in over 100 countries (manufacturing in over 40 countries) and employs more than 315,000 people worldwide. 2006 consolidated revenues reached \$163 billion.

With significant manufacturing and research & development activities worldwide, GE is an important stakeholder in the US export control system. The company devotes significant resources to ensuring appropriate classification of its products, software and technologies prior to export from the United States, whether to a customer, supplier, another GE facility, or in the case of technology/software, release to a non-US person inside the United States. We welcome the opportunity to comment on the opportunities we see to improve the CCL to ensure accurate and efficient export classification. Our comments address the four areas specified in the Notice.

- (1) The overall structure of the CCL, including suggestions for how the structure of the CCL may be changed to better advance US national security, foreign policy and economic interests.*

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Structure/Layout:

The current layout of the CCL is not user-friendly. Readers must cross-reference and flip between sections within part 774 as well as other sections of the EAR in order to comprehend individual entries. We understand that BIS utilizes the current double-column format because of the publication of the EAR through the Federal Register and cost issues associated with its publication. However, this format makes the entries difficult to read, particularly when an individual ECCN controls a long list of products and/or intervening notes interrupt the flow of text. Further, BIS does not generate a CCL that allows automatic linking in an online format, rather the CCL is published online in text and PDF formats only.

Further, entries that have a significant number of subparagraphs are difficult to navigate. One example of an entry with a large volume of control paragraphs is 3A001. Particularly when there is a range of items captured that are subject to different reasons for control, grouping a large volume of entries under a single heading is confusing. Of course some of these entries, including 3A001, are consistent with the Wassenaar control lists, but BIS should consider whether changes to multilateral lists should also be pursued to improve the ease of compliance worldwide.

Technology controls:

There is a lack of consistency in the division of entries, particularly in the technology section. For some technologies, the ECCNs are broken out separately for development/production/use technology and for some, two or three are grouped in a single entry, which can create confusion. For example, consider a few entries in category 2 of the CCL:

- 2E001 controls technology for the *development* of equipment or software controlled by various entries in 2A, 2B or 2D;
- 2E002 controls technology for the *production* of certain equipment controlled by 2A or 2B;
- 2E101 controls technology for the *use* of equipment or software in certain 2B and 2D entries;
- 2E201 controls other technology for the *use* of certain equipment and software in 2A, 2B and 2D and 2E290; and
- 2E301 controls other technology for the *use* of items controlled by 2B350, 2B351 and 2B352.

On the other hand:

- 2E983 controls technology for the *development, production or use* of equipment controlled by 2A983 or the *development* of software controlled by 2D983.

The concern is that for a manufacturer or exporter that is accustomed to working with a technology ECCN that groups *development, production and use* in a single technology entry, it may miss controls on certain types of technology that are divided into separate headings. The current entries also do not cross-reference to the other technology entries (nor do the relevant 2A entries, for example).

Technology ECCNs tend to lump in a significant volume of items, subject to disparate reasons for control. It is not possible to determine from the applicable technology ECCN what level of control applies to the technology, while it is generally possible to do so from the ECCN and subparagraph numbers in other types of entries. This difficulty is compounded when the "A" entry includes a significant volume of subparagraphs, such that it requires a significant amount of reading to determine the reasons for control that are applicable.

In addition, the technology entries tend to have very little descriptive information as to the type of technology controlled, but rely on cross-references back to the "A" entry. As product development begins with technology, the descriptive nature of the technology entries should be improved. Further, it is increasingly common that exporters are dealing with the controlled technology but not manufacturing the "A" product. The current structure is backwards in that for most entries is necessary to understand the product/materials/equipment in order to determine if the technology is controlled. Controls should describe the technology and then control other items only to the extent necessary to achieve the purpose of the control. One example of a technology entry with additional detail is 9E003, in which the descriptions are more detailed and the end products are often not subject to control above the level of AT-only.

Finally, the General Technology Note is a key document to assist in the classification of technology, however, the GTN is not self-contained. Many of the key definitions necessary to understand the GTN are contained in part 772, such that additional "flipping" through the EAR is necessary to understand the foundational principles of the GTN.

Recommendations:

- (a) Simplify the layout of the CCL by using a single column format or other format that will ease readability.
- (b) Publish an "unofficial" version of the CCL on the BIS website that could employ more functionality, such as:

- i. Create a table that includes a cross reference of all the linked entries (product, software, technology, etc.), which will help users to identify the relevant categories that apply to a family of items that are controlled.
 - ii. Create a “hot linked” version of the CCL on the website that could use programming to take the reader directly to related entries, definitions, country chart, etc. and avoid “flipping” necessary in today’s version.
 - iii. Utilize coding tools such that cross-references are automatically updated, to minimize the need for technical correction notices.
- (c) Work with multilateral regimes to break entries with a significant number of subparagraphs into more manageable sizes or adopt such additional divisions on the CCL to improve readability and the ease of the classification process.
- (d) Adopt a consistent practice as to whether different types of technology (development/production/use) are controlled under a single ECCN entry or broken out into separate entries.
- (e) Technology ECCNs should be divided into subparagraphs so that there is a separate subparagraph to identify technologies that are subject to different reasons for control.
- (f) Incorporate additional descriptive information as to the type of technology controlled in the xEXXX entries.
- (g) Incorporate all the relevant definitions into the General Technology Note to avoid the need for extensive cross-referencing.
- (2) *Types of items that should be listed on the CCL and the appropriate levels of controls to be placed on those items, taking into account technology levels, markets, and foreign availability*

Unilateral controls:

Many of the items that are included on the CCL today are subject solely to unilateral controls by the United States, particularly items with the reason for control of Anti-Terrorism, Crime Control and Regional Stability. However, if any such item is available from non-US suppliers, these controls are ineffective and put US exporters on an uneven playing field. Support for this fundamental principle can be found in the plain language of the EAA, for example:

“Recognizing the ineffectiveness of unilateral controls . . .” (EAA, 5(i)).

"It is the policy of the United States [] to apply any necessary controls to the maximum extent possible in cooperation with other nations . . ." (EAA, 3(3)).

"It is the policy of the United States to use its economic resources and trade potential to further the sound growth and stability of its economy as well as to further its national security and foreign policy objectives." (EAA, 3(4)).

However, other determinations and US Government practices over time have basically eliminated these principles from the administration of the current export control system and the designation of items on the CCL. The formal procedure specified by the EAA for foreign availability sometimes does not work or does not apply.

Moreover, the US Government has adopted policy justifications for maintaining unilateral controls over items that do not seem consistent with the EAA, such as justifying the maintenance of AT controls based on "US resolve not to trade with nations or entities that fail to adhere to the acceptable norms of international behavior" (BIS 2003 Foreign Policy Report, Chapter 4) despite "widespread availability of comparable goods from foreign sources [that limits] the effectiveness of these controls" (*id.*). Further, items subject to AT-only controls pursuant to section 6(j) of the EAA are exempt from foreign availability assessments.

The result is that unilateral controls over specific ECCNs are rarely revised and subject to review based on the justification for maintaining controls over individual entries (rather than broad, sweeping statements of policy justification). These items are also not subject to the annual review cycles associated with Wassenaar and other multilateral regimes. Accordingly, many of the individual entries over which the US Government has the most discretion to take action never receive appropriate evaluation.

Unilateral Controls on Explosive Detection Systems: 2A983, 2D983 and 2E983

GE Security's and other US companies' explosive detection systems (EDS) are unilaterally controlled for Regional Stability (RS) and Anti-Terrorism reasons under ECCN 2A983. The EDS products are primarily sold to airport authorities worldwide for passenger and baggage screening purposes in accordance with U.S. anti-terrorism policies. The USG through the Transportation Security Administration (TSA) actually requires airlines at international airports serving U.S. destinations to deploy EDS screening systems and certifies their proper operation. Thus, it is not clear the unilateral RS controls are consistent with the clear U.S. policy objective to support and ensure EDS equipment is in place worldwide.

The RS controls do allow NLR treatment for NATO countries, plus Japan, Australia, and New Zealand, but shipments to all other countries require an export license, often with restrictive license conditions. The 2A983 products are also not eligible for most license exceptions, such as GBS. There are also a few foreign EDS competitors in the UK, Canada, and Germany

making comparable products, which would be controlled under 2A983 if made in the United States. To our knowledge the foreign producers are not subject to similar controls or individual license requirements. Therefore, US EDS products are adversely affected by unilateral export controls, since non-US competitors market their products, in part, by promising expeditious delivery.

GE Security acknowledges that certain EDS technologies should be controlled to protect certain "need to know" and anti-terrorism information. However, multilateral controls on the 2A983 products would be more effective. Alternatively, or if the products remained controlled unilaterally, BIS should consider narrowing the license requirements to specified countries of concern, permitting the use of more license exceptions for hardware and firmware, or limiting the controls to certain critical EDS software and technology.

Country Groupings:

Over the past ten years there has been a considerable expansion of the "Reasons for Control" which has added considerable complexity to the EAR without providing any underlying rationale for why new controls apply to certain countries. Several "Reasons for Control", such as Regional Stability (RS) and Encryption Information (EI), have less restrictive export authorizations for very similar but not exact groups of "low risk" countries. The differences in export authorization requirements complicate internal procedures for marketing, order processing, shipping, and distribution, as well as general compliance training. For example, products & technologies controlled for RS allow NLR treatment for NATO countries, plus Japan, Australia, and New Zealand, while EI controls allow License Exception ENC benefits to countries listed in Supplement 3 of EAR Part 740. Why do EU and EFTA countries such as Austria, Cyprus, Finland, Ireland, Malta, Sweden and Switzerland receive Encryption benefits, but not Regional Stability benefits? Why do NATO member countries such as Bulgaria, Iceland, Romania, and Turkey receive Regional Stability benefits, but not Encryption? The level of risk posed by exports to all of these destinations seems low given important commercial ties and/or the high level of military cooperation. Consistent NLR treatment across the reasons for control would simplify compliance decisions for certain US exporters.

Spare Parts for Medical Equipment:

The Trade Sanctions Reform and Export Enhancement Act of 2000 (TSRA) created a framework to permit US companies to sell medical devices to countries designated as state sponsors of terrorism to ensure those countries have access to adequate medical care for humanitarian reasons. However, TSRA and the Agriculture/Medical Program have fallen short of the intended goal because it is difficult to service customers in those countries in many circumstances. Currently only items that are classified as EAR99 are eligible for TSRA treatment, however, in some circumstances non-EAR99 replacement parts are necessary to the operation of EAR99 medical devices. From a policy perspective there seems little

justification to limit the export of parts for one-for-one replacement of components already exported as part of larger medical devices that are EAR99.

The Supplement No. 3 to Part 774 – Statement of Understanding -- Medical Equipment should be amended to allow EAR99 classification of parts necessary for the safe operation of medical equipment shipped under license in certain narrow circumstances, where there is a previously authorized transaction and the component will be sent as a one-for-one replacement, with assurance that the part will be installed into the item. Such a change would enable industry to service/support the previously-authorized installed base, thus allowing medical equipment to operate safely and to meet the objective of TSRA and the Agriculture/Medical Program.

BIS should also consider whether additional changes are needed to Supplement No. 3 to Part 774 or other mechanisms to ensure that US exporters can provide necessary upgrades and modifications to exported medical equipment in order to keep pace with the continual advancements in medical technology, for example, the ability to remotely support medical equipment through the Internet.

Alternatively, BIS could create a new license exception for spare parts for medical equipment necessary for one-for-one replacement of items incorporated into previously authorized medical equipment shipments, though it would be preferable from an industry perspective to address this concern through a revised Statement of Understanding allowing EAR99 classification.

Recommendations:

- (a) BIS should adopt a sunset procedure applicable to all unilateral controls, even those technically exempt from the foreign availability assessment procedures in the EAA. There should be a presumption that items subject to unilateral controls will be removed from the control lists absent specific justification to keep the items on the list over a reasonable period (3-5 years). Interested parties should have the opportunity to provide comments in the context of a review and provide information on foreign availability and technological advances relevant to assessing the validity of continued controls. Such sunset reviews could be championed by the TACs.
- (b) BIS should remedy the unilateral 2A983 controls by initiating multilateral negotiations in a similar fashion as described for National Security items in Section 5(f)(4) of the EAA. Alternatively, or if the products remained controlled unilaterally, BIS could consider narrowing the license requirements to specified countries of concern, such as Country Group D:1, permitting the use of more license exceptions for hardware and firmware (such as GBS), or limiting the controls to critical EDS software and technology.

- (c) Create a new country group comprised of NATO, EU, and EFTA members who would represent low risk destinations that justify less restrictive export authorizations based on strong economic and/or military relations with the United States.
- (d) Amend supplement No. 3 to Part 774 to address the shortfalls experienced by industry related to exports of medical devices, to read:

Statement of Understanding - medical equipment: Commodities that are 'specially designed for medical end-use' that 'incorporate' commodities or software on the Commerce Control List (Supplement No. 1 to part 774 of the EAR) are designated by the number EAR99. Items on the CCL necessary for the safe operation of medical equipment that otherwise would be classified on the Commerce Control List shall be classified as EAR99 if exported as for one-for-one replacement of parts for previously authorized medical equipment exports.

- (e) Alternatively to address the issue of parts necessary for the safe operation of medical equipment, create a new "License Exception" such as: "General Items for Medical Equipment (GME)" The new License Exception will provide industry the ability to service or support "items on the CCL necessary for the safe operation of medical equipment pursuant to the exported medical equipment as provided under Trade Sanctions Reform and Export Enhancement Act of 2000 (TSRA)."

(3) Any updates to the CCL item descriptions that would enable the descriptions to better reflect the intent of the multinational controls and to eliminate any overly broad descriptions that inadvertently capture non-critical items that are not controlled by other countries; and

There are a number of terms included in the CCL that are not defined in part 772 and which are critical to determining whether a control may apply. One example is the use of the term "prepreg" in 1C010. We understand that BIS currently interprets that term to mean any combination of carbon fiber and resin, whereas industry standard practice uses that term in a far more specialized way, to mean ordered arrangements of fiber that create strength in a composite material. Terms critical to classification decisions should be defined in part 772 and definitions should normally be driven by industry practice as relates to those definitions.

Publication of Classification Information:

A significant volume of information relevant to classification is currently not published or otherwise publicly available. For example, in some circumstances BIS has developed informal interpretative guidance that it uses in determining whether items fall under certain ECCN entries on the CCL, but that guidance is not available to the general public to assist in self-classification.

If a third party requests a formal classification of a US manufacturer's products, BIS does not currently contact the manufacturer. In some circumstances, however, third parties do not accurately describe the manufacturer's products or provide sufficient technical detail to result in an accurate classification. This can yield the circumstance in which a third party has received a classification that is at a higher level of control than the manufacturer's self-classification based on the accurate product parameters.

Recommendations:

- (a) Review terms that remain undefined and with guidance from the TACs, add additional definitions relevant to the interpretation of CCL entries. Absent special policy justification, terms should adopt industry-standard definitions.
- (b) Publish informal BIS interpretative guidance on individual ECCN entries on the BIS website.
- (c) Establish a procedure to contact the US manufacturer if a third party requests formal classification of its products so that the manufacturer has an opportunity to submit additional technical information that would assist in an accurate classification. This procedure should give the US manufacturer a short window in which to respond, perhaps 7-10 days and allow the classification to proceed absent a response from the manufacturer. BIS should use contact information in the SNAP-R system to ensure it is reaching the right contacts at the US manufacturers.

(4) Coordination and harmonization of controls on items covered by the multilateral regimes, such as the Wassenaar Arrangement.

In our experience, some multilateral regime members maintain very similar descriptions in their individual control lists and in practice interpret those restrictions similar to the United States in terms of what items are subject to control. However, the licensing practices of these regime members result in disparate treatment. For example, some regime members process license requests more quickly. Alternatively, some regime members allow comprehensive, open licensing arrangements that result in the ability for exporters from their countries to deliver "controlled" products in a much faster time frame. If the US

exporter must wait several weeks to obtain a license or the license has additional restrictions and a competitor can ship immediately under an open general license, the playing field is not level. These licensing practices have a significant impact on the competitive situation and should be taken into account when evaluating the coordination and harmonization of controls.

Further, in the past few years BIS has been very slow to implement the decontrol decisions of multilateral regimes. Wassenaar changes for 2006, adopted in December of 2005, were finally published in September 2006, nine months late. Wassenaar changes for 2007, adopted in December of 2006, still have not been published as of the filing of these comments. The delay in implementing these changes unnecessarily disadvantages US exporters.

Recommendations:

- (a) BIS should take into account the licensing time frames and open licensing arrangements of key supplier countries when assessing the harmonization of controls. Where there is a significant difference in licensing practice, BIS should seek to put US exporters on the same playing field by adopting an expedited time frame for processing requests and/or consider adopting additional license exceptions or open general licenses to expedite deliveries for bona fide end users and end uses.
- (b) BIS should automatically adopt multilateral control list changes within 30-60 days of the decision of the multilateral regime to ensure that US exporters are not disadvantaged as compared to foreign competitors.

* * *

GE thanks BIS and the Department of Commerce for the opportunity to submit these comments. We look forward to working with BIS in the Technical Advisory Committees and other fora to improve the current CCL for US exporters. Please contact the undersigned if you have any questions.

Best regards,



Kathleen Lockard Palma
Counsel, International Trade Regulation

By Electronic Mail (publiccomments@bis.doc.gov)

November 1, 2007

Timothy Mooney
Office of Exporter Services
Regulatory Policy Division
Bureau of Industry and Security
U.S. Department of Commerce
14th Street & Pennsylvania Avenue, N.W., Room 2705
Washington, D.C. 20230

Re: Systematic Review of the Commerce Control List

Dear Mr. Mooney:

I. INTRODUCTION

On behalf of our client, Robbins and Myers, Inc., ("R&M") we thank you for the opportunity to participate in the Bureau's systematic review of the Commerce Control List. R&M appreciates the Bureau's effort at striking a balance between national security and the economic interests of American companies competing in the global marketplace.

R&M is headquartered in Dayton, Ohio, and it operates through multiple subsidiaries in the United States and countries around the world, including Belgium, Brazil, Canada, China, Germany, India, Indonesia, Italy, Mexico, Singapore, Venezuela, and the United Kingdom. For nearly 130 years, R&M has designed and manufactured highly engineered equipment such as reactor systems, industrial mixers, and down-hole pumps, and today that equipment plays a vital role in the global manufacturing, chemical, and energy industries.

R&M operates in a competitive global market place, which makes it particularly well-placed to provide the Bureau with information and insights regarding improvements to the CCL. R&M believes that the CCL can be improved to better advance U.S. economic interests, without compromising national security. Specifically, R&M submits that the CCL could be improved by clarifying overly-broad descriptions to avoid unnecessary control of certain items, and by limiting the items captured by the CCL by taking into account their commercial availability outside of the United States.

Julia.McCalmon@ThompsonHine.com Phone 202.973.2778 Fax 202.331.8330

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II. PROPOSED AMENDMENTS TO ECCNs 2B350 AND 2E002

Our focus in these comments is on ECCNs 2B350 and 2E002, which potentially control the export of a significant portion of R&M's equipment and related technology.¹ To avoid placing unnecessary economic burdens on U.S. exporters such as R&M, the CCL must reflect the reality of the global marketplace. It is R&M's position that the ECCNs in question do not reflect such reality in many industrial sectors.

Specifically, (1) some parts and components, including some of those manufactured by R&M, have been improperly treated as controlled under ECCNs 2B350 and 2E002, and (2) many 2B350-controlled items and 2E002-controlled technologies are commercially available outside of the United States, including in non-Australia Group countries.

The end result of the incongruity between how the ECCNs are being interpreted and the reality of the global marketplace is an ineffective export control regime that harms U.S. economic interests. For this reason, we propose the following revisions to ECCNs 2B350 and 2E002.

a. Parts and Components Should Be Expressly Excluded from the Scope of ECCNs 2B350 and 2E002

ECCN 2B350 does not control parts and components of the equipment listed in the text of 2B350. However, R&M suggests that overbroad interpretations of ECCN 2B350 and 2E002 have led to improper controls on such parts and components and their related technology. R&M accordingly proposes an amendment to these ECCNs to clarify that they do not capture parts and components that do not come in direct contact with the chemical(s) being processed or contained, or technologies related to these parts and components.²

¹ Background information on selected Pfaudler and Chemineer products is attached as Exhibit 1.

² One of the Bureau's stated aims of this review is to "eliminate overly broad descriptions that inadvertently capture non-critical items." 72 Fed. Reg. 51,213 (Sep. 6, 2007). In the context of 2B350, "critical" equipment is equipment whose surfaces come into direct contact with the chemicals being processed, and is rightly controlled by that ECCN.

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A specific example of the inadvertent control of a Pfaudler product through an overbroad interpretation of ECCNs 2B350 and 2E002 occurred when Pfaudler sought to export to its Indian affiliate, GMM Pfaulder, designs for a particular clamp used to bind together glass-lined pieces of a reactor.³ Clamps are not controlled by 2B350, and clamps of this particular design are not necessary for the production of a glass-lined reactor, so the technology for those clamps does not fall within 2E002. However, the Bureau denied Pfaudler's export license application, presumably on the basis of ECCN 2E002.⁴

Pfautler's inability to transfer this technology means R&M is unable to realize a significant cost savings and competitive advantage through overseas production. Meanwhile, manufacturers in India and other controlled destinations, such as China, are currently producing clamps for glass-lined reactors similar to those Pfautler sought to produce in India.⁵ The Bureau's interpretation of 2B350 has been harmful to U.S. economic interests and does not advance national or global security. As such, R&M proposes that the following language be added to the "List of Items Controlled" section of 2B350:

The controls in this entry do not apply to parts and components of equipment controlled under this entry, where such parts and components do not come in direct contact with the chemical(s) being processed or contained.

Likewise, to ensure that technology for such parts and components is not inadvertently controlled, R&M suggests that the following language be added to 2E002:

The controls in this entry do not apply to technology for the production of parts and components of equipment controlled by 2B350, where such parts and components do not come in direct contact with the chemical(s) being processed or contained.

Control of parts and components that do not come into contact with the process chemicals—"non-critical" equipment—does not further the goals of the U.S. export control laws.

³ Exhibit 2 is a data sheet for the clamp in question and a diagram of how a clamp is used on a reactor.

⁴ The Bureau's notice of denial is attached as Exhibit 3.

⁵ See *infra* note 10.

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The addition of this language to the CCL does not alter the current scope of 2B350 or 2E002. Nevertheless, R&M believes that this clarification is necessary to maintain the intent of the controls while eliminating the inadvertent capture of parts and components that are not intended to be controlled.

**b. License Exception for 2B350 Equipment and 2E002 Technologies
Commercially Available Outside of the United States**

Worldwide commercial availability of items captured by ECCNs 2B350 and 2E002 must be considered in the EAR licensing regime. In today's global market, many dual-use items and technologies captured by ECCNs 2B350 and 2E002 are currently used, manufactured, and transferred throughout the world. For example:

- Several Chinese entities manufacture glass-lined reactors, storage vessels, condensers, and other 2B350 items that compete directly with Pfaudler's products on the world market, including within the United States. In addition to U.S. sales, the Chinese companies sell to customers in non-Australia Group countries such as Brazil and Iran.⁶
- Glass-lined flush valves, which are controlled by 2B350, are currently being produced by an Indian company and sold globally.⁷ Nonetheless, the Bureau denied Pfaudler's request for permission to transfer this technology to India.⁸
- Pfaudler's Indian affiliate currently produces glass-lined agitators in India, the technology having been transferred under export license from Pfaudler's affiliate company in the United Kingdom.⁹ This is the same glass-lining technology required to produce other glass-lined 2B350 items.

⁶ Product specifications for glass-lined reactors made by manufacturers outside of the United States are attached as Exhibit 4.

⁷ An advertisement for glass-lined flush valves produced in India is attached as Exhibit 5.

⁸ The Bureau's notice of denial is attached as Exhibit 6.

⁹ The export license is attached as Exhibit 7.

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The global availability of these items warrants an approach that ensures U.S. exporters are not left at a severe competitive disadvantage.¹⁰ Notwithstanding the worldwide availability of the equipment and technology described above, the current application of the CCL prevents American businesses such as R&M from competing with foreign manufacturers in overseas markets. In this situation, maintenance of existing controls on these items does not advance the objectives of the Australia Group; it only serves to harm U.S. business interests, with no national security benefit.

We propose that the Bureau institute a new license exception to reflect the commercial availability of chemical processing equipment and technologies in the global marketplace. The proposed exception would be available upon demonstration that the item to be exported is commercially available to civil end-users in the importing country. This additional requirement would ensure that U.S.-origin chemical processing equipment and technologies would only reach the civil end-users that could otherwise obtain them from non-U.S. sources. The following is the draft text R&M proposes for such an exception:

COMMERCIALLY-AVAILABLE GOODS AND TECHNOLOGY (AVL)

(a) Scope

License Exception AVL authorizes exports and reexports of items on the Commerce Control List (CCL) (Supplement No. 1 to part 774 of the EAR) that have a license requirement to the ultimate destination pursuant to the Commerce Country Chart (Supplement No. 1 to part 738 of the EAR) for CB reasons only; and identified by "AVL—Yes" in the License Exception section of the Export Control Classification Number (ECCN), provided the items are destined for civil end-users for civil end-uses in Country Group D:3, except Cuba, Iran, North Korea, and Syria (Supplement No. 1 to part 740 of this part).

¹⁰ Note also that in addition to the items listed above, clamps substantially similar to those Pfaunder sought to manufacture in India (*see* section II.a, *supra* page 3) are commercially available on the global market. An example of such clamps, manufactured in India, is attached as Exhibit 8.

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(b) Restrictions

(1) Restricted end-users and end-uses. You may not use AVL if you "know" the item will be or is intended to be exported, reexported, or transferred within country to military uses or military end-users. Such exports, reexports, and transfers will continue to require a license. In addition to conventional military activities, military uses include any proliferation activities described and prohibited by part 744 of the EAR.

(2) Availability. You may not use AVL unless the item is commercially available to civil end-users in the importing country. "Commercially available" means that the item is available for purchase by civil end-users in the importing country, without requirement of government approval in that country. Evidence of commercial availability includes, but is not limited to, records of actual sales to civil end-users, as well as advertisements, catalogs, and product listings. Availability to military end-users or availability to civil end-users through non-commercial channels does not constitute "commercial availability," and License Exception AVL is not available for such items.

(3) Visa status. Deemed exports under License Exception AVL are not authorized to foreign nationals in an expired visa status. It is the responsibility of the exporter to ensure that, in the case of deemed exports, the foreign national maintains a valid U.S. visa, if required to hold a visa from the United States.

The "commercial availability" requirement of the proposed exception will allow U.S. exporters to compete in foreign markets, and thereby advance U.S. economic interests. Where such availability cannot be established, the existing controls would continue to operate as they have and should under the wording of each ECCN.

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III. CONCLUSION

R&M shares the Bureau's objective of ensuring effective controls on exports that must not end up in the wrong hands. However, realization of this goal must not unnecessarily impair U.S. economic interests. R&M believes the proposals outlined in these comments will enable the Bureau to realize both of these objectives as they relate to 2B350 equipment and 2E002 technology, and at the same time keep the CCL relevant and up-to-date in the ever-evolving global economic environment.

We thank you for your consideration in reviewing our comments and are available to assist the Bureau with its review in any way.

Sincerely,



Julia M. McCalmon
Jason T. Hungerford
Counsel to Robbins & Myers, Inc.

EXHIBIT 1



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Prochem MD Series Mixers

For over 40 years, Prochem[®] MD Series Mixers have been the value choice for many side-entering applications. Integral to the MD Mixer's design is the Maxflo WSE impeller. Each MD Series Mixer maximizes the capabilities of this high-efficiency impeller to reduce operating costs and increase processing capacities.

The MD Mixer's modular design, featuring innovative shaft bearing cartridges, allows longer operating runs between maintenance periods. Routine maintenance and overhauls can be performed without draining the tank or removing the mixer.

Horsepower and Speed Ranges

Standard MD Mixers are available from 1 hp to 250 hp with speeds from 240 rpm to 480 rpm. Mixer designs with enhanced operating capacity can be designed for applications with unique requirements.

Shafts

Heavy-duty, oversized shafts, the largest in the industry, are designed to handle up to 10 times the normal operating bending load at full torque. MD Mixers offer shaft sizes from 1.5" to 4".

Bearings

MD Mixers offer a minimum B-10 bearing life of 100,000 hours and feature separated bearing cartridges with a double front bearing seal for greater protection against contamination.

Unit Construction

All MD Mixers are completely assembled at our facility with all shaft, bearings and seals accurately aligned before shipment. No on-site alignment is required.

Housings & Mounts

Housings and motor mounts are fabricated from steel and can withstand loads several times that of typical application requirements. Two coats of polyurethane, catalyzed paint over a two-part epoxy primer protect against corrosion.

Tank Shut-Off Devices

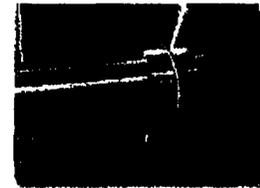
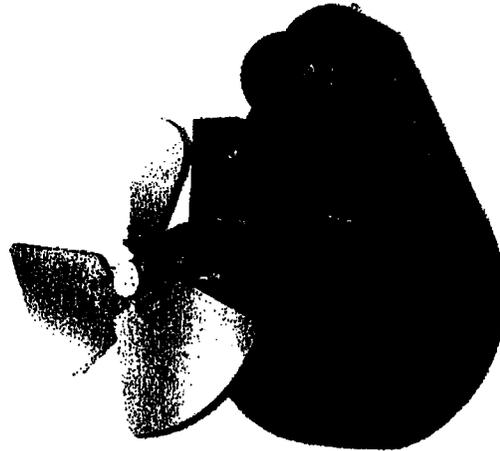
An optional secondary shut-off seal prevents fluid leaking during routine bearing/seal maintenance so the tank does not have to be drained when servicing the mixer.

Belt Drives and Guards

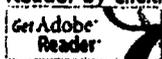
Ultra VX belts and sheaves provide economical power transmission with shock-absorbing capability. Belt and shaft guards are made to OSHA standards. Guards on units with 3" or larger shafts contain access holes for adjusting belt tension. Drive systems are available for 1.3, 1.5 and 2.0 belt drive service factors.

Product Literature

All Product Literature is in Adobe's PDF Format. Acrobat Reader is required to view all documents. You may download the Acrobat



Reader by clicking on the Get Acrobat Reader Icon Below.



MD Series Mixers Bulletin #720
240kb

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Chemineer, Inc. | P.O. Box 1123 Dayton, Ohio 45401 | Phone: 1-800-643-0641

GlasteelTM Column Systems



**PC
Pfauder, Inc.**

A Unit of Robbins & Myers, Inc.

Glasteel Column

Pfaunder pioneered the development and use of Glasteel as a material of construction. Advanced enameling technology is used to produce glass lining for column shells, bonnets and support rings.

Pfaunder Glasteel columns combine the inert properties of glass with the structural strength of steel. Glass lining offers many advantages over other lining materials:

- Highly resistant to strong acids, powerful oxidizers and organics except for fluoride elements.
- Glass is essentially inert, so it cannot adversely affect product purity or flavor.
- Glass is impermeable, eliminating cross contamination.

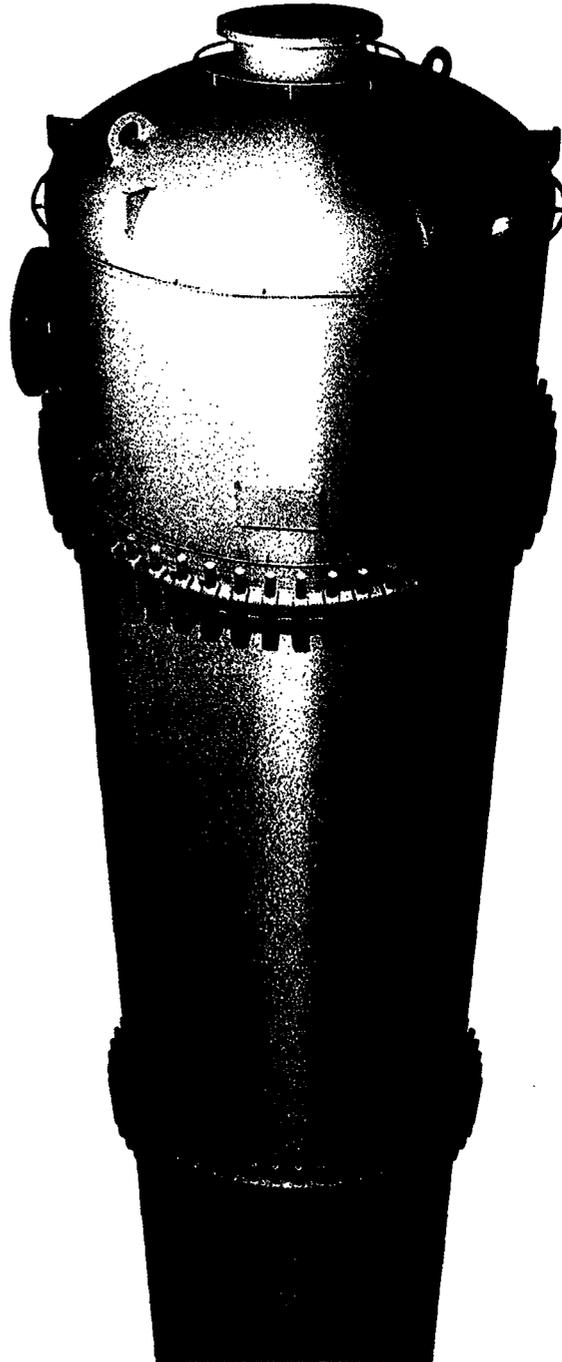
- The fire polished surface of the glass lining provides anti-stick properties, thus minimizing fouling factors.

Glasteel columns are available in:

- Sizes ranging from 6 inch to 78 inch diameter.
- Single shell or jacketed design.
- Wide range of pressure ratings to meet various process requirements.
- Temperature ratings ranging from -20° F to +450° F.

Glasteel columns are designed and fabricated in accordance with ASME Code requirements.

With all these features and benefits, you now have the flexibility to minimize cost, improve product purity and column performance efficiency.

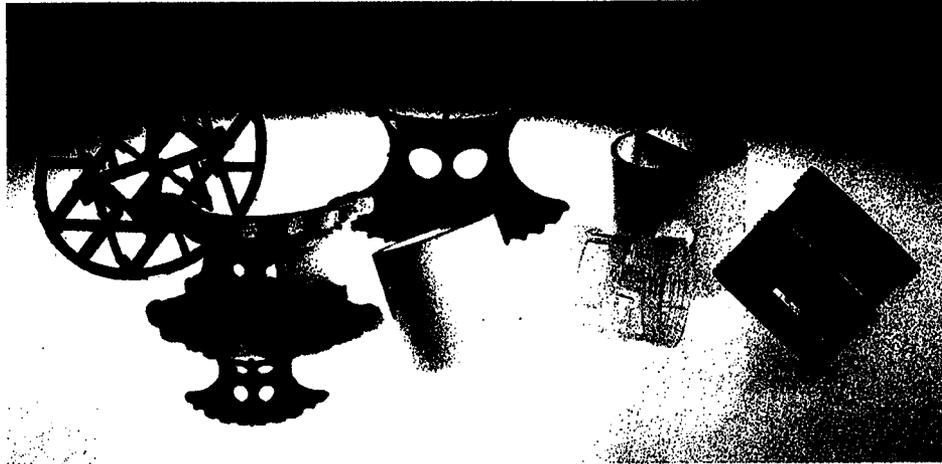


No matter what the application, Pfaunder can provide solutions to meet your process requirements.

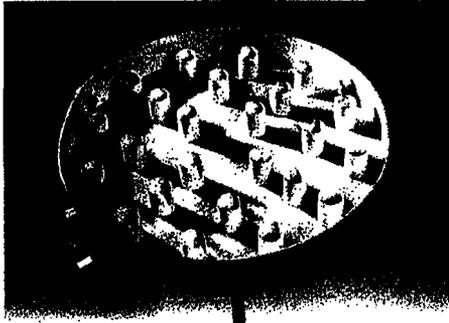
Packing

Pfaucler works closely with various packing suppliers to provide the best random or structured packing solution to your process.

Random packing is available in different sizes and shapes to provide high surface contact area for mass transfer while minimizing pressure drop. Random packing is available in various materials of construction such as: fluoropolymers, alloy and ceramic. Selected material is dependent on compatibility with process chemistry. The same design parameters are considered when selecting structured packing.



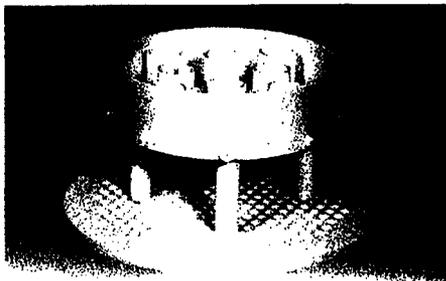
Traditional Random Packing



Orifice riser distributor combines a standard orifice and weir type distributor to handle a wide range of liquid flow rates. This unique design results in low pressure drop and reduced liquid entrainment.



Ladder distributor provides uniform liquid distribution over the column packed bed.



Combination distributor and bed limiter prevents column packing from rising and obstructing the function of the distributor in upset conditions and reduces the number of support rings in the column.

Column Internals

Column internals are customized to each application. Optimization is the goal when retrofitting existing columns or constructing new units.

Column Internals are constructed of fluoropolymers, alloy or ceramic, and are provided in a wide variety of designs and configurations.

Each of the following are reviewed to maximize column performance:

- Maximum capacity.
- Uniform liquid distribution.
- Resistance to plugging or fouling.
- Proper turndown capability.
- Minimum pressure drop.
- Minimal distributor height to allow more packed bed height.
- Cross-mixing capability.

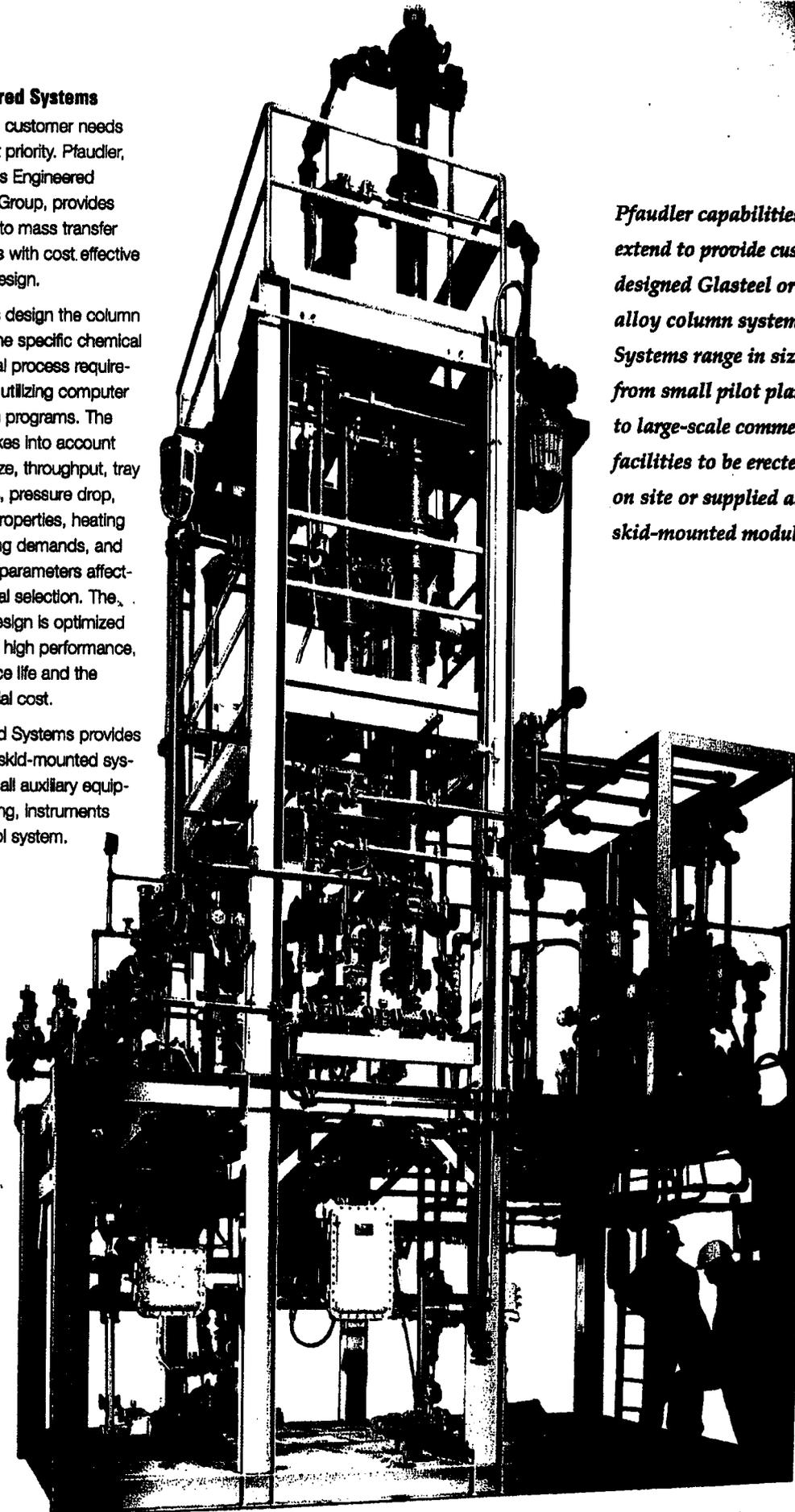
Engineered Systems

Satisfying customer needs is the first priority. Pfaudler, through its Engineered Systems Group, provides solutions to mass transfer processes with cost effective column design.

Engineers design the column to meet the specific chemical or physical process requirements by utilizing computer simulation programs. The design takes into account column size, throughput, tray hydraulics, pressure drop, packing properties, heating and cooling demands, and corrosion parameters affecting material selection. The column design is optimized to provide high performance, long service life and the lowest initial cost.

Engineered Systems provides complete skid-mounted systems with all auxiliary equipment, piping, instruments and control system.

Pfaudler capabilities extend to provide custom-designed Glasteel or alloy column systems. Systems range in size from small pilot plants to large-scale commercial facilities to be erected on site or supplied as skid-mounted modules.

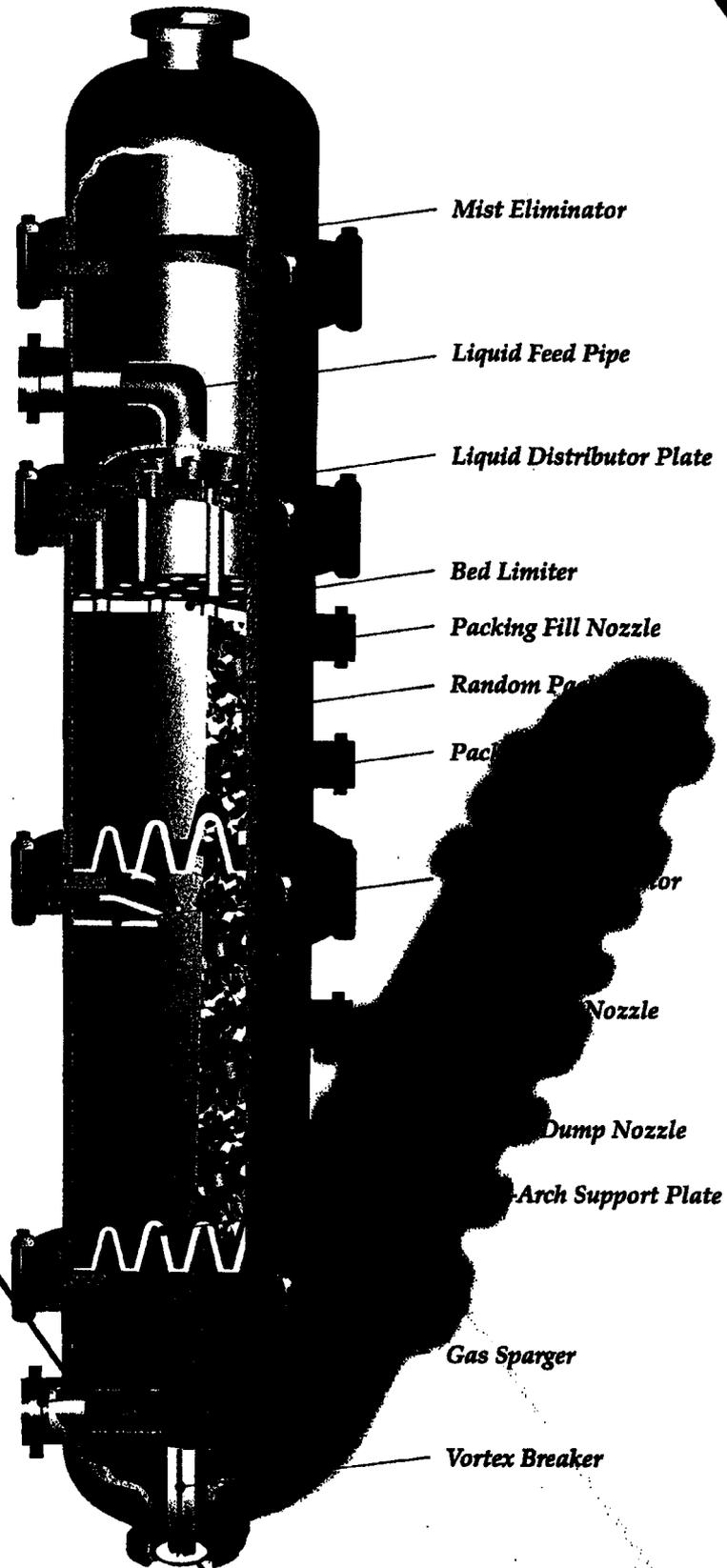


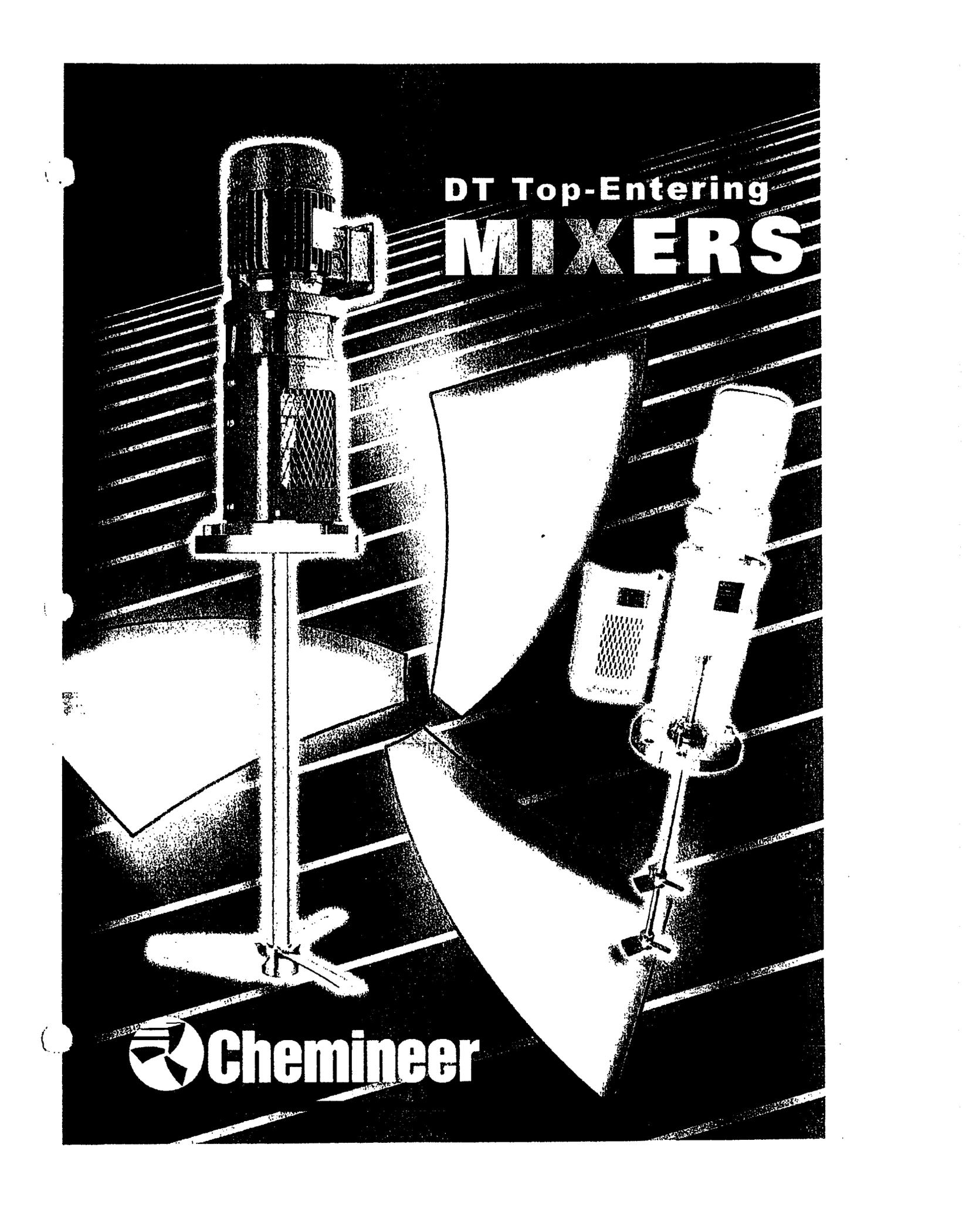
Column Systems

Designed and built to withstand highly corrosive and reactive environments. Pfaudler packed Glasteel columns efficiently handle process operations such as: distillation, absorption, stripping and extraction.

Glasteel packed columns are built to your complete process specifications and designed in accordance with ASME Code.

Pfaudler supplies the columns as complete systems with all internals including random or structured packing.





DT Top-Entering
MIXERS

 **Chemineer**

Chemineer... the Right Mixer Company

Fluid agitation products and systems from Chemineer have earned a reputation for high quality and dependability over the last 50 years. Our technical support staff, after-sales service, engineering staff and skilled independent representatives are committed to provide solutions for mixing applications.

Chemineer sales personnel utilize CEDS™ computer aided design software, extensive application databases and a state-of-the-art lab facility to provide optimized mixing solutions.

DT Mixer (0.25-4.0kw)

- Rapid delivery on standard configuration designs
- Industry standard, off-the-shelf, IEC electric or air motors
- Low maintenance integral motor/gear drives
- Optional right angle drive for low-headroom requirements
- Gear Driven units use sealed for life gearboxes, filled with semi fluid grease.
- Wide range of mechanical seal offerings
- Broad range of impeller selections both "standard" and "custom"
- Alloys, polishing, coatings and other custom options are available
- Positive shaft attachment eliminates inherent problems with grip spring designs
- 25mm or 40mm shaft diameter
- Shaft lengths to 3400mm
- Flameproof/Explosion proof motors available on longer delivery
- Modular components for application versatility

Sealed Tank Mixers

Chemineer DT top-entering, sealed tank mixers offer various drive configurations and a broad range of sealing options. Mounting flanges are available in ANSI, DIN and Ferrule standard sizes.



20DT Gear-Drive Mixer

- Vapour seal (DTL)
- Pedestal integral with bearing housing
- Low maintenance integral motor/gear drive

40DT Gear-Drive Mixer

- Vapour seal (DTL)
- Single (DTNC or DTNS) & double (DTN) mechanical seals
- Pedestal integral with bearing housing
- Low maintenance integral motor/gear drive

30DT Direct-Drive Mixer

- Vapour seal (DTL)
- Single (DTNC) or Double (DTN) mechanical seal
- Pedestal integral with bearing housing

60DT Gear-Drive Mixer

- Vapour seal (DTL)
- Right-angle drive configuration
- Ideal for low-headroom clearance applications
- Standard mounting flange integral to pedestal. Adapter flange sizes also available.

Open Tank Mixers

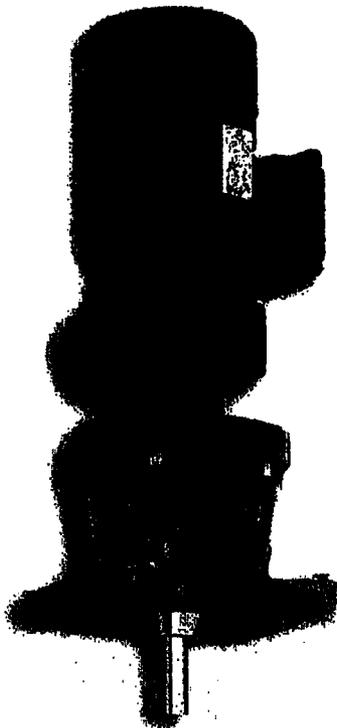
20DTD

Gear-Drive Mixer

- High flow/low-shear mixing requirements
- Solid suspension or blending and motion applications
- Low maintenance integral motor/gear drive



10° Angle Fitters



40DTD

Gear-Drive Mixer

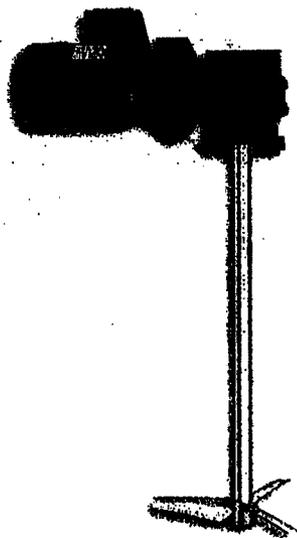
- High flow/low-shear mixing requirements
- Solid suspension or blending and motion applications
- High torque design suitable for higher viscosity applications
- Low maintenance integral motor/gear drive



30DTD

Direct-Drive Mixer

- High shear mixing requirements
- Solid suspension incorporation



60DTD

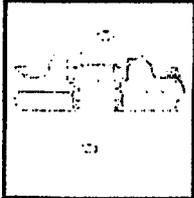
Gear-Drive Mixer

- Right-angle drive configuration
- Ideal for low-headroom clearance applications
- Cast iron housing
- Pre-lubricated with synthetic oil

Sealing Options

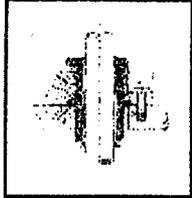
Chemineer offers a broad range of sealing options for the DT top-entering, sealed tank mixers. These options enable Chemineer to offer you the right level of performance to meet your application needs.

DTLS



Vapour Seal
The sealing ring of the DTL models protects process fluid from contamination in general purpose, light duty applications.

DTN



Double Mechanical Cartridge Seal
The double mechanical cartridge seal on the DTN models provide long-life and excellent sealing capabilities with minimum maintenance.

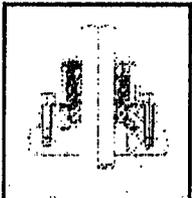
- Optional lubrication system available: 10 litres stainless steel vessel rated to 11 bar supplied with sight glass level gauge mounting hardware and flexible hoses.

DTL



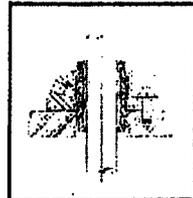
V-Ring Seal
The V-ring Seal is mounted inside the pedestal and protects from vessel vapours.

DTNS



Single Mechanical Seal
A single, dry-running component mechanical seal is an economical option for low pressure applications.

DTNC



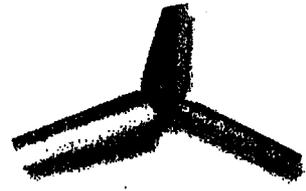
Single Mechanical Cartridge Seal
A single mechanical seal offers dry-running capability with an easily replaceable cartridge.

Impellers

To ensure optimum efficiency for all of your mixing applications, Chemineer offers a range of impeller designs that produce maximum pumping action with minimum energy loss.



Marine Propeller (JP-3)



High Efficiency Impeller (JF-3)



High Efficiency Impeller (SC-3)

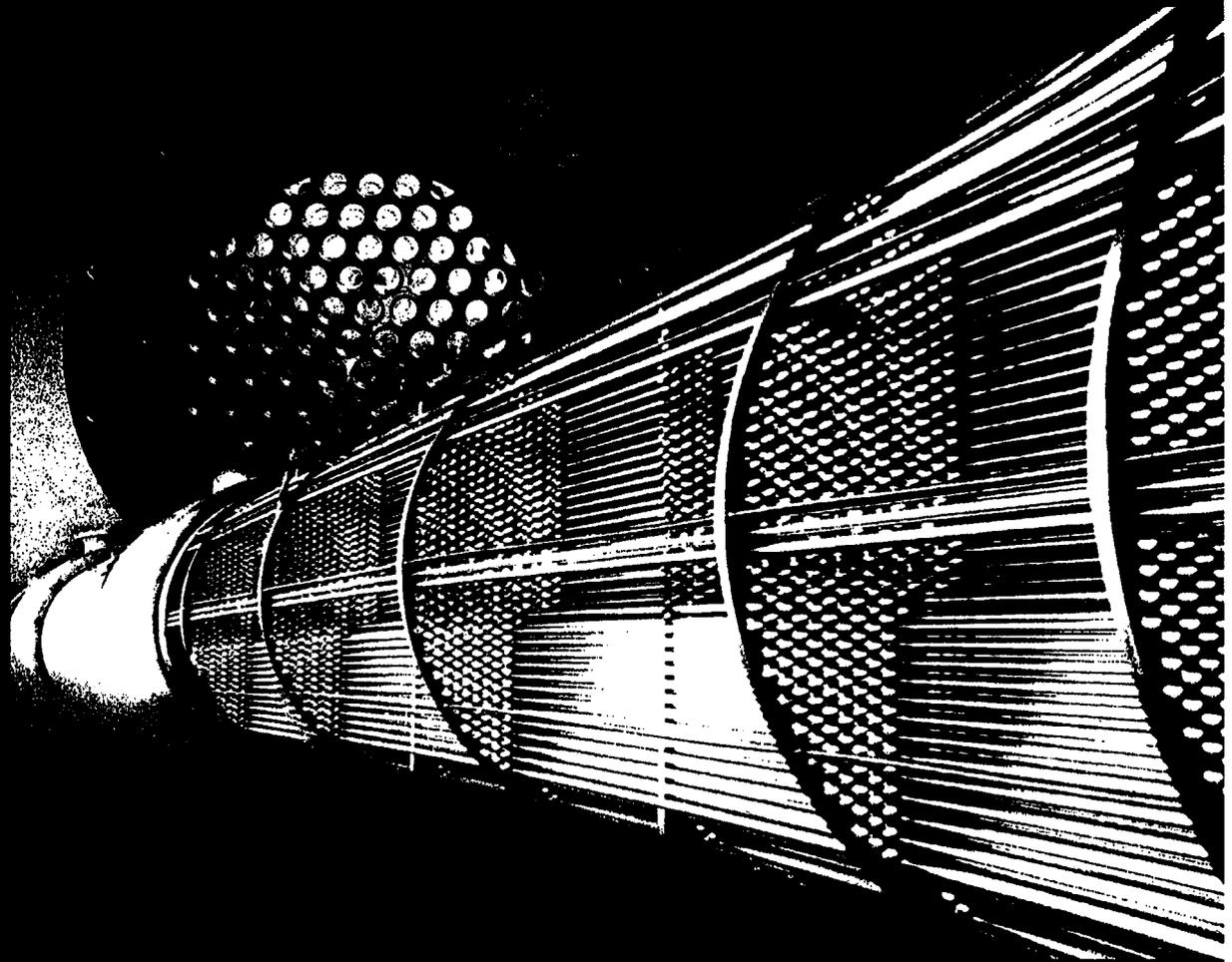


Crammer Road, West Meadows, Derby DE21 6XT, England
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Reactive Metal Heat Exchangers



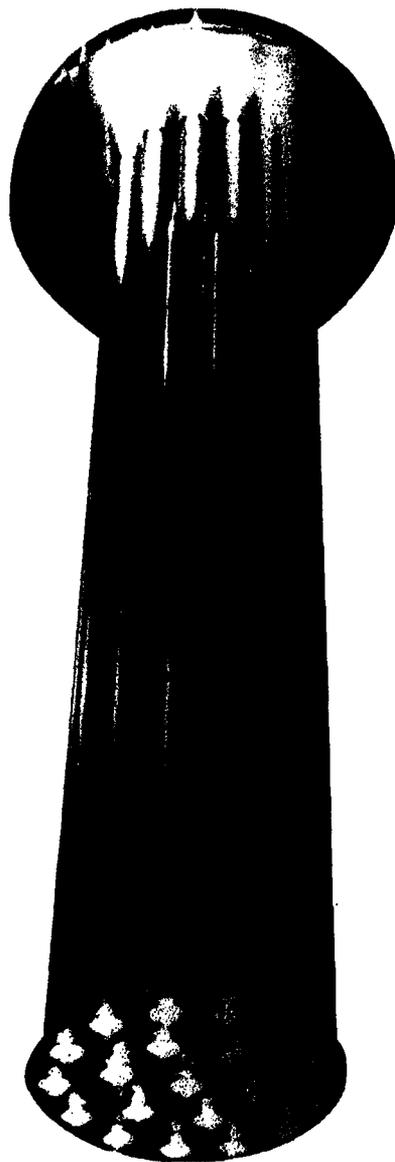
**DC
Praxair**

REACTOR SYSTEMS

REACTIVE METAL HEAT EXCHANGERS

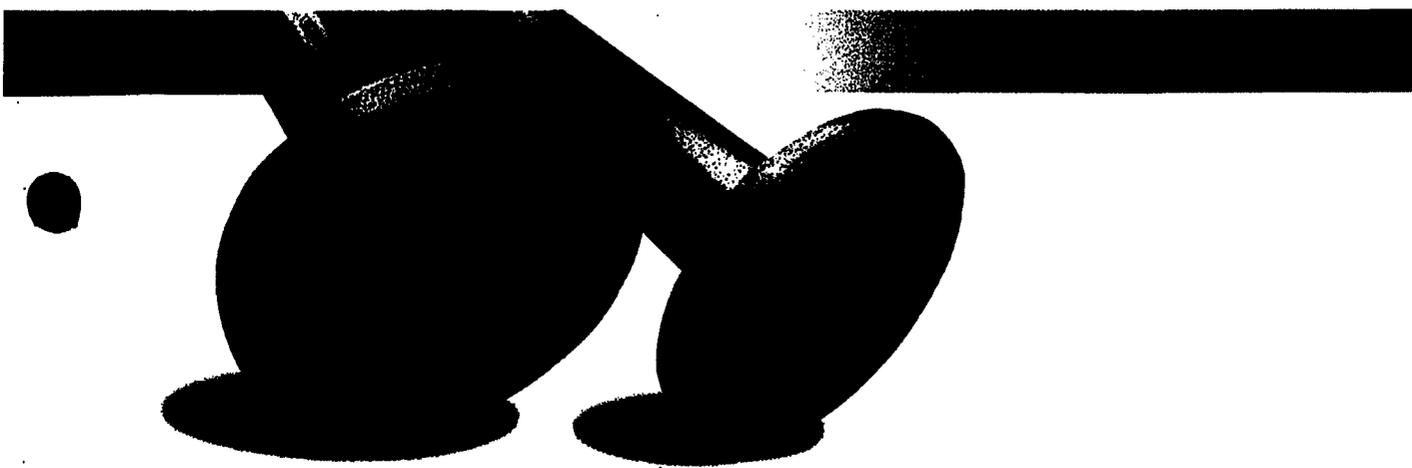
TECHNICAL EXPERTISE

- Computer design capabilities include Aspen B-JAC Heat Exchanger Design, HYSYS Process Simulation and proprietary computer programs.
- Pfudler can design and fabricate heat exchangers from all of the reactive metals including tantalum, niobium and zirconium.
- Fabrication is in accordance with ASME Sec. VIII, Div. 1 Code and TEMA Class B, C or R Construction codes.
- All types of heat exchangers can be fabricated including bayonets, fixed tubesheets and U-tube type units.
- Pfudler can also provide Glasteel® construction for such items as bonnets or shells.



EXPERIENCE

- Pfudler designed and fabricated the first tantalum heat exchanger in 1942 and the first zirconium heat exchanger in 1938.
- Our welders range in experience from 10 to 25 years.
- We have provided corrosion-resistant equipment to the chemical and pharmaceutical industry for over 100 years.
- Pfudler has fabricated tantalum heat exchangers as large as 40 inches in diameter with over 1,400 sq. ft. of surface area.
- Pfudler designed and fabricated the largest known zirconium heat exchanger with over 15,500 sq. ft. of surface area.



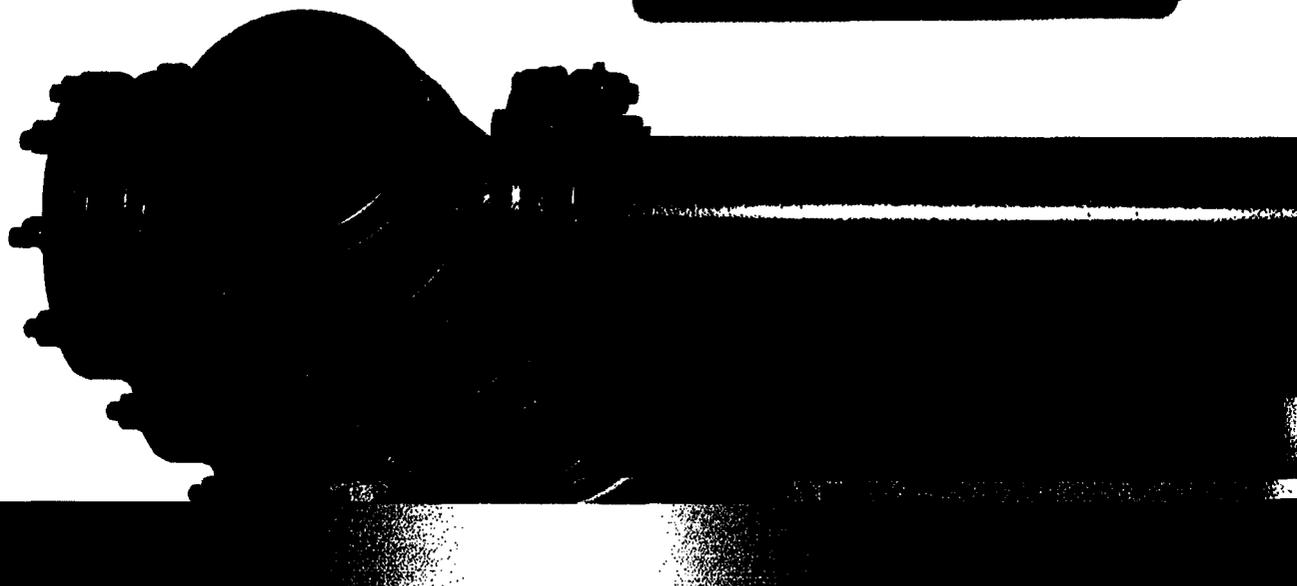
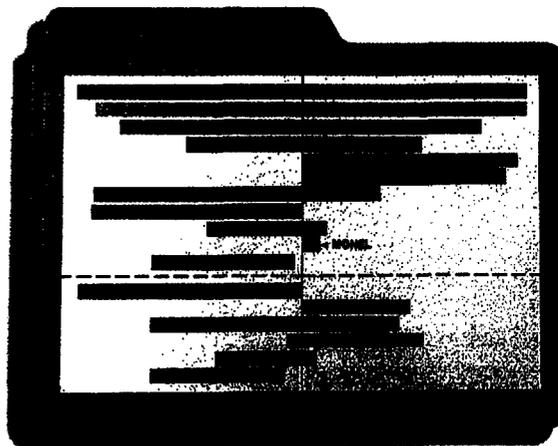
ADVANTAGES OF REACTIVE METAL HEAT EXCHANGERS

Reactive metals have many advantages over other materials of construction:

- **Superior Corrosion Resistance** – Reactive metals are inert to various compounds at temperatures up to 200° C.
- **Welded Design** – Eliminates O-ring and tube to tubesheet joint leaks.
- **Higher Temperature and Pressure Ratings** – Compared to glass, graphite and fluoropolymer materials.

- **Product Purity** – There is no contamination from heavy metals or filler materials.
- **Quick Delivery** – Standard size tantalum tubing (3/4 inch OD by 0.015 inch thick) is stocked to provide quick delivery of units.

- **Low Pressure Drop** – Large diameter tubes provide lower pressure drops, especially for overhead vacuum condenser applications.

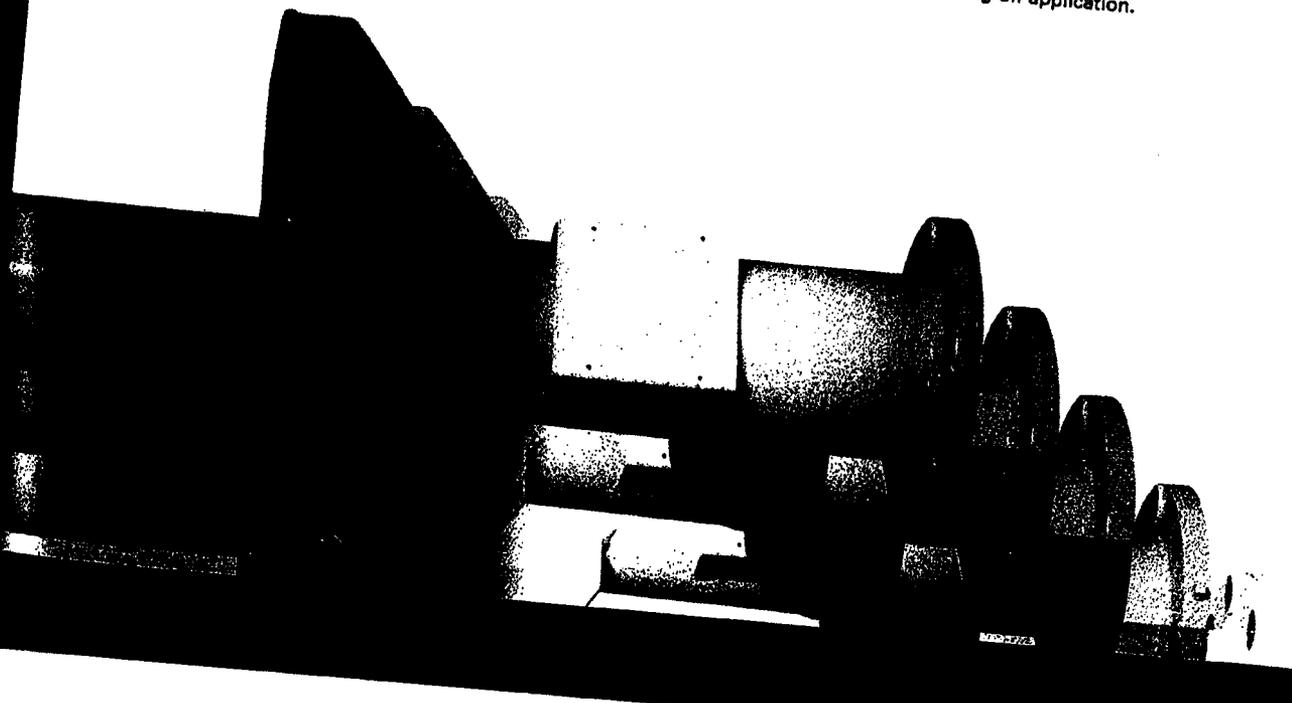


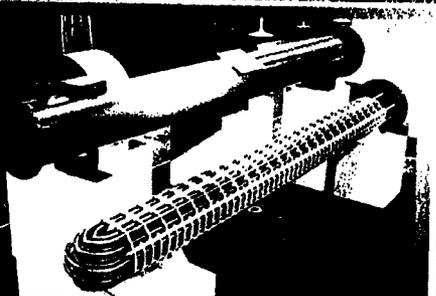
DESIGN FEATURES OF PFAUDLER TANTALUM HEAT EXCHANGERS

- **Quality Assurance** – All welds are liquid dye penetrant tested and gas leak tested for integrity.
- **Silver Brazing** – The outside edge of tantalum tubesheets, or flange faces in tantalum lined bonnets, are silver brazed to the carbon steel substrate beyond the gasket surface. This feature keeps the space between the tantalum liner free from moisture, dirt, gasket leakage or other contaminants.
- **"Tell-Tale"** tubesheet and bonnet ports allow purging the welds during fabrication and, along with the silver brazing, allow for leak testing with air or helium. During operation, the ports can be used to monitor process fluid leakage as an indication of weld integrity.
- **Flush Mount** tantalum tubes allow for draining the unit if mounted vertically or inclined. This new design is being widely used in the pharmaceutical industry. Without this feature, the tubes would project a short distance and build up material or contamination on top of the tubesheet.

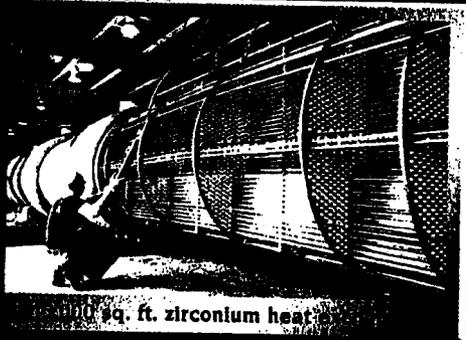
| Gasteel Reactor Size (Gallons) | Jacket Area (Sq Ft) | Equivalent Tantalum Cond. Area (Sq Ft) |
|--------------------------------|---------------------|--|
| 10 | 4 | 5 |
| 20 | 7 | 9 |
| 30 | 9 | 11 |
| 50 | 13 | 15 |
| 100 | 23 | 26 |
| 200 | 38 | 45 |
| 300 | 53 | 62 |
| 500 | 80 | 90 |
| 750 | 96 | 105 |
| 1,000 | 122 | 135 |
| 1,500 | 158 | 170 |
| 2,000 | 191 | 210 |
| 3,000 | 236 | 260 |
| 4,000 | 300 | 330 |

Table shows the typical tantalum condenser for general purpose use with a jacketed glass-lined steel reactor.
Actual area required may vary depending on application.





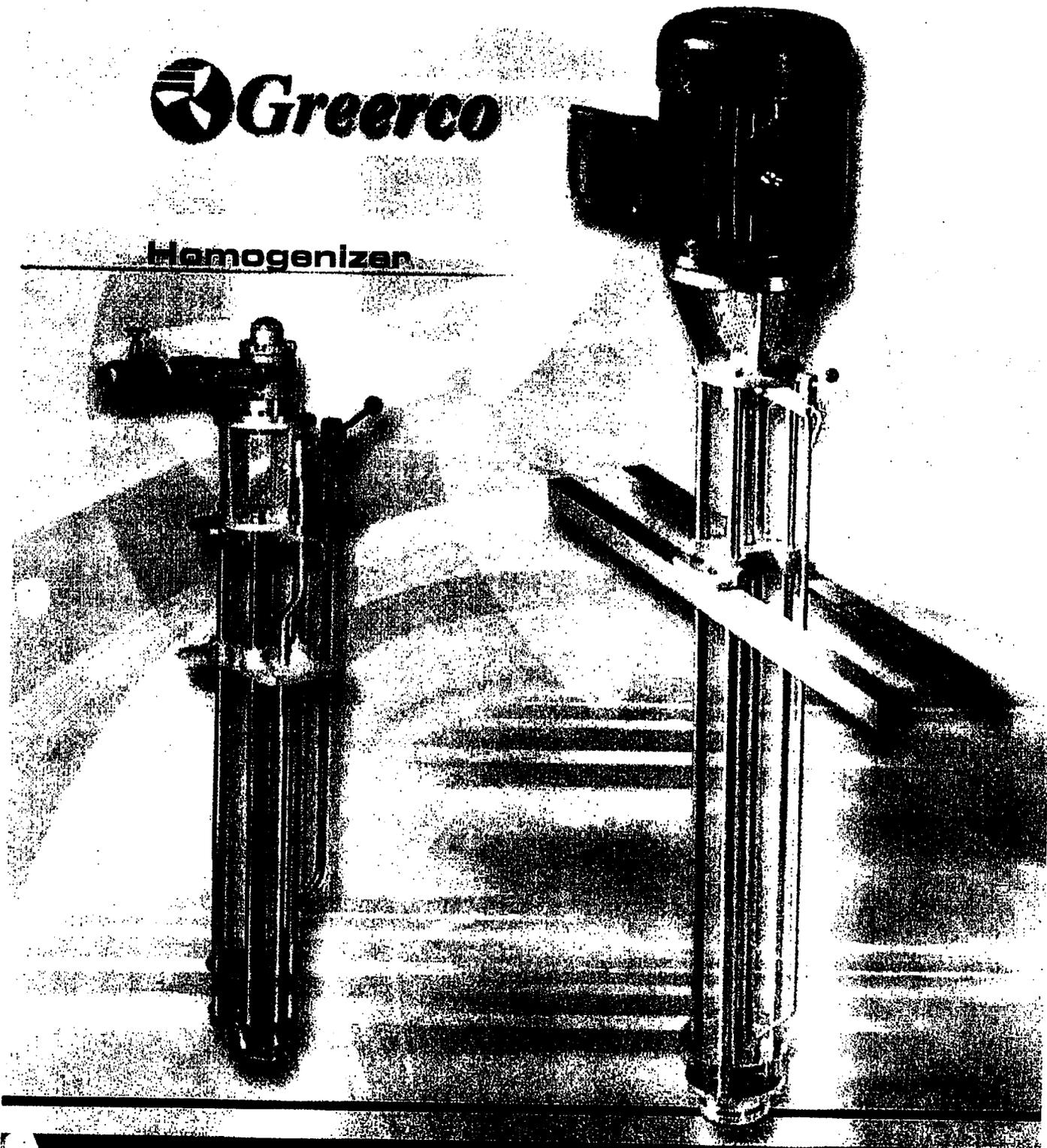
tantalum U-tube condenser
glass-lined steel pipe



100 sq. ft. zirconium heat exchanger

 **Greerco**

Homogenizer



Reliability

The Greerco Homogenizer series offers a full range of tank-mounted, high shear mixers for laboratory to production scale. The design exceeds the high quality standards necessary to achieve optimal process results and withstand the rigors of difficult processes that require high shear mixing.

- High-speed turbine running in close proximity to a fixed stator creates intense hydraulic and shear forces where product is broken down into its primary particle size or dispersed throughout the carrier phase
- Tightly held tolerances on machined components allow for consistent and predictable performance
- The robust stator design handles severe duty better than competitive designs that utilize screen technology
- The axial in-axial out flow path results in higher throughputs with lower horsepower requirements

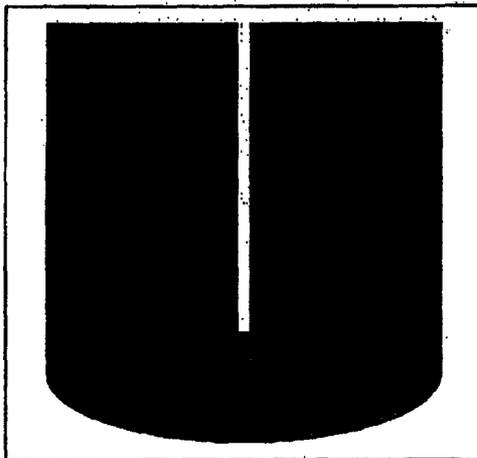
Greerco Processing Advantages

Vs. Traditional Agitator Impeller Systems

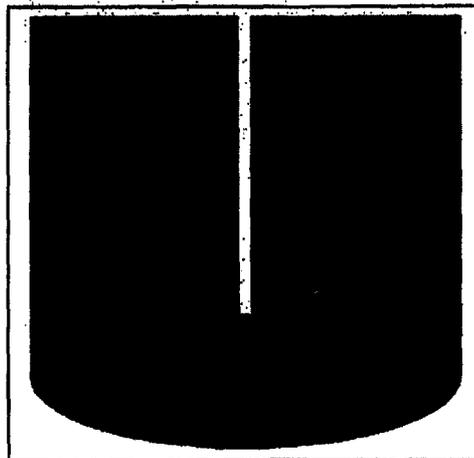
The Homogenizer offers operating speeds and shear rates not available in traditional impeller systems. This allows the Greerco unit to dramatically reduce process times for difficult applications as well as complete complex operations where standard impeller technology isn't an option (*see application section for examples*).

Vs. Alternate High Shear Mixing Head Designs

The Greerco rotor-stator design is unique in that it utilizes an axial-in/axial-out flow pattern and allows for reversible operation. When operated in the forward direction, the Homogenizer creates an up-pumping umbrella flow pattern as opposed to the localized radial-out pattern offered by competitive technology (*see CFD images for illustration*). In the reverse direction, a vortex is created that can be used to incorporate solids directly into the mixing head for immediate dispersion.



Axial-Umbrella Flow Pattern of Greerco Technology



Radial Flow Offered by Competitive Technology

Aerosols • Antacids • Antibiotics • Antiperspirants • Bacterial Slurries • Biologics • Cell Rupturing • Coatings • Cold Creams • Color Dispersions
• Flavor Syrups • Fluxes • Gum Dispersions • Hair Gel • Herbicides • Hormone Emulsions • Injectables • Insecticides • Liquid Make Up • Lotions
• Printing Inks • Refractory Dispersions • Salad Dressing • Sauces • Serums • Shampoo • Shaving Cream • Silicone Emulsions • Sulfur Dioxide

With over 65 years of experience servicing the needs of the high shear market and its customers.

Applications

- Solids Incorporation
- Homogeneous dispersions
- Solids deagglomeration
- Rapid blending
- Particle size reduction
- Pre-packaging product refinement

Cost Effective Solution

Low Horsepower

Reduces initial investment and energy consumption

High Throughput

Faster processing rates improve productivity

Robust Design

Minimal downtime and maintenance costs

Mechanical Construction

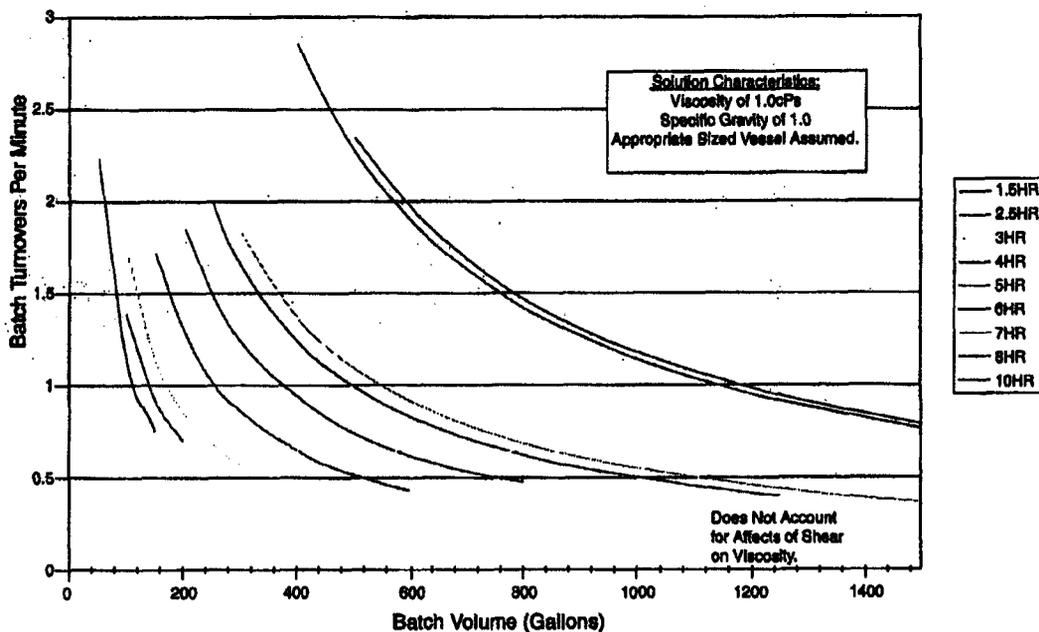
Standard Features

- 316SS wetted parts
- Stellite® bushings
- Lip seal shaft sealing
- Explosion-proof motors
- Reversible operation
- SS cross supports

Optional Features

- Flange mounted units
- Double mechanical seal
- 440 hardened SS rotor-stator
- Alternate motor enclosures
- Polished wetted components

Greerco Homogenizer Tank Turnover

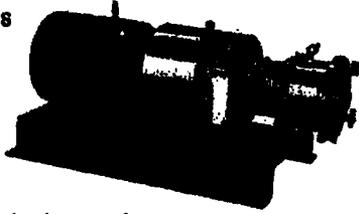


Cosmetics • Deodorants • Depilatories • Drug Dispersions • Dye stuffs • Essential Oils • Eye Make Up • Fertilizers • Foods • Flavor Emulsions
• Lubricants • Mascara • Mayonnaise • Medicinals • Mineral Oil Emulsions • Ointments • Pharmaceuticals • Photographic Emulsions • Pigments
• Persians • Syrups • Textile Emulsions • Toiletries • Vaccines • Vitamins • Wax Emulsions • Welding Fluxes • Yeast • Zinc Oxide Ointment

ers, today's Greerco technology has also been known as Gifford Wood and Eppenbach mixers.

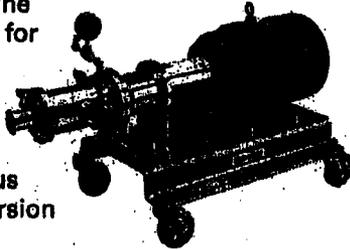
Colloid Mills

Greerco offers the most versatile line of colloid mills that allow the user to easily modify the shear rate to achieve the desired process results while ensuring precise repeatability. Available in vertical or horizontal mounting positions, these high shear mixers are ideal for batch, batch-continuous or in-line applications.



Pipeline Mixers

Greerco offers a complete line of in-line high shear mixers for both sanitary and industrial applications. Available in single or tandem shear configurations, the pipeline mixer is perfect for continuous in-line emulsification, dispersion and de-agglomeration.



Greerco Factory Services Machine Rebuild Programs:

The Greerco factory offers a total equipment service program, where for the cost of replacement parts and a small fee, the customer will receive a machine rebuilt to factory specifications complete with a mechanical warranty on parts and labor. Emergency, same day turn around available on most models.

Flexible, Low-Cost Rental Program:

All lab models and most full scale units are available for rental. The program includes two free weeks and credit towards the purchase of either the rental unit or new equipment. The rental program can often be tailored to meet your specific needs.



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Prochem, Inc.
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Your Local Contact:

Bulletin 123

For the nearest sales office call 1-800-643-0641 or go to www.chemineer.com

RA Series Glasteel[®] Reactors

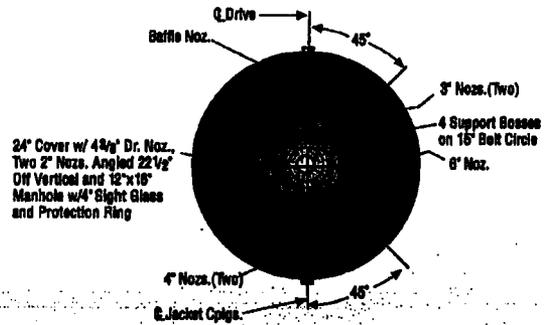


PAUL

REACTOR SYSTEMS

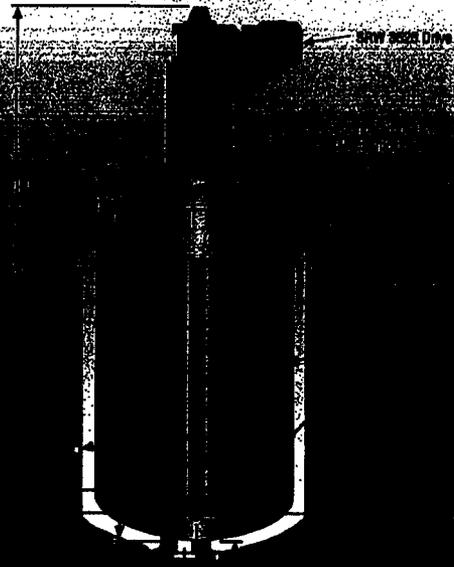
DESIGN FEATURES

- Heavy-duty forged nozzles minimize distortion, reduce time-consuming gasket shimming.
- Split backing flanges, Class 150, supplied with all nozzles. Flanges rated Class 300 also available.
- 3000-psi series jacket couplings, baffled to prevent jacket media from impinging directly on vessel wall. Flanged jacket connections are optional.
- Conventional jacket equipped with agitating nozzles provides optimum liquid circulation in jacket. Optional half-pipe jacket can be either parallel-path or zoned.
- Adjustable pipe leg supports are supplied on 300 through 400 gallon. Side supports are optional.
- A complete set of Pfaudler CRT envelope gaskets with stainless steel inserts is supplied with each vessel.
- Cryo-Lock curved blade turbine is provided as standard. One-piece retreat curve impellers and other Cryo-Lock configurations are available.



Dimensions

| | 300 gal. | 500 gal. |
|---|----------|----------|
| A | 33" | 56" |
| B | 45" | 70" |
| C | 57" | 70" |
| D | 68" | 70" |
| E | 31" | 31" |



| | RA-60 | | RA-78 | |
|-----------------------------------|----------|-----------|-----------|-----------|
| | 750 gal. | 1000 gal. | 1500 gal. | 2000 gal. |
| Capacity (gallons) | | | | |
| Working | 750 | 1,000 | 1,500 | 2,000 |
| Per Inch of S.S. | 12.24 | 12.24 | 20.69 | 20.69 |
| Bottom Head | 122 | 122 | 269 | 269 |
| Top Head | 122 | 122 | 269 | 269 |
| To Bottom of Impeller | 35 | 35 | 83 | 55 |
| To Top of Impeller Hub | 100 | 100 | 189 | 161 |
| To Bottom of Baffle | 181 | 181 | 316 | 316 |
| Jacket | 141 | 171 | 255 | 301 |
| Heating Area (square feet) | | | | |
| Jacket | 96 | 122 | 158 | 191 |
| Bottom Head | 27.1 | 27.1 | 45.8 | 45.8 |
| Per Inch of S.S. | 1.31 | 1.31 | 1.70 | 1.70 |
| Design Pressure | | | | |
| Internal @ 450°F | 100/FV | 100/FV | 100/FV | 100/FV |
| Jacket @ 450°F | 90 | 90 | 90 | 90 |
| Steel Thickness (Inches) | | | | |
| <i>Inner Vessel</i> | | | | |
| Top Head | 5/8 | 5/8 | 3/4 | 3/4 |
| Shell | 5/8 | 5/8 | 3/4 | 3/4 |
| Bottom Head | 5/8 | 5/8 | 3/4 | 3/4 |
| <i>Jacket</i> | | | | |
| Shell | 3/8 | 3/8 | 7/16 | 7/16 |
| Bottom Head | 7/16 | 7/16 | 9/16 | 9/16 |
| Weight (pounds) | | | | |
| Net - No Accessories | 5,900 | 7,150 | 11,275 | 13,000 |
| W/SRW Drive, Agit, Baffle | 7,700 | 9,300 | 13,650 | 15,500 |
| Add for Shipment | 200 | 200 | 400 | 450 |

Dimensions

| | 750 gal. | 1000 gal. |
|----|----------|-----------|
| A | 52" | 72" |
| B | 67" | 87" |
| C | 82" | 102" |
| D | 115 1/2" | 135 1/2" |
| E* | 38 1/2" | 46 1/2" |
| F | 14" | 20" |

*SRW w/ seal

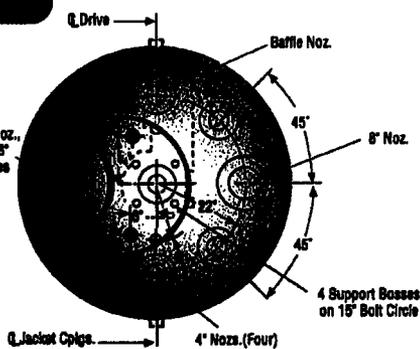
Dimensions

| | 1500 gal. | 2000 gal. |
|----|-----------|-----------|
| A | 65" | 84" |
| B | 84 1/2" | 103 1/2" |
| C | 104" | 123" |
| D | 137 1/2" | 156 1/2" |
| E* | 46 1/2" | 48 1/2" |
| F | 18" | 20" |

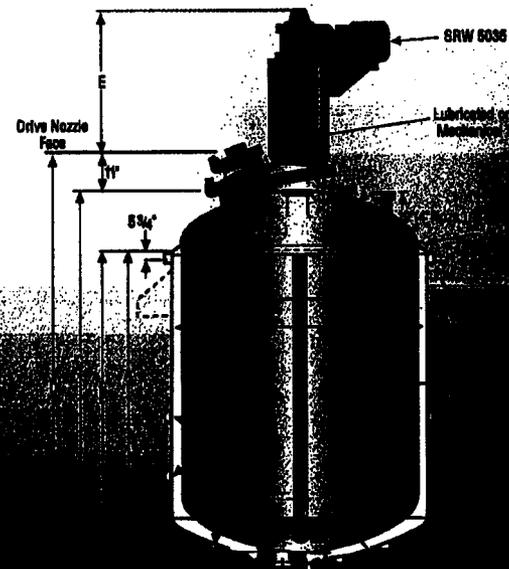
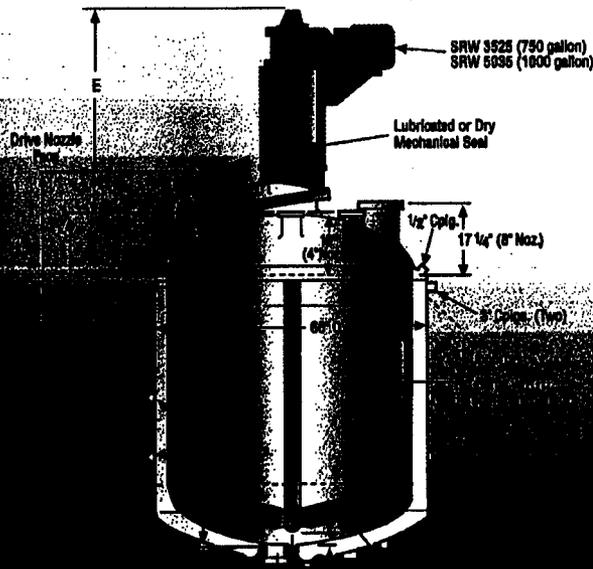
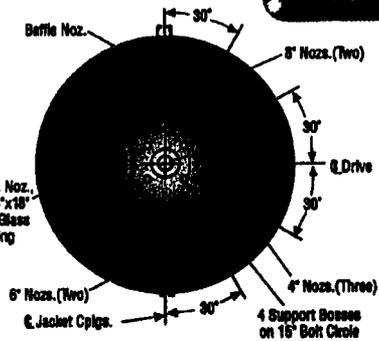
*SRW w/ seal



30" Cover w/ 4 1/2" Dr. Noz., Two 2" Noza. and 14"x18" Manhole w/4" Sight Glass and Protection Ring



30" Cover w/ 4 1/2" Dr. Noz., Two 2" Noza. and 14"x18" Manhole w/4" Sight Glass and Protection Ring

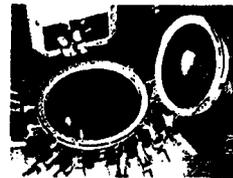


Field-proven
mixer drives with
capabilities up to 75 HP

Symmetrical top
head layout

Conventional
jacket. Optional
half-pipe jacket

Fin baffle huge
sidewall



Optional spring-
assisted manway
cover lifts easily,
stays where it's put

Cryo-Lock® agitator
assembles inside
reactor. Can be
retrofitted

Rugged glassed
steel accessories

RA SERIES GLASTEEL REACTORS

Long-recognized standard in glassed-steel reactors for the chemical process industries. Top-quality design and construction contribute to long, dependable service life.

Choose from the full line of Pfaudler RA Series Glasteel reactors, with models ranging in size from 300 to 15,000 gallons. All offer the familiar RA features, the same built-in ruggedness and reliability the industry has depended on for decades.

Versatile Cryo-Lock options

Something new has been added to give RA reactors a flexibility never before possible. The exclusive, Pfaudler Cryo-Lock agitator design provides a wide choice of impeller configurations to answer changing mixing requirements.

The interchangeable Cryo-Lock impellers are quickly replaced inside the vessel, resulting in substantial savings in downtime costs.

Moreover, the variety of impeller designs available can handle every mixing task from simple blending to emulsification. This means that a quick changeover of impeller and baffle can reconfigure your RA reactor for an entirely different process.

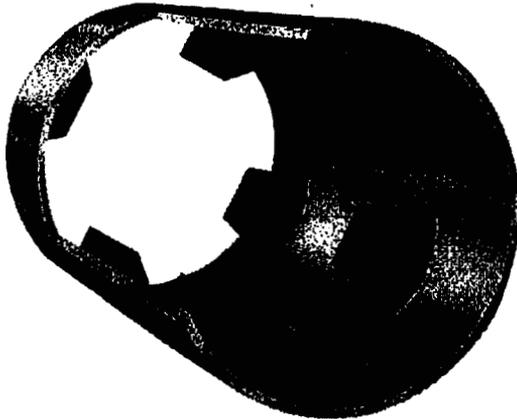
Standard Cryo-Lock impeller configurations are used in RA reactors sized from 300 to 4000 gallons. For larger reactors, Pfaudler fabricates impellers on a custom basis.

Easy, inexpensive modification

The standard models of RA Series reactors, detailed here, are based on thoroughly proven engineering designs. In many cases, the basic design can be modified to meet your specific needs.

The top head layouts shown are typical, suggested layouts. During fabrication, openings can be omitted, resized or moved to suit your process and your piping arrangement.

HEV STATIC MIXERS



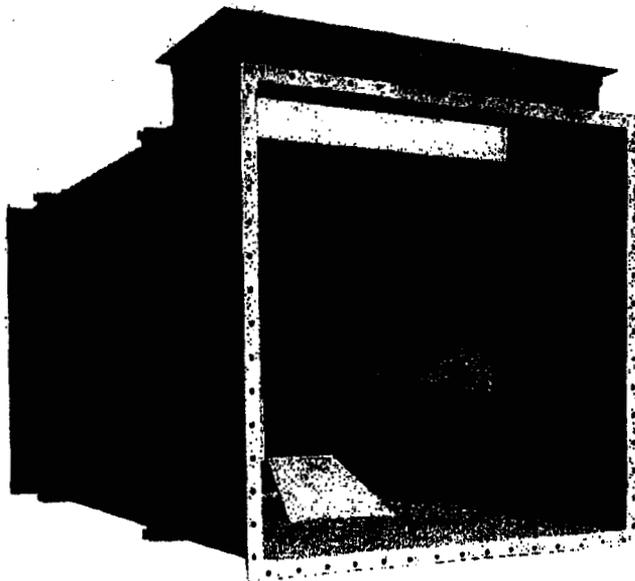
HEV high-efficiency static mixers handle all turbulent-flow mixing applications regardless of line size or shape. Mixing is accomplished by controlled vortex structures generated by the patented low-profile tab geometry. This provides uniform blending while limiting mixer length to less than 1-1/2 pipe diameters. Complete mixing is achieved with pressure losses 75% less than conventional static mixers.

Typical applications for the HEV include all low-viscosity liquid-liquid blending processes, as well as gas-gas mixing. The HEV is ideal for processes where pressure loss and length are critical.

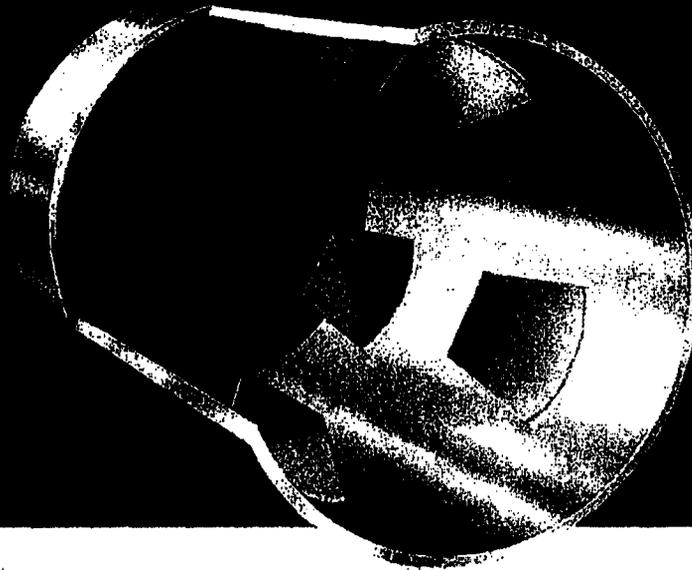
HEV Static Mixer features include:

- Lowest pressure drop available
- Unlimited sizes and shapes
- Shortest possible mixer length
- Easy retrofit to existing lines
- Available in all metals and alloys, FRP, PVC, PFA, and epoxy-coated steel

HEV static mixers provide installation flexibility and can be configured to square, rectangular or 3-sided ducts. They are adaptable to open channels typically found in water treatment systems.



HEV High Efficiency Static Mixer



Chemineer's latest technology brings you the newest design in static mixers. The patented Kenics High Efficiency HEV Static Mixer gives you pressure drops drastically lower than any other static mixer available today and can be applied to any turbulent flow mixing problem regardless of line size or shape.

Typical applications for the HEV include all low viscosity liquid-liquid blending problems, as well as gas-gas mixing. It is offered in unlimited sizes and mixes in the shortest possible pipe length for applications having space restrictions.

HEV Technology

University studies of turbulence led to the understanding of fluid flow phenomena that made the development of the HEV Static Mixer possible. Years of research have gone into defining the patented element geometry parameters to maximize conversion to fluid energy into efficient mixing. The length, width, and attack angle of the HEV mixing elements have been optimized for mixing performance while limiting pressure drop.

To create mixing action the mixing element must impart momentum to the fluid stream. The level to which this momentum is converted to effective mixing versus wasted turbulence determines the mixer efficiency. Because the HEV is configured to promote a "natural" mixing pattern, the redirection of the flow stream results in virtually no loss of pumping energy. The benefit you gain is minimum pressure loss and significant energy savings compared to static mixers using more disruptive-type mixing elements.

The HEV mixing element consists of special patented trapezoidal tabs mounted at an acute angle relative to the downstream surface of the mixer housing. As the process stream strikes the base of the tab, it is deflected up the angled incline creating a pressure gradient between the upstream and downstream surfaces of the tab. This pressure differential causes the fluid to flow around the opposite sides of the tab generating alternating tip vortices having their axes of rotation oriented in the direction of the main fluid flow. The alternating rotations of the tip vortices induce vigorous cross-stream mixing

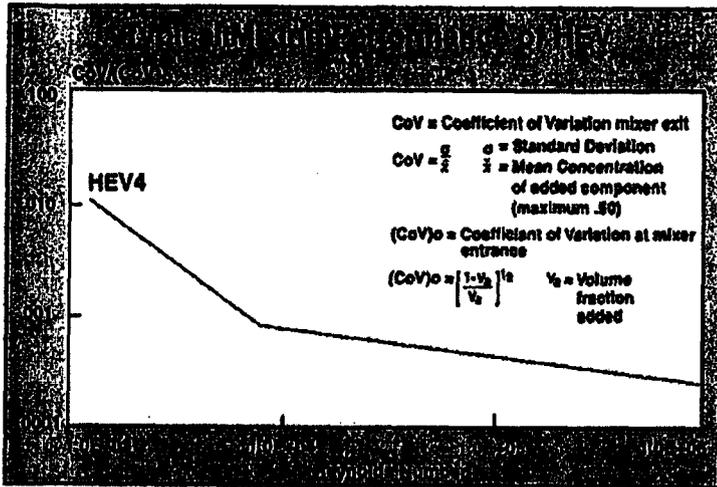
which results in rapid uniformity of the process components.

Full-scale mixing tests have confirmed the performance of the HEV and have resulted in highly accurate equations for predicting uniformity levels. These equations evaluate various parameters such as side-stream ratio and injection techniques that are influential to the process performance of the mixer. Control of these parameters allows the HEV to be applied with complete certainty.

Uniformity Criteria

Comprehensive testing of the HEV mixer using tracer injection techniques has quantified its mixing performance. Multi-point sampling probes were utilized to generate stream uniformity data. Statistical analysis applied to this data resulted in the equations that predict mix quality as a function of the inlet and outlet coefficient of variation (CoV_0 and CoV , respectively). By knowing the inlet stream conditions any desired level of uniformity can be achieved by adjusting the design of the HEV.

U.S. Patent No. 4,929,088. Other patents pending



Process Performance

You can adapt the HEV Static Mixer to most turbulent flow applications without having to upgrade pump capacity. Another great advantage is its ability to be used effectively in non-circular ducts. The extremely low pressure drop and high mixing efficiency make the HEV ideal for low pressure gas phase blending situations or applications with severe space restriction.

The model HEV Static Mixer produces complete stream uniformity through controlled vortex action generated by its unique mixing elements. The patented element geometry takes

advantage of the naturally occurring vortices induced by the element edges. This highly effective flow field provides uniform blending while limiting mixer length to less than 1-1/2 pipe diameters.

The mixing elements' low angle of attack minimizes non-productive disruption to the fluid stream which results in reduced drag and pressure drop. Pressure losses are 75% less than conventional static mixers for the same degree of blending. The extremely low profile of the HEV mixing element also maintains maximum open flow area and reduces fouling tendencies.

HEV Features

Standard HEV Static Mixers are available in pipe diameters up through 72". However, the mixing element design allows fabrication in virtually any size. This unlimited size capacity makes it easily adaptable to applications using large ducts, channels, or stacks up to 20 feet in diameter. The high efficiency design makes space limitations cease to be a problem. Standard materials of construction include all metals and FRP. Other materials are available on a custom basis.

The Kenics HEV Static Mixer provides installation flexibility that has not been available in the past. While conventional mixers are generally confined to circular cross sections, the HEV Static Mixer can easily be configured to square, rectangular, or 3 sided ducts. It's adaptable to open channels or ditches typically found in water treatment systems.

HEV Configurations

| | |
|--------------------|---|
| • Round | • General CPT • Water & Waste Treatment |
| • Square/Rectangle | • Gas Processing • HVAC • Stack Gases |
| • 3 Sided Channel | • Water & Waste Treatment |

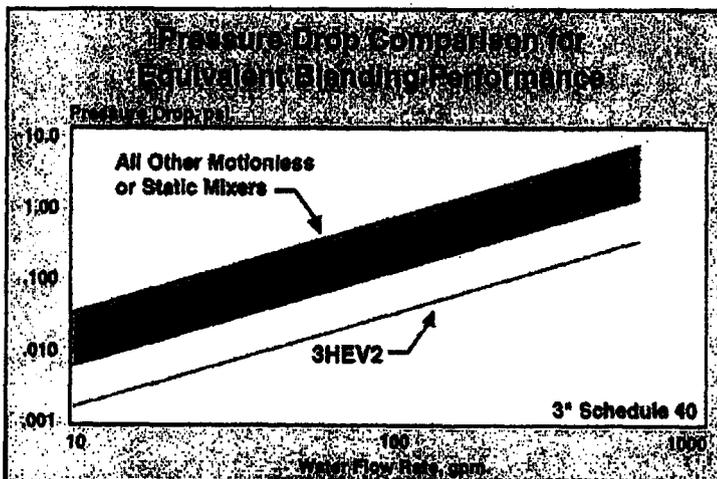
The Kenics HEV Static Mixer brings proven static mixer technology to applications that had previously been handled by guesswork. Contact your Chemineer sales representative to learn more about how the Kenics HEV Static Mixer can benefit you.

Chemineer, Inc.
A Unit of Robbins & Myers, Inc.

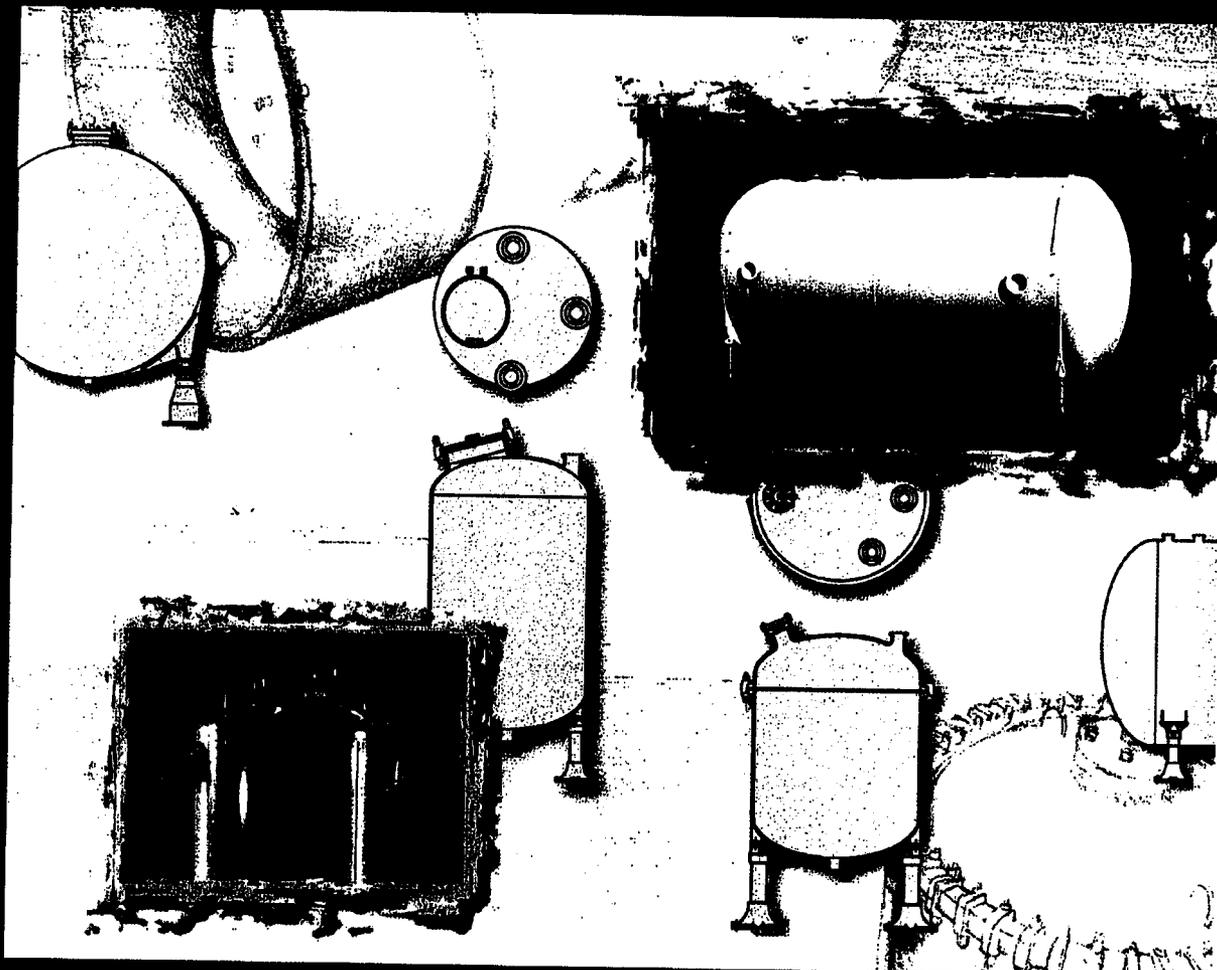
125 Flagship Drive, North Andover, MA 01845
Telephone (978) 687-0101 Fax (978) 687-8500

For the nearest sales office
call 1-800-643-0641

Visit our Website at www.chemineer.com
www.kenics.com



Chemstor/Storage Tank



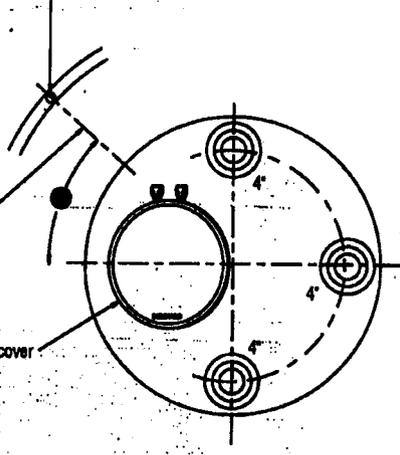
PC
Prübler
REACTOR SYSTEMS

CV Series

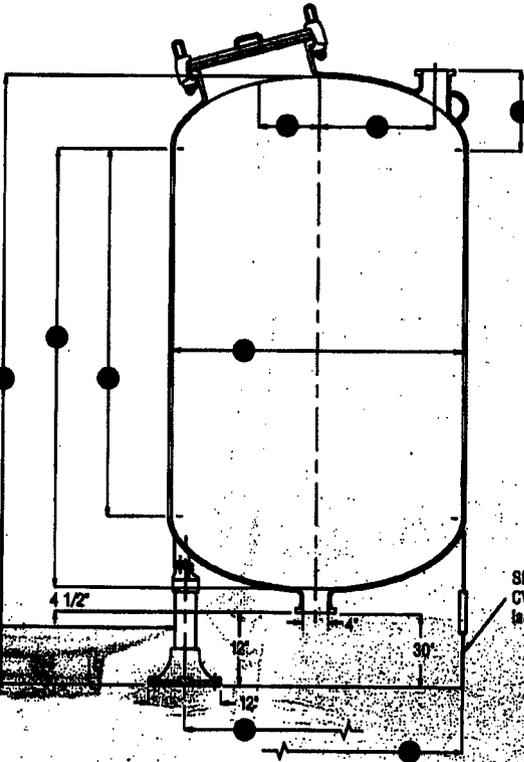
● (number of 1 3/8" dia. holes equally spaced for anchor bolts in skirt supported vessel on CV-7500 and larger sizes).

● 4 equally spaced legs on CV-500 through CV-5000.

18" plain cover



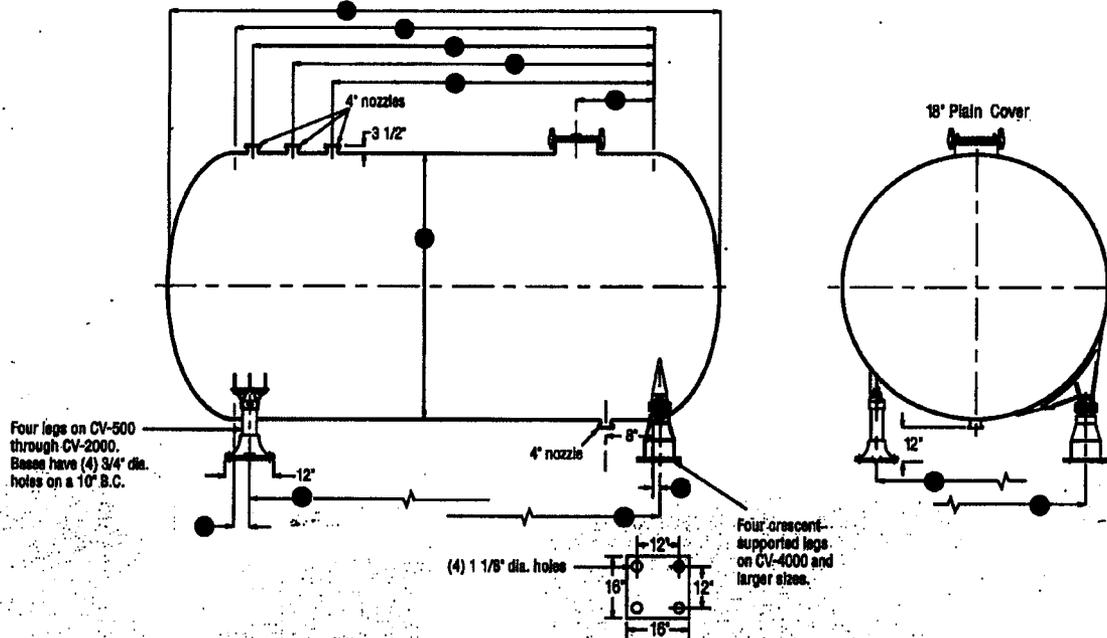
● (number of legs on CV-600 through CV-5000) (base has (4) 3/4" dia. holes equally spaced on 10" B.C.)



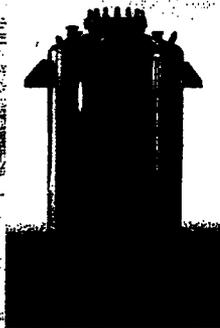
Skirt support on CV-7500 and larger sizes.

| Model - Rated Capacity (gallons) | Full Capacity (gallons) | Dimensions (inches, unless otherwise indicated) | | | | | | | | | | Design Pressure (psig) | Design Temp (°F) | Weight (lbs.) |
|----------------------------------|-------------------------|---|--------------|------|------|-----|----|----|------|-------|---------|------------------------|------------------|---------------|
| | | A (I.D.) | B (St. Side) | C | D | E | F | G | H | I | J | | | |
| CV-500 | 580 | 48 | 58 | 70 | 98% | 13% | 10 | 19 | 43 | 4 ea | 45° | 50 psig or full vacuum | 450 | 2,900 |
| CV-1000 | 1128 | 60 | 72 | 87 | 118% | 16 | 12 | 22 | 55 | 4 ea | 45° | 50 psig or full vacuum | 450 | 4,100 |
| CV-2000 | 2278 | 78 | 84 | 103% | 139% | 18% | 23 | 29 | 73 | 4 ea | 45° | 50 psig or full vacuum | 450 | 6,300 |
| CV-4000 | 4418 | 96 | 109 | 133 | 173% | 22% | 33 | 35 | 91 | 6 ea | 30° | 50 psig or full vacuum | 450 | 11,500 |
| CV-5000 | 5624 | 102 | 125 | 150% | 192% | 23% | 36 | 37 | 97 | 8 ea | 22 1/2° | 50 psig or full vacuum | 450 | 13,500 |
| CV-7500 | 8866 | 120 | 137 | 167 | 231% | 26% | 44 | 44 | 120% | 12 ea | 30° | 50 psig or full vacuum | 350 | 21,730 |
| CV-10,000 | 11,261 | 120 | 190 | 220 | 284% | 26% | 44 | 44 | 120% | 12 ea | 30° | 50 psig or full vacuum | 350 | 25,300 |
| CV-15,000 | 15,580 | 132 | 219 | 252 | 319% | 26% | 49 | 48 | 132% | 12 ea | 30° | 50 psig or full vacuum | 350 | 35,700 |
| CV-20,000 | 20,657 | 144 | 245 | 281 | 352 | 31 | 54 | 53 | 144% | 12 ea | 30° | 50 psig or full vacuum | 350 | 48,400 |
| CV-24,000 | 24,930 | 150 | 276 | 313% | 388 | 32% | 57 | 55 | 150% | 12 ea | 30° | 50 psig or full vacuum | 350 | 54,600 |

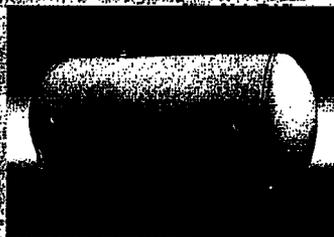
CH Series



| Model - Rated Capacity (gallons) | Full Capacity (gallons) | Dimensions (inches, unless otherwise indicated) | | | | | | | | | | | Design Pressure (psig at 450°F) | Weight (lbs.) |
|--|-------------------------------|--|-----------------|-----|----|-----|-----|-----|---|-----|---------|------------------------|------------------------------------|------------------|
| | | A (I.D.) | B (St. Side) | C | D | E | F | G | H | I | J | | | |
| CH-500 | 580 | 48 | 58 | 82 | 14 | 36 | 48 | - | 4 | 50 | 31 | 50 psig or full vacuum | 2,900 | |
| CH-1000 | 1126 | 60 | 72 | 102 | 14 | 36 | 49 | 62 | 4 | 64 | 33 1/2 | 50 psig or full vacuum | 4,100 | |
| CH-2000 | 2275 | 78 | 84 | 123 | 33 | 52 | 63 | 74 | 4 | 78 | 50 | 50 psig or full vacuum | 6,300 | |
| CH-4000 | 4418 | 96 | 109 | 157 | 35 | 63 | 81 | 99 | 1 | 111 | 81 | 50 psig or full vacuum | 12,900 | |
| CH-5000 | 5264 | 102 | 125 | 176 | 35 | 79 | 97 | 115 | 1 | 127 | 86 | 50 psig or full vacuum | 14,700 | |
| CH-7500 | 8668 | 120 | 137 | 197 | 35 | 91 | 109 | 127 | 1 | 139 | 104 | 50 psig or full vacuum | 20,130 | |
| CH-10,000 | 11,261 | 120 | 190 | 250 | 35 | 144 | 182 | 180 | 1 | 192 | 104 | 50 psig or full vacuum | 23,700 | |
| CH-15,000 | 15,581 | 132 | 219 | 285 | 35 | 173 | 191 | 209 | 1 | 221 | 117 1/2 | 50 psig or full vacuum | 33,700 | |
| CH-20,000 | 20,850 | 144 | 245 | 317 | 35 | 189 | 217 | 235 | 1 | 247 | 128 | 50 psig or full vacuum | 45,200 | |
| CH-24,000 | 24,939 | 160 | 276 | 351 | 35 | 230 | 248 | 266 | 1 | 278 | 133 | 50 psig or full vacuum | 51,100 | |



Custom 1,000 gallon vertical
CV Series



10,000 gallon horizontal
CH Series



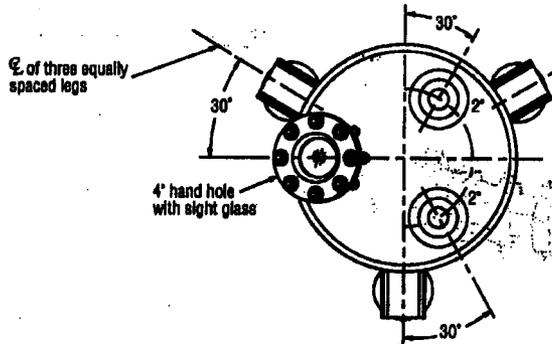
24,000 gallon vertical CV Series -
skidded and ready for shipment



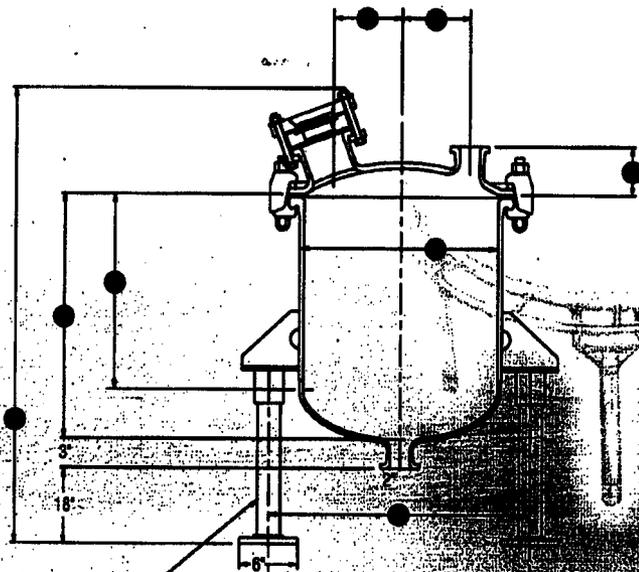
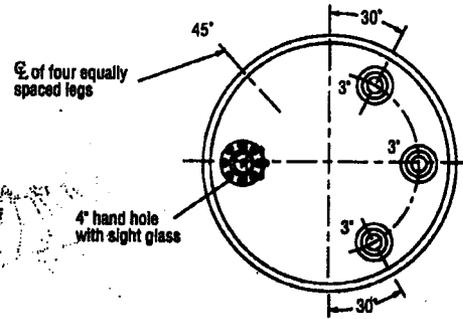
Custom 300 gallon
VR Series

VR Series

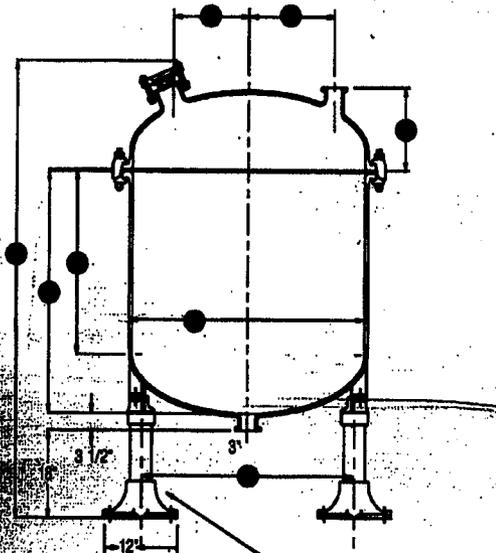
VR-20 through VR-50



VR-100 through VR-300



Three legs, bases have (4) 3/4" dia. holes on a 4 3/4" B.C.



Four legs, bases have (4) 3/4" dia. holes on a 10" B.C.

| Model- Rated Capacity (gallons) | Full Capacity (gallons) | Dimensions (Inches, unless otherwise indicated) | | | | | | | | Design Pressure (psig at 450°F) | Weight (lbs.) |
|---------------------------------------|-------------------------------|--|-----------------|--------|--------|--------|--------|--------|-------------------------|------------------------------------|------------------|
| | | A (I.D.) | B (St. Side) | C | D | E | F | G | H | | |
| VR-20 | 23 | 20 | 13 1/4 | 18 1/2 | 5 1/2 | 5 | | 7 | 27 | 150 psig or full vacuum | 610 |
| VR-30 | 32 | 20 | 18 1/4 | 24 1/2 | 5 7/8 | | 7 | 27 | 150 psig or full vacuum | 660 | |
| VR-50 | 52 | 24 | 22 1/4 | 28 1/2 | 6 1/8 | 5 1/4 | 7 1/4 | 8 1/4 | 31 | 150 psig or full vacuum | 800 |
| VR-100 | 136 | 32 | 28 1/4 | 36 1/2 | 7 7/8 | 13 1/4 | 9 1/4 | 11 1/4 | 26 1/4 | 150 psig or full vacuum | 1,400 |
| VR-200 | 266 | 40 | 35 1/4 | 45 1/2 | 10 1/8 | 15 1/4 | 10 1/4 | 14 1/4 | 34 1/4 | 100 psig or full vacuum | 2,100 |
| VR-300 | 418 | 48 | 37 1/4 | 49 1/2 | 13 1/8 | 17 1/4 | 15 1/4 | 17 1/4 | 43 | 100 psig or full vacuum | 2,760 |

Pfautler Chemstor® tanks and receivers are made of Glasteel®, a versatile material of construction which combines inert glass on the inside surface for complete product protection with steel outside for structural strength. Because of this Glasteel construction, these tanks:

- provide superior corrosion resistance
- do not affect the flavor, color or purity of stored products
- require minimal maintenance
- have a long service life.

Glasteel Chemstor tanks and receivers provide the many advantages of glass with the durability and strength of steel.

Chemstor tanks and receivers are inspected with electric testers to assure complete glass coverage on the interior steel surface. This assurance permits the handling of virtually all acids and salts, organic or inorganic, anhydrous or aqueous, to temperatures of 250°F and sometimes higher. The only exceptions are the fluorides in any concentration.

Alkalies are also included in the permissible service environments. Operating temperatures can be as high as 180°F at pH 13. When the pH reaches 14, the maximum temperature is limited to 160°F.

Pfautler Glasteel is an inert material. There is no contamination of product purity. Color and taste are not affected. Sticky materials such as latex and resins do not readily cling to the fire-polished smooth surface.

Another advantage of the smooth glass surface is the ease with which it can be rinsed and cleaned. Very little time is required to thoroughly clean a tank. It is possible to sterilize the Glasteel surface.

Heat can be applied to the exterior surface for products that solidify at ambient temperatures. External heating panels are added in number and location as dictated by the characteristics of the user's product.

Both horizontal and vertical designs are offered in a wide range of convenient standard size increments from 20 gallons through 24,000 gallons. Pfautler can provide other designs if these standard sizes do not meet your specific requirements.

All vessels are designed, fabricated, inspected and stamped in accordance with Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code. All vessels are designed for a maximum specific gravity of 1.6, 110 m.p.h. wind load and seismic zone 2A (UBC).

EXHIBIT 2



J-Bolt Clamps for Glasteel® Equipment

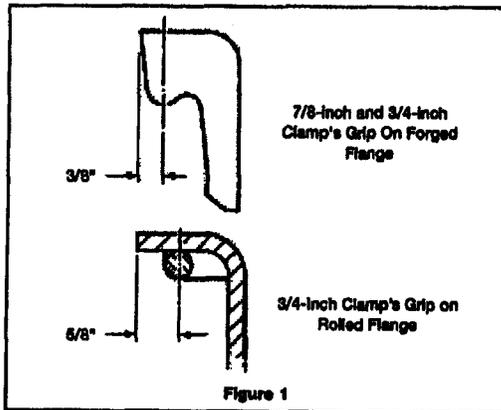
Data Sheet DS65-800-2

1978 Design vs Earlier Model

Flanged openings on glassed-steel process vessels are constructed differently than the openings supplied on lined, clad and all-metal vessels. Due to glassing requirements, glassed-steel flanges are smaller in outside diameter and thinner in cross section than bolted flanges. They are not usually drilled for bolt holes. A split-ring flange or specially designed, J-bolt clamp is used instead to join glassed-steel flanges.

Split-Ring Flanges on Smaller Openings

The lap-joint type nozzle used on Pfaudler Glasteel equipment openings no larger than 12-inches nominal diameter is a forged stub-end flange fitted with a drilled, split-ring flange. The split flange is installed after the vessel has been glassed. Refer to Data Sheet DS65-300 for specifications on Pfaudler Split Flanges.



J-Bolt Clamps on Larger Openings

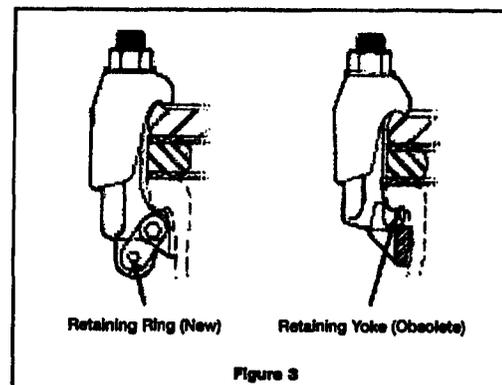
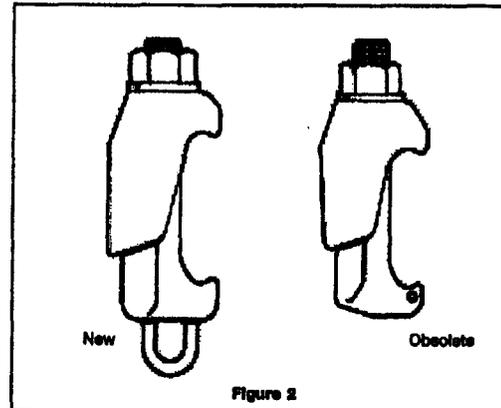
On manways, agitator access openings and the main flanges used on clamp-top vessels and columns, a contoured flange is used in conjunction with a specified number of forged J-bolt clamps.

Pfaudler J-bolt clamps are supplied in 3/4 inch and 7/8 inch diameters. The 3/4 inch Pfaudler clamp has sufficient reach to grip at 5/8" from the clamping ring to the OD of a rolled flange. Both the 7/8-inch and 3/4-inch Pfaudler J-bolt clamps have sufficient reach to grip at 3/8" from the centerline of the clamping point to the OD of a forged flange. See Fig. 1.

Common Usage

The use of J-bolt clamps is common on all makes of glassed-steel process equipment. However, each supplier has his own clamp design that may or may not be interchangeable with other brands of glassed-steel equipment.

WARNING: The use of any J-bolt clamp on Pfaudler-brand equipment that does not bear the "Pfaudler" name on the clamp should be considered hazardous. Failure to use "Pfaudler" clamps on Pfaudler-brand equipment could result in costly equipment damage and serious personal injury.



| Standard Pfaudler J-Bolt Clamps | | | | | | | | | |
|---------------------------------|---------------|---------------|---------------|-------------|-----------------------------|------------------------------|-----------------|----------|-----------------------------|
| Part Numbers | | | | | | | | | |
| | | | | 1978 DESIGN | | | OBSOLETE DESIGN | | |
| Dia. (Inches) | Grip | | J-Bolt (Only) | | Clamp with Hex Nut (Part #) | Clamp with Dome Nut (Part #) | J-Bolt (Only) | | Clamp with Hex Nut (Part #) |
| | Min. (Inches) | Max. (Inches) | A (Inches) | (Part #) | | | A (Inches) | (Part #) | |
| 3/4 | 1-3/8 | 2-1/2 | 8-3/4 | 1100821 | 1100851 | 1100841 | 6-3/8 | 1100026 | 1100036 |
| 7/8 | 2-1/4 | 3 | 7-1/2 | 1100833 | 1100853 | 1100843 | 6-7/8 | 1100808 | 1100066 |
| 7/8 | 2-3/4 | 3-3/4 | 8-1/4 | 1100834 | 1100854 | 1100844 | 6-5/8 | 1100806 | 1100047 |
| 7/8 | 3-1/2 | 4-1/2 | 9 | 1100835 | 1100855 | 1100845 | 7-3/8 | 1100802 | 1100069 |

Footnote #1 Replacement Swing-Away Clamps require a retaining ring to replace the yoke. See Figure 3.
 #2 Zinc Chromate-plated dome nut supplied separately; Part #1100866 (3/4-inch dia.), #1100867 (7/8-inch dia.).
 #3 Polypropylene protection cap supplied separately; Part #1100863 (3/4-inch dia.), #1100864 (7/8-inch dia.).

Figure 4

The 1978 Design

In 1978, Pfaudler introduced a new style J-bolt clamp. It differs from the previous Pfaudler design by having a loop at the base of the clamp in place of the lugs used formerly. See Fig. 2. The loop provides the means for attaching the J-bolt to a retainer ring when swing-away clamps are required for frequently opened and closed openings.

The 1978 design clamp obsoletes the previous Pfaudler clamp and can be used to replace the older style. A retaining ring is required to replace the yoke used with the obsolete clamps. See Figs. 3 and 4.

Another feature of the 1978 J-bolt design is the availability of either a zinc chromate-plated dome nut or a polypropylene cap for the steel nut to protect the exposed threads from ambient corrosion. Further details are given in Fig. 4.

Specification

Materials:

J-Bolt and Clamp –
ASME SA-449 Forged Steel
Hex Nut and Dome Nut –
ASME SA-194, Gr2H Steel

Load Rating:

3/4-inch – 4761 lbs.
7/8-inch – 8646 lbs.

A Pfaudler part number is forged into each J-bolt corresponding to the numbers listed in Fig. 4 to designate the grip range.

How To Order

When ordering J-bolt clamps as replacement for the obsolete Pfaudler design, it will help us to fill your order when the following information can be supplied.

1. Part number.
2. Diameter of the J-bolt.
3. Grip range of the clamp.
(Refer to Fig. 4)

If the above information is not available, we will need the serial number of your Pfaudler vessel along with a description of each opening to be sealed with clamps (manway, agitator access or main flange).

When ordering J-bolt clamps for a manway opening, identify the style of protection ring (with or without spring assistance) or the extension collar used on the vessel, if at all.

The data and commentary presented herein are based on test information and field experience by Pfaudler, Inc. They are believed to be reliable, but do not express or imply warranty or performance guarantee. Since process conditions vary widely, Pfaudler, Inc. and Glasteel® Parts and Services expressly disclaim in connection with the information contained herein any warranty, express, implied or statutory, including the warranty of fitness for a particular purpose and merchantability.



1000 West Avenue
PO Box 23800
Rochester, NY 14692-3600
Phone: 585 235 1000
Fax: 585 235 6393
www.pfaudler.com

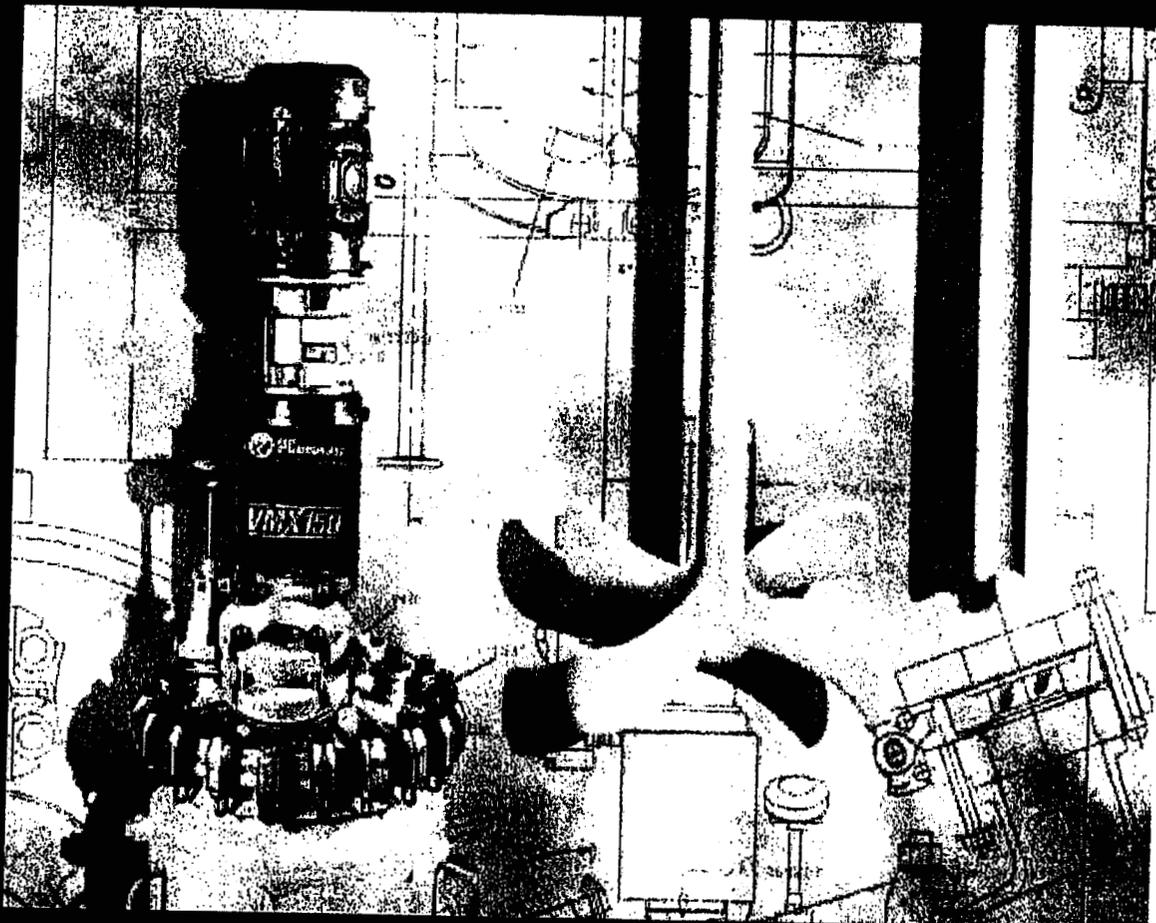


Glasteel® Parts and Services
A Unit of Pfaudler, Inc.

1999 Mt. Read Blvd.
PO Box 20857
Rochester, NY 14602
Phone: 585 235 1010
Fax: 585 235 7923

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trademark of Pfaudler, Inc.

RT Series Glasteel[™] Reactors



**PC
Praeger**

REACTOR SYSTEMS



**VMX
Mixer Drive**

Handhole
or manway
including an
integral fused
sight glass and
protection ring

Stainless steel
insulation
ring/drip
shield

Fine grain
carbon
steel for
improved low
temperature
characteristics

Higher internal
and jacket
pressure rating

All legs
designed for
wind and seismic
conditions

In-line
mixer drive

Move top
head nozzles

Superior
concave
baffle with
TMI sensor

Superior
carbon
distribution
impeller
design

Scalable or
Cryo-cool
impellers

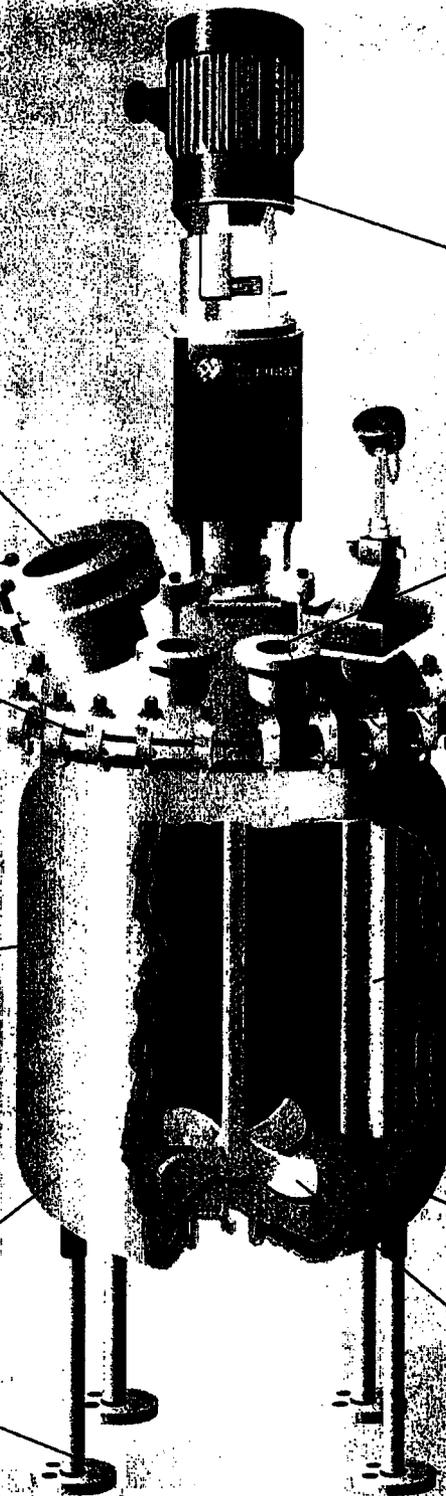


EXHIBIT 3

EXPORT LICENSE

DENIAL NOTICE

CASE NUMBER: Z196893

ACTION DATE: OCT 22 2003



**UNITED STATES DEPARTMENT OF COMMERCE
BUREAU OF INDUSTRY AND SECURITY
P.O. Box 273, Ben Franklin Station
Washington, DC 20044**

PURSUANT TO SECTION 10 OF THE EXPORT ADMINISTRATION ACT OF 1979, AS AMENDED, THE REFERENCED APPLICATION FOR EXPORT LICENSE IS DENIED. IN REACHING THE DECISION, WE GAVE FULL CONSIDERATION TO ANY REBUTTAL YOU MAY HAVE MADE TO PREVIOUS COMMUNICATION FROM THIS OFFICE. THE RIGHT TO APPEAL THIS DECISION EXPIRES 45 DAYS FROM THE DATE OF THIS LETTER. THE APPEAL PROCEDURE IS OUTLINED IN PART 756 OF THE EXPORT ADMINISTRATION REGULATIONS. IF YOU HAVE QUESTIONS REGARDING EXPORT CONTROLS PLEASE CONTACT THE EXPORTER COUNSELING DIVISION AT 202-482-4811 OR THE WESTERN REGIONAL OFFICE AT 714-660-0144

APPLICANT REFERENCE NUMBER: Z196893

**APPLICANT: F386305
PFAUDLER, INC.
1000 WEST AVENUE
ATTN: ROBERT TAYLOR
ROCHESTER, NY 14692-2360**

**CONSIGNEE IN COUNTRY OF
ULTIMATE DESTINATION:
GUJARAT MACHINERY MANUF. PFAUDLER
LTD., CHURCHGATE HOUSE
32-34 VEER NARIMAN ROAD
FORT BOMBAY, INDIA**

ATTN: ROBERT F. TAYLOR

REASON:

THIS APPLICATION IS DENIED PURSUANT TO SECTION 10(F)(3) OF THE EXPORT ADMINISTRATION ACT OF 1979, AS AMENDED, AND SECTION 750.6 OF THE EXPORT ADMINISTRATION REGULATIONS. THE DEPARTMENT OF COMMERCE, IN CONSULTATION WITH OTHER U.S. GOVERNMENT AGENCIES, HAS CONCLUDED THAT THIS EXPORT WOULD BE DETRIMENTAL TO U.S. FOREIGN POLICY INTERESTS. FOR FURTHER INFORMATION, PLEASE SEE THE INTENT TO DENY LETTER ISSUED ON SEPTEMBER 2, 2003.

**EILEEN ALBANESE
DIRECTOR
OFFICE OF EXPORTER SERVICES**

**OFFICE OF EXPORTER SERVICES
P.O. BOX 273
BEN FRANKLIN STATION
WASHINGTON, D.C. 20044**



UNITED STATES DEPARTMENT OF COMMERCE
Bureau of Industry and Security
Washington, D.C. 20230

SEP 21 2003

Known
FIC
BT.

Mr. Robert F. Taylor
Pfaudler, Inc.
1000 West Avenue
Rochester, NY 14692-2360

Ref. No.: Z196893

Dear Mr. Taylor:

Pursuant to Section 10(f)(3) of the Export Administration Act of 1979, as amended, and in accordance with Section 750.6 of the Export Administration Regulations (EAR), we are informing you of our intent to deny the referenced application. The Department has concluded that this license would be detrimental to United States foreign policy.

Denial of this application furthers the United States policy set forth in Section 3(2)(B) of the Export Administration Act, to "restrict the export of goods and technology where necessary to further significantly the foreign policy of the United States or to fulfil its declared international obligations."

We will withhold further action on this application for 20 calendar days from the date of this letter. Your application will be held and processing suspended, pending receipt of any comments or rebuttals you may wish to make on this matter.

Should you wish to respond to this letter, you may submit a response to this notification in accordance with Section 750.6 of the EAR. Your letter should be addressed to:

James Seevaratnam
Director, Chemical and Biological Controls Division
Office of Nonproliferation Controls and Treaty Compliance
P.O. Box 273
Washington, D.C. 20044

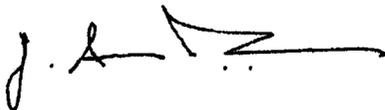
Please write the words "TTD Rebuttal" on the outside of your envelope and on the face of your letter to ensure that your rebuttal receives prompt attention. You may also forward a copy of your letter to this office by facsimile on (202) 482-2190.



Unless you receive other advice from the Bureau of Industry and Security, this denial will become final 45 days from the date of this letter. The process for appealing this final denial is described in Part 756 of the EAR. Any such appeal must be made within 45 days of the date of the final denial.

The Commerce employee available for consultation is Dr. Scott Hubinger, of my staff, who can be reached at (202) 482-5223 or via facsimile at (202) 482-2190.

Sincerely,



James Seevaratnam
Director
Chemical & Biological Controls Division

| | | | | | |
|---|--|---|--|--|--|
| B FORM 85A-748P <small>FORM APPROVED: GAB NO. 0854-0088, 0854-0089</small> | | U.S. DEPARTMENT OF COMMERCE Bureau of Export Administration MULTIPURPOSE APPLICATION | | DATE RECEIVED <small>(Leave Blank)</small> | |
| 1. CONTACT PERSON: Robert F. Taylor | | <small>Comments: Licensee (Applicant) is subject to the provisions of E.O. 12958 (a) of the Export Administration Act of 1979, as amended, and U.S.C. app. 49 (101-109) and Supplemental Regulations thereunder by law.</small> | | APPLICATION CONTROL NUMBER This is NOT an export license number. Z196893 | |
| 2. TELEPHONE: 85-235-1000 | | 3. FACSIMILE: 85-235-5200 | | 4. DATE OF APPLICATION: 11-14-2008 | |
| 5. TYPE OF APPLICATION: <input checked="" type="checkbox"/> EXPORT <input type="checkbox"/> REEPORT <input type="checkbox"/> CLASSIFICATION REQUEST <input type="checkbox"/> SPECIAL COMPREHENSIVE LICENSE <input type="checkbox"/> OTHER | | 6. DOCUMENTS SUBMITTED WITH APPLICATION: <input type="checkbox"/> 85A-748P-A <input type="checkbox"/> 85A-748P-B <input type="checkbox"/> 85A-711 <input type="checkbox"/> IMPORT/END-USER CERTIFICATE <input checked="" type="checkbox"/> TECH. SPECS. <input type="checkbox"/> LETTER OF EXPLANATION <input type="checkbox"/> FOREIGN AVAILABILITY <input type="checkbox"/> OTHER | | 7. DOCUMENTS ON FILE WITH APPLICANT: <input type="checkbox"/> 85A-711 <input type="checkbox"/> LETTER OF ASSURANCE <input type="checkbox"/> IMPORT/END-USER CERTIFICATE <input type="checkbox"/> NUCLEAR CERTIFICATION <input type="checkbox"/> OTHER | |
| 8. SPECIAL PURPOSE: <input type="checkbox"/> EXCISE OR 85A-748-A <input type="checkbox"/> INTERNAL CONTROL PROGRAM <input type="checkbox"/> COMPREHENSIVE NARRATIVE <input type="checkbox"/> CERTIFICATIONS <input type="checkbox"/> OTHER | | 9. REEPORT APPLICATION CONTROL NUMBER: <input type="checkbox"/> | | 10. REPLACEMENT LICENSE NUMBER: <input type="checkbox"/> | |
| 11. IMPORT/END-USER CERTIFICATE COUNTRY: <input type="checkbox"/> | | 12. REPLACEMENT LICENSE NUMBER: <input type="checkbox"/> | | 13. FOR ITEMS PREVIOUSLY EXPORTED, PROVIDE LICENSE EXCEPTION SYMBOL OR LICENSE NUMBER: <input type="checkbox"/> | |
| 14. APPLICANT: Fraudier, Inc. Attn: Robert Taylor | | 15. OTHER PARTY AUTHORIZED TO RECEIVE LICENSE: <input type="checkbox"/> | | | |
| ADDRESS LINE 1: 1000 West Avenue | | ADDRESS LINE 1: <input type="checkbox"/> | | | |
| ADDRESS LINE 2: P.O. Box 23600 | | ADDRESS LINE 2: <input type="checkbox"/> | | | |
| CITY: <input type="checkbox"/> | | STATE: <input type="checkbox"/> | | CITY: <input type="checkbox"/> | |
| COUNTRY: <input type="checkbox"/> | | TELEPHONE (IN FAX): <input type="checkbox"/> | | COUNTRY: <input type="checkbox"/> | |
| TELEPHONE (IN FAX): <input type="checkbox"/> | | TELEPHONE (IN FAX): <input type="checkbox"/> | | | |
| 16. EXTERNAL CONTACT: Charles Machinery Maint. Fraudier, Inc. | | 17. END-USER: Charles Machinery Maint. Fraudier, Inc. | | | |
| ADDRESS LINE 1: Charlotte, NC | | ADDRESS LINE 1: <input type="checkbox"/> | | | |
| ADDRESS LINE 2: <input type="checkbox"/> | | ADDRESS LINE 2: <input type="checkbox"/> | | | |
| CITY: <input type="checkbox"/> | | STATE: <input type="checkbox"/> | | CITY: <input type="checkbox"/> | |
| COUNTRY: <input type="checkbox"/> | | TELEPHONE (IN FAX): <input type="checkbox"/> | | COUNTRY: <input type="checkbox"/> | |
| TELEPHONE (IN FAX): <input type="checkbox"/> | | TELEPHONE (IN FAX): <input type="checkbox"/> | | | |
| 18. TECHNICAL DESCRIPTION: (SEE ATTACHED TECHNICAL DATA SHEET) | | 19. TECHNICAL DESCRIPTION: <input type="checkbox"/> | | | |
| 20. QUANTITY: 3002 | | 21. MODEL NUMBER: <input type="checkbox"/> | | 22. TOTAL APPLICATION DOLLAR VALUE: <input type="checkbox"/> | |
| 23. ADDITIONAL INFORMATION: This company's complete instructions for license application will be given to suitable suppliers in Table 5344. | | 24. SIGNATURE: <input type="checkbox"/> | | | |
| 25. TITLE: <input type="checkbox"/> | | 26. TITLE: <input type="checkbox"/> | | 27. TITLE: <input type="checkbox"/> | |

J-Clamp Assembly Technical Write-up

Pfaunder, Inc. manufactures glass-lined steel reactor vessels, storage vessels, dryers, columns, and their components and spare parts. This dual-purpose equipment is frequently configured in multiple sections to permit application of the glass lining and flanged to provide a means of assembling sections and/or components for operation. A series of J-Clamp assemblies serves to hold the unique flanges against one another. A gasket is positioned between the glass-lined flanges before applying the clamps to prevent damage to glass lined surfaces as the clamps are tightened. When properly designed, manufactured and assembled the combination of glass-lined flanges, gasket and J-Clamps result in a leak-tight joint capable of preventing materials inside the equipment from escaping. This configuration was developed specifically for, and is unique to, glass-lined equipment.

The specific J-Clamp assemblies used by Pfaunder in the United States are uniquely designed for equipment produced in the United States and are not used globally. Alternate designs exist in other regions of the world. The J-Clamps have a nominal thread diameter of 7/8" and can be configured to provide varying grip ranges. The primary components are forged from material complying with the American Society of Mechanical Engineer's specification SA-449.

We request an export license to transfer the technology necessary to produce J-clamp assemblies in India. The technology to be transferred that would allow the India-produced clamp to be used on our glass-lined equipment would include material specifications, manufacturing techniques, evaluation methods and the drawings and/or descriptions of the required geometries.

B.Gruver 05/14/03



J-Bolt Clamps for Glasteel® Equipment

Data Sheet DS65-800-2

1978 Design vs Earlier Model

Flanged openings on glassed-steel process vessels are constructed differently than the openings supplied on lined, clad and all-metal vessels. Due to glassing requirements, glassed-steel flanges are smaller in outside diameter and thinner in cross section than bolted flanges. They are not usually drilled for bolt holes. A split-ring flange or specially designed, J-bolt clamp is used instead to join glassed-steel flanges.

Split-Ring Flanges on Smaller Openings

The lap-joint type nozzle used on Pfaudler Glasteel equipment openings no larger than 12-inches nominal diameter is a forged stub-end flange fitted with a drilled, split-ring flange. The split flange is installed after the vessel has been glassed. Refer to Data Sheet DS65-300 for specifications on Pfaudler Split Flanges.

J-Bolt Clamps on Larger Openings

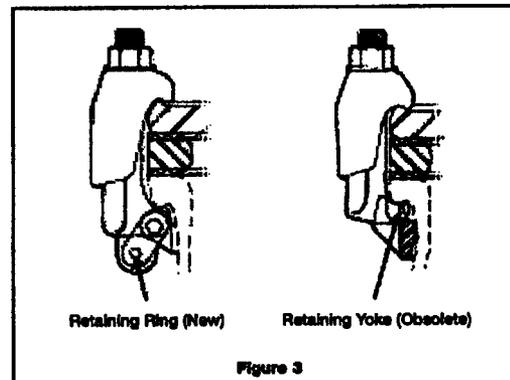
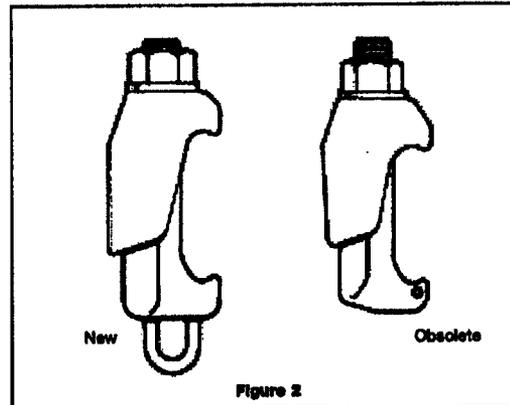
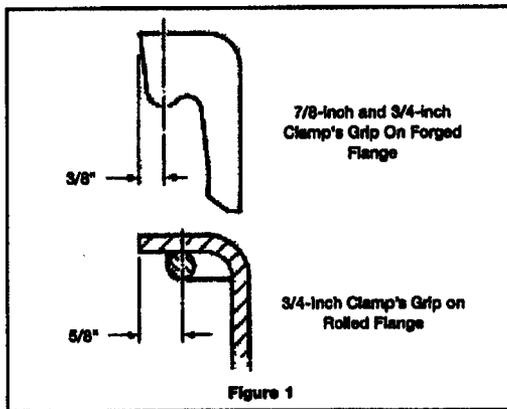
On manways, agitator access openings and the main flanges used on clamp-top vessels and columns, a contoured flange is used in conjunction with a specified number of forged J-bolt clamps.

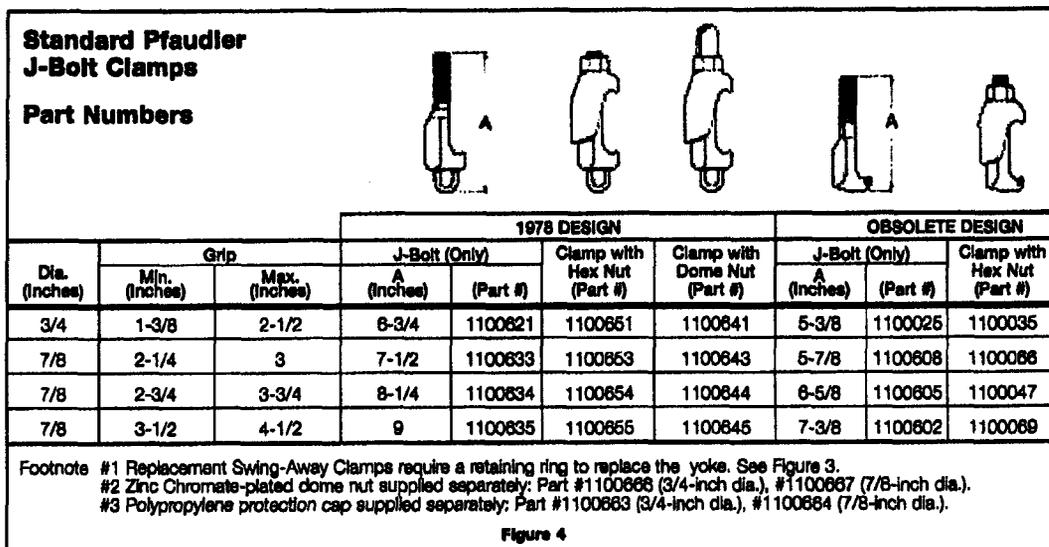
Pfaudler J-bolt clamps are supplied in 3/4 inch and 7/8 inch diameters. The 3/4 inch Pfaudler clamp has sufficient reach to grip at 5/8" from the clamping ring to the OD of a rolled flange. Both the 7/8-inch and 3/4-inch Pfaudler J-bolt clamps have sufficient reach to grip at 3/8" from the centerline of the clamping point to the OD of a forged flange. See Fig. 1.

Common Usage

The use of J-bolt clamps is common on all makes of glassed-steel process equipment. However, each supplier has his own clamp design that may or may not be interchangeable with other brands of glassed-steel equipment.

WARNING: The use of any J-bolt clamp on Pfaudler-brand equipment that does not bear the "Pfaudler" name on the clamp should be considered hazardous. Failure to use "Pfaudler" clamps on Pfaudler-brand equipment could result in costly equipment damage and serious personal injury.





The 1978 Design

In 1978, Pfaudler introduced a new style J-bolt clamp. It differs from the previous Pfaudler design by having a loop at the base of the clamp in place of the lugs used formerly. See Fig. 2. The loop provides the means for attaching the J-bolt to a retainer ring when swing-away clamps are required for frequently opened and closed openings. The 1978 design clamp obsoletes the previous Pfaudler clamp and can be used to replace the older style. A retaining ring is required to replace the yoke used with the obsolete clamps. See Figs. 3 and 4.

Another feature of the 1978 J-bolt design is the availability of either a zinc chromate-plated dome nut or a polypropylene cap for the steel nut to protect the exposed threads from ambient corrosion. Further details are given in Fig. 4.

Specification

Materials:
 J-Bolt and Clamp – ASME SA-449 Forged Steel
 Hex Nut and Dome Nut – ASME SA-194, Gr2H Steel

Load Rating:

3/4-Inch – 4761 lbs.
 7/8-inch – 8646 lbs.

A Pfaudler part number is forged into each J-bolt corresponding to the numbers listed in Fig. 4 to designate the grip range.

How To Order

When ordering J-bolt clamps as replacement for the obsolete Pfaudler design, it will help us to fill your order when the following information can be supplied.

1. Part number.
2. Diameter of the J-bolt.
3. Grip range of the clamp. (Refer to Fig. 4)

If the above information is not available, we will need the serial number of your Pfaudler vessel along with a description of each opening to be sealed with clamps (manway, agitator access or main flange).

When ordering J-bolt clamps for a manway opening, identify the style of protection ring (with or without spring assistance) or the extension collar used on the vessel, if at all.

The data and commentary presented herein are based on test information and field experience by Pfaudler, Inc. They are believed to be reliable, but do not express or imply warranty or performance guarantee. Since process conditions vary widely, Pfaudler, Inc. and Glassteel® Parts and Services expressly disclaim in connection with the information contained herein any warranty, express, implied or statutory, including the warranty of fitness for a particular purpose and merchantability.



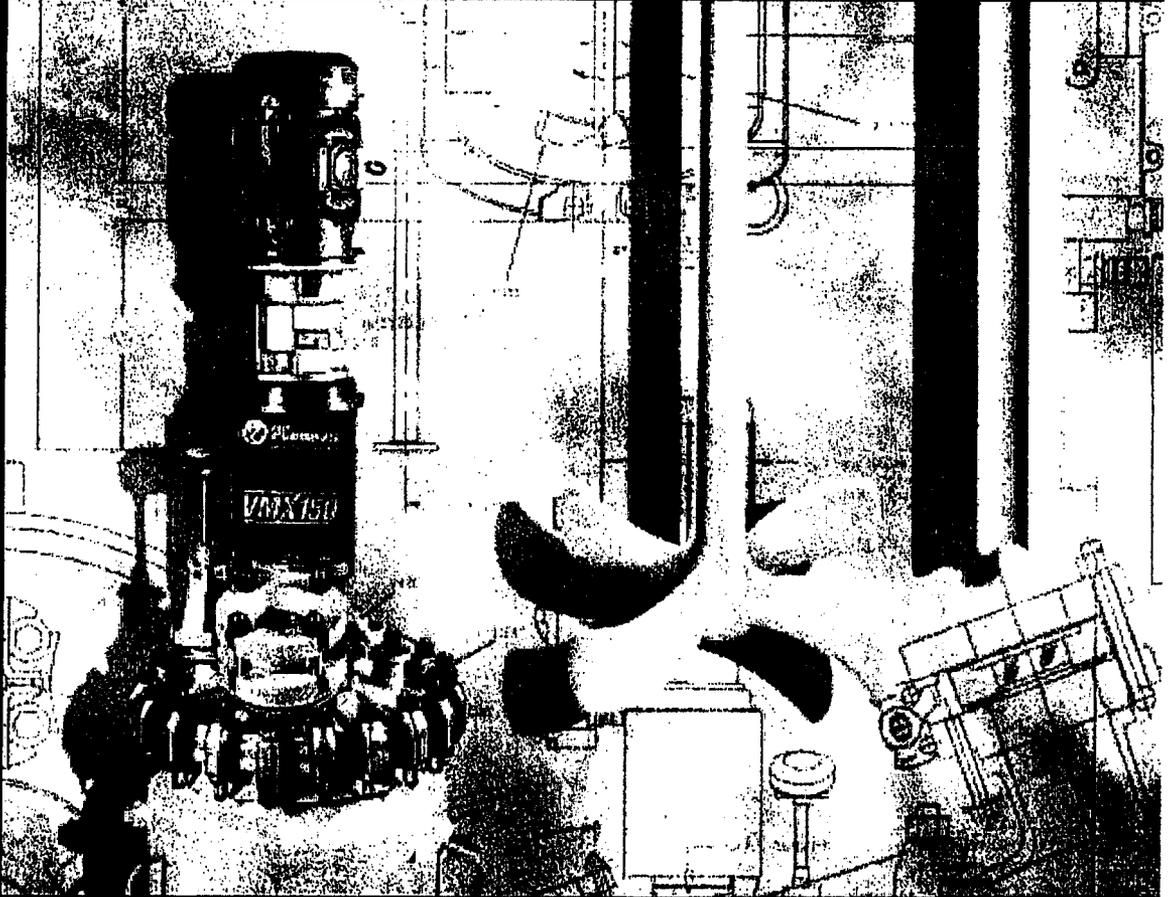
1000 West Avenue
 PO Box 23600
 Rochester, NY 14692-3600
 Phone: 585 235 1000
 Fax: 585 235 6393
 www.pfaudler.com



Glassteel® Parts and Services
 A Unit of Pfaudler, Inc.
 1999 Mt. Read Blvd.
 PO Box 20857
 Rochester, NY 14602
 Phone: 585 235 1010
 Fax: 585 235 7923

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RT Series Gasteel[®] Reactors



Praeger

REACTOR SYSTEMS

**VMX
Mixer Drive**

Handhole
or manway
including an
integral fused
sight glass and
protection ring

Stainless steel
insulation
ring/drip
shield

Fine grain
carbon
steel for
improved low
temperature
characteristics

Higher internal
and jacket
pressure rating

All legs
designed for
wind and seismic
conditions

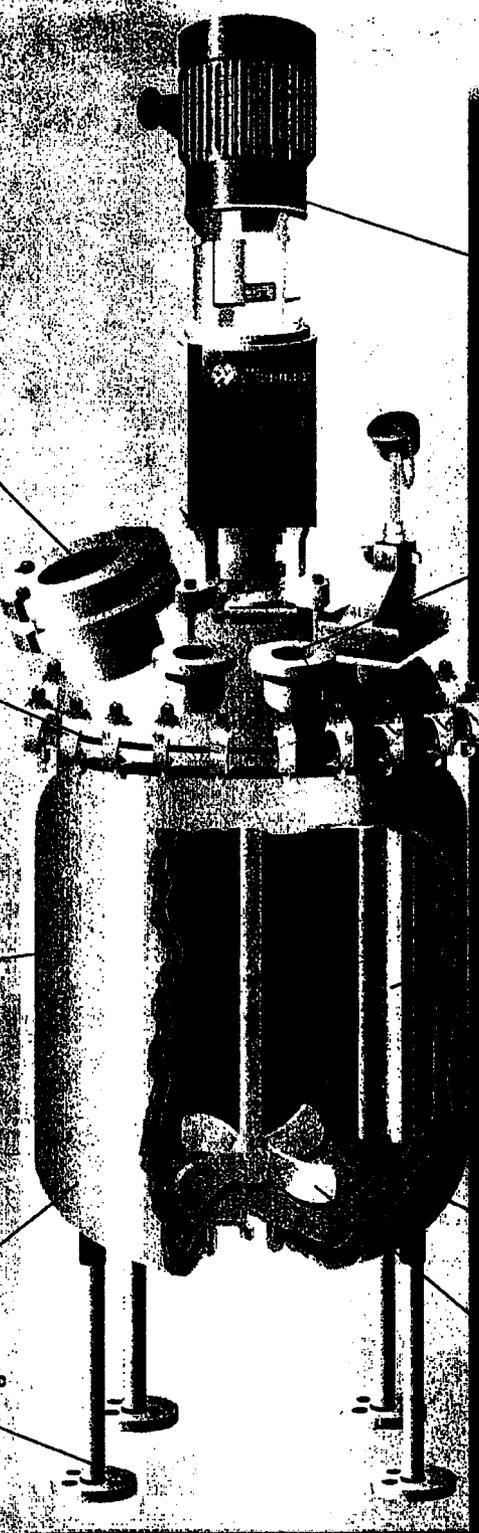
In-line
mixer drive

More top
head nozzles

Superior
concave
baffle with
TMI sensor

Superior
erosion
resistance
with concave
baffle

Scalable to
Cryo-Gen
Inerters



Pfaunder RT Series

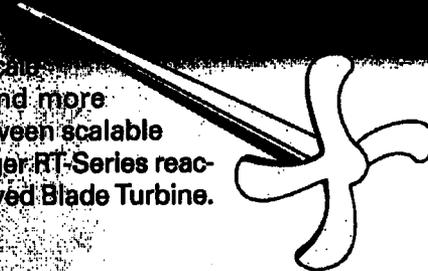


VMX Drive

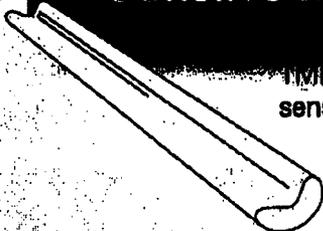
RT-Series reactors from 20 gallons to 500 gallons are equipped with Pfaunder's VMX Mixer Drive. It provides a versatile, compact, clean package. The in-line design is composed of a C-faced motor suitable for inverter service, supported directly on the top of the gearbox. This design allows easier access to the process nozzles. Additional features are simple seal changeouts, low maintenance gearboxes, and plated (not painted) pedestal and gearbox components.

The new standard impeller for small-scale reactors (20 to 200 gallons) is the scalable Curved Blade Turbine (CBT), replacing the traditional Retreat Curve Impeller (RCI). Process scale-up and scale-down has been made easier and more accurate due to the geometric similarities between scalable impellers and Cryo-Lock® impellers. For the larger RT-Series reactors, the standard impeller is the Cryo-Lock Curved Blade Turbine.

Scalable Mixers



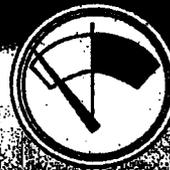
Concave Baffle



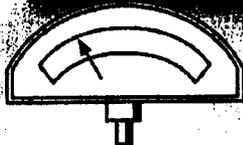
The new Concave Baffle provides 15% to 20% increased power investment over competitive offerings. It is provided with our TMI temperature sensor. The TMI is a spring-loaded temperature sensor, with no exposed tantalum and no gasketed joint.

Many processes today run at lower temperatures. All shells and heads of the RT Series utilize fine grain carbon steel which has significantly improved low temperature characteristics.

Low Temperatures



Higher Pressure Ratings



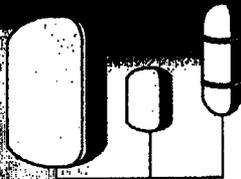
Since many chemical processes today require higher pressures, we have increased the internal pressure ratings for our small reactors (5 to 100 gallons) to 150 psig. The jacket pressure rating for the small reactors is 125 psig. For our larger RT-Series reactors (200 to 500 gallons) the internal and jacket pressure ratings are 100 psig.

The RT-Series reactor can replace existing standard P-Series and E-Series reactors with minimal piping or support modifications. Additionally, the bottom outlet nozzle projection has been increased for easier access.

Easy Installation



Standard and Custom Designs



Choose from a full line of Pfaudler RT-Series Glasteel reactors, with models ranging from 5 to 500 gallons. These configurations can be customized to meet specific design requirements.

The specially formulated glass lining fused to a steel substrate is highly corrosion resistant and chemically inert to nearly all substances. It is the ideal environment for processing ultra-pure products.

Its smooth surface resists adherence by viscous or sticky materials and cleans easily.

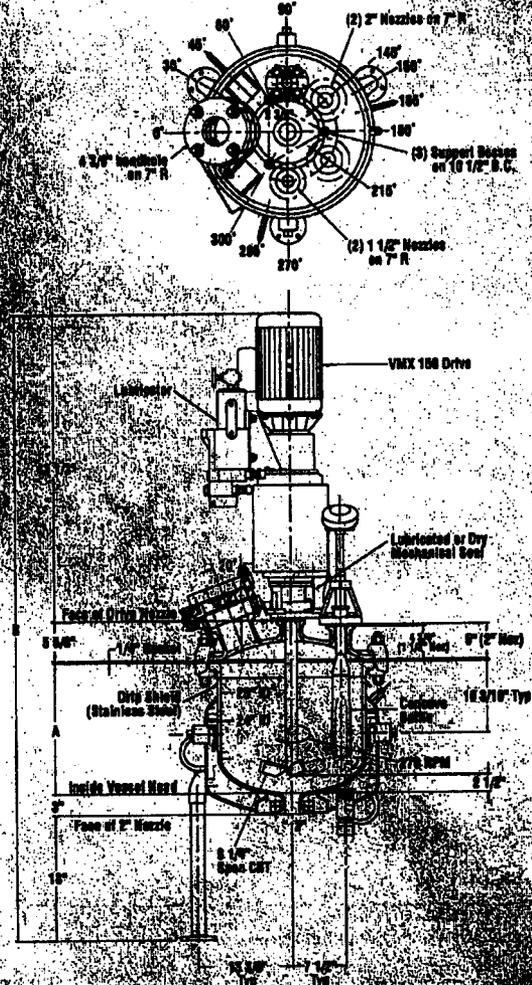
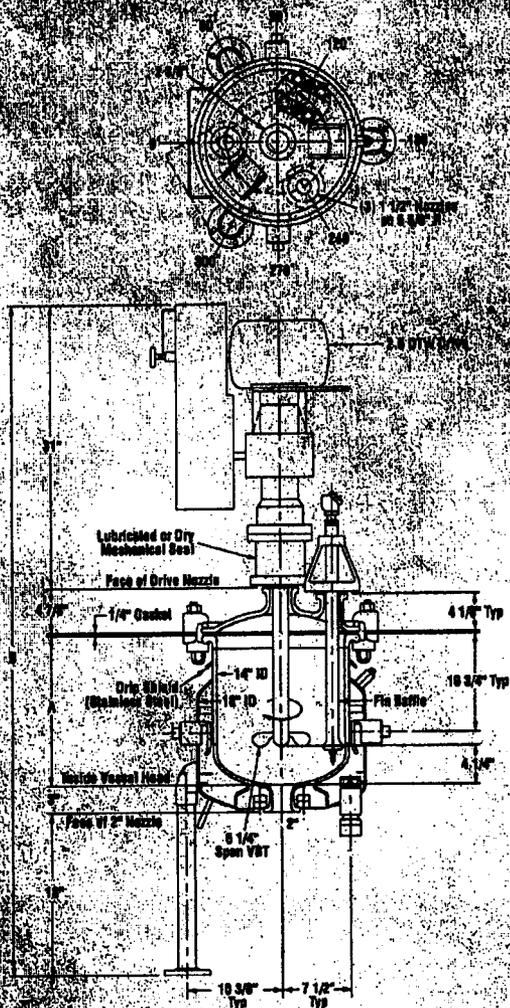
Glasteel is strong. Fusing glass to steel produces a composite material with the advantages of glass and strength of steel. It has a high resistance to impact and thermally induced stresses.

Why Use a Glasteel Reactor



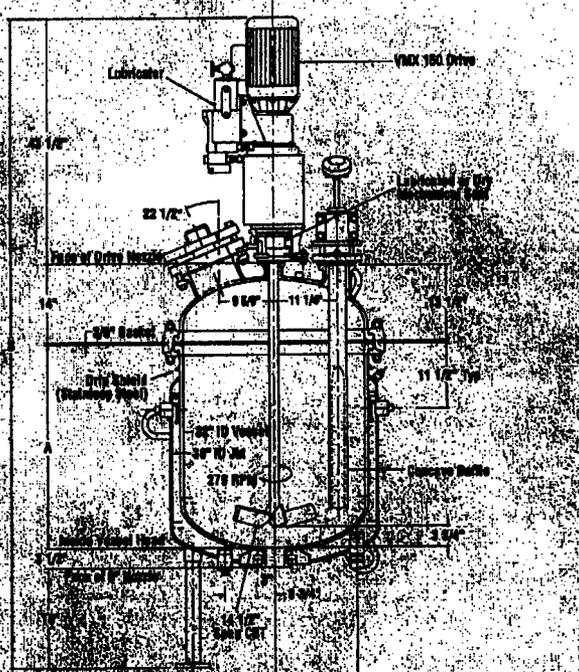
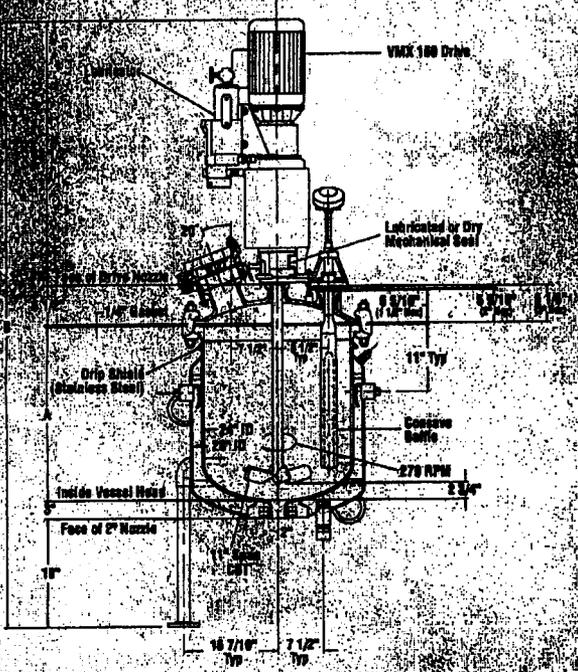
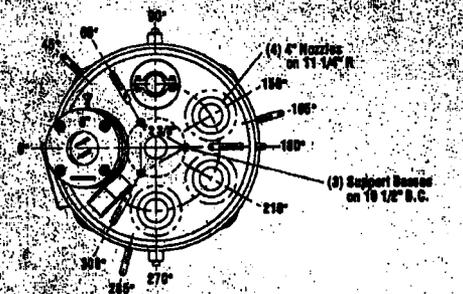
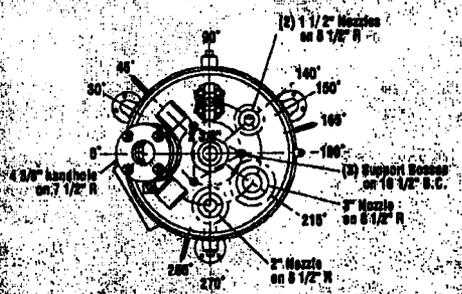
RT-14-10 Series and RT-20-20/30 Series

| | RT-14-10 | RT-20-20 | RT-20-30 | | RT-14-10 | RT-20-20 | RT-20-30 | | RT-14-10 | RT-20-20 | RT-20-30 |
|----------------------------------|----------|----------|----------|-----------------------------------|----------|----------|----------|------------------------------|----------|----------|----------|
| Capacity (gallons) | 10 | 20 | 30 | | | | | | | | |
| Working | 10 | 20 | 30 | Heating Area (square feet) | | | | | | | |
| Top Head | .8 | 1.9 | 1.9 | Jacket | 3.6 | 6.7 | 9.3 | Weight (pounds) | | | |
| Bottom Head | 1.8 | 4.5 | 4.5 | Bottom Head | 1.2 | 2.7 | 2.7 | W/Drive, Agit, Baffle | 780 | 1070 | 1180 |
| Per Inch of S.S. | .7 | 1.4 | 1.4 | Per Inch of S.S. | .3 | .4 | .4 | Add for Shipment | 150 | 150 | 160 |
| To Bottom of Impeller | 2.1 | 1.5 | 1.5 | Design Pressure | | | | Dimensions | | | |
| To Top of Impeller Blades | 3.1 | 4.0 | 4.0 | Internal @ 450°F | 150/PV | 150/PV | 150/PV | A | 16 1/2" | 18 1/2" | 24 1/2" |
| To Bottom of Baffle | 1.7 | 4.9 | 4.9 | Jacket @ 450°F | 125/125 | 125/125 | 125/125 | B | 73 1/2" | 91 1/4" | 95 1/2" |
| To Face of Main Flange | 10.2 | 23.2 | 31.4 | | | | | | | | |
| Jacket | 5.8 | 10.7 | 13.6 | | | | | | | | |



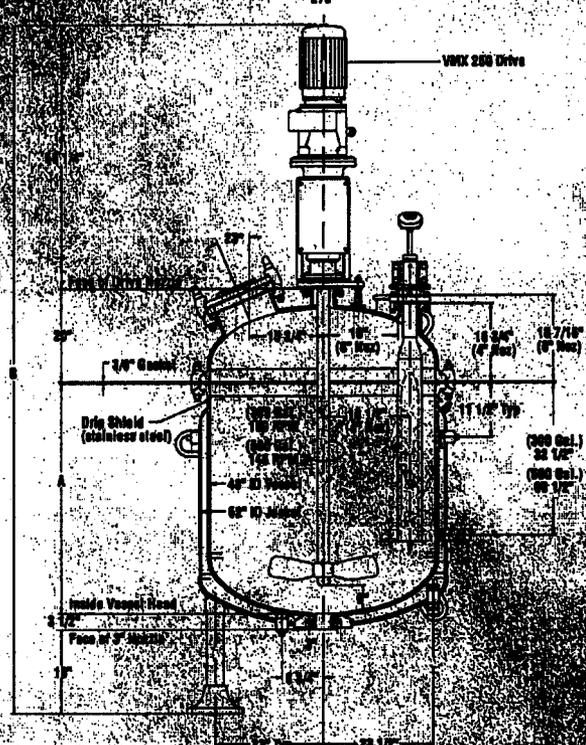
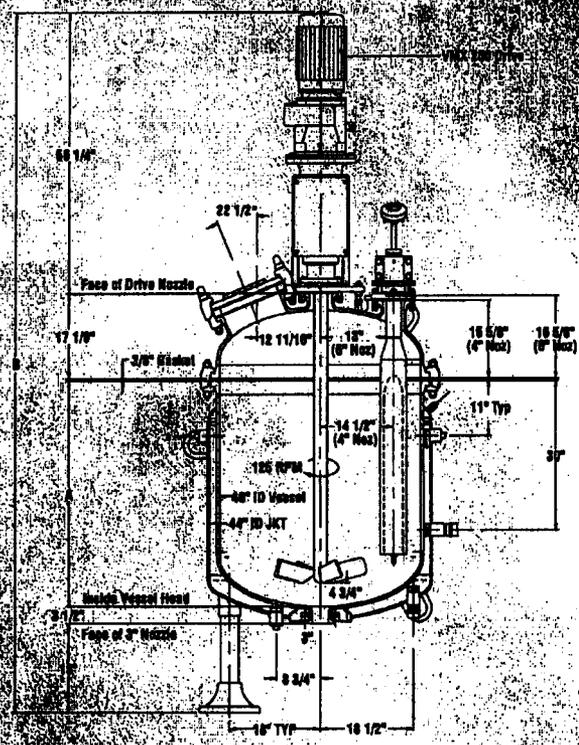
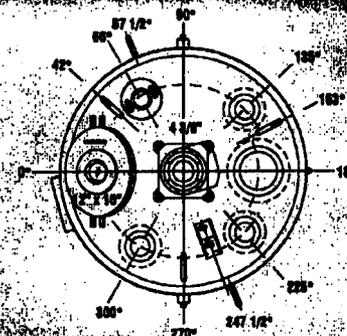
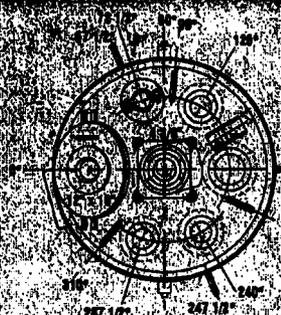
RT-24-50 Series and RT-32-100 Series

| | RT-24-50 | RT-32-100 | | RT-24-50 | RT-32-100 |
|---------------------------|----------|-----------|-----------------------------------|----------|-----------|
| Capacity (gallons) | 50 | 100 | Heating Area (square feet) | | |
| Working | 50 | 100 | Jacket | 13.1 | 22.8 |
| Top Head | 3.2 | 23.0 | Bottom Head | 4.1 | 7.3 |
| Bottom Head | 7.8 | 18.6 | Per inch of S.S. | .5 | .7 |
| Per inch of S.S. | 2.0 | 3.5 | Design Pressure | | |
| To Bottom of Impeller | 2.1 | 5.2 | Internal @ 450°F | 150/PV | 150/PV |
| To Top of Impeller Blades | 7.1 | 16.8 | Jacket @ 450°F | 125/125 | 125/125 |
| To Bottom of Baffle | 8.5 | 18.5 | Weight (pounds) | | |
| To Face of Main Flange | 52.4 | 118.9 | W/Drive, Agit, Baffle | 1380 | 2510 |
| Jacket | 18.4 | 28.5 | Add for Shipment | 150 | 150 |
| | | | Dimensions | | |
| | | | A | 28 1/2" | 36 1/2" |
| | | | B | 100" | 115 1/2" |

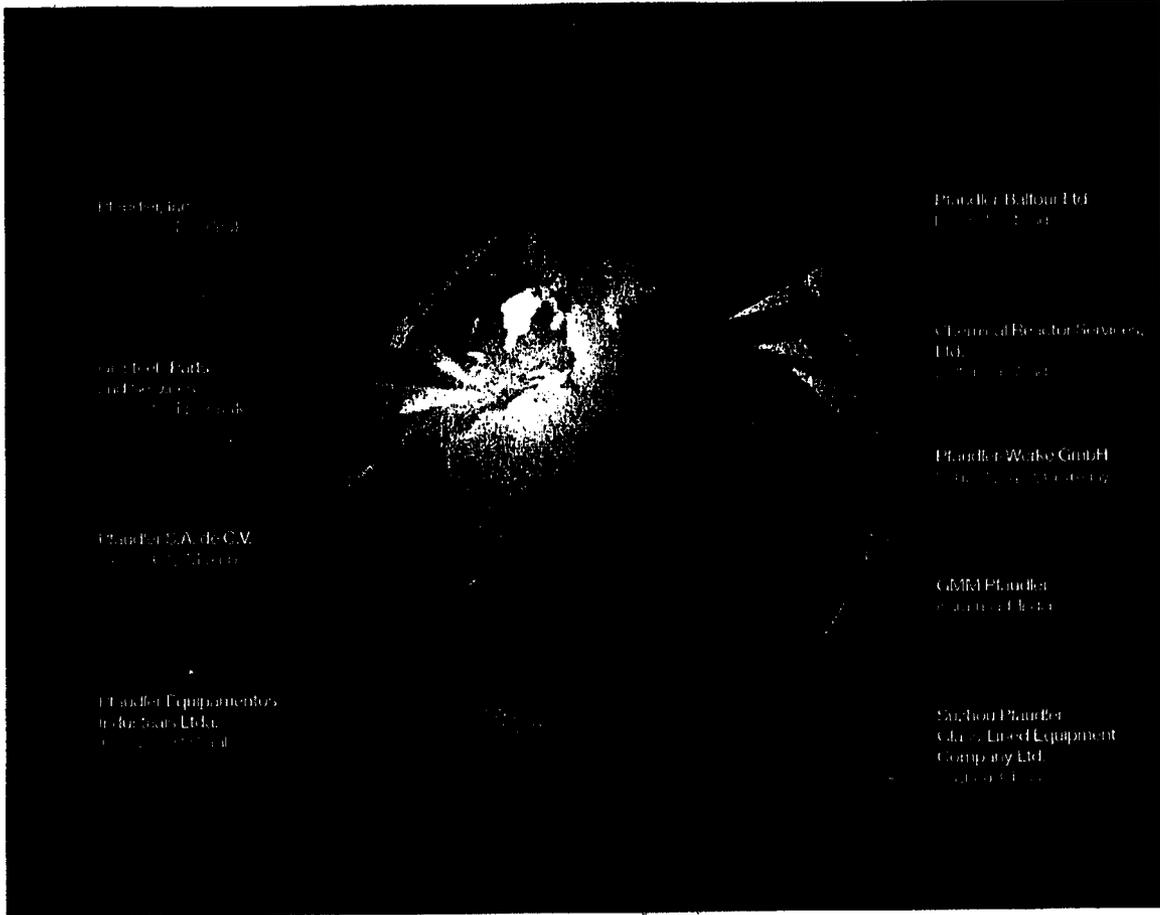


RT-40-200 Series and RT-48-300/500 Series

| | RT-40-200 | RT-48-300 | RT-48-500 | RT-40-200 | RT-48-300 | RT-48-500 | RT-40-200 | RT-48-300 | RT-48-500 |
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Capacity (gallons) | 200 | 300 | 500 | | | | | | |
| Working | 200 | 300 | 500 | | | | | | |
| Top Head | 58.7 | 92.0 | 92.0 | | | | | | |
| Bottom Head | 38.3 | 62.7 | 62.7 | | | | | | |
| Per inch of S.S. | 5.4 | 7.8 | 7.8 | | | | | | |
| To Bottom of Impeller | 10.4 | 19.6 | 19.6 | | | | | | |
| To Top of Impeller Blades | 33.6 | 65.6 | 65.6 | | | | | | |
| To Bottom of Baffle | 39.0 | 90.1 | 90.1 | | | | | | |
| To Face of Main Flange | 229.4 | 355.5 | 574.8 | | | | | | |
| Jacket | 46.4 | 54.9 | 81.0 | | | | | | |
| Heating Area (square feet) | | | | | | | | | |
| Jacket | 37.8 | 50.3 | 79.8 | | | | | | |
| Bottom Head | 11.8 | 18.9 | 18.9 | | | | | | |
| Per inch of S.S. | .9 | 1.1 | 1.1 | | | | | | |
| Design Pressure | | | | | | | | | |
| Internal @ 450°F | 100/PV | 100/PV | 100/PV | | | | | | |
| Jacket @ 450°F | 100/100 | 100/100 | 100/100 | | | | | | |
| Weight (pounds) | | | | | | | | | |
| W/Drive, Agit, Baffle | 3990 | 5070 | 6420 | | | | | | |
| Add for Shipment | 150 | 150 | 150 | | | | | | |
| Dimensions | | | | | | | | | |
| A | 45 1/2" | 49 1/2" | 77 1/2" | | | | | | |
| B | 140 1/2" | 147 1/2" | 178 1/2" | | | | | | |



SB81-400-2



Pfaudler, Inc.
Rochester, NY

Pfaudler Equipamentos Industriais Ltda.
Rochester, NY

Pfaudler S.A. de C.V.
Mexico City, Mexico

Pfaudler Equipamentos Industriais Ltda.
Rochester, NY

Pfaudler Balfour Ltd.
Leven, Fife, Scotland

Chemical Reactor Services, LLC
Rochester, NY

Pfaudler Werke GmbH
Schwetzingen, Germany

GMM Pfaudler
Bombay, India

Suzhou Pfaudler Glass-Lined Equipment Company Ltd.
Suzhou, China

The information contained in this bulletin is believed to be reliable general guidelines for consideration of the products and services described herein. The information is general in nature and should not be considered applicable to any specific process or application. Pfaudler, Inc. expressly disclaims in connection with the information contained herein any warranty, express, implied or statutory, including the warranty of fitness for a particular purpose and merchantability.

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Fax: (1 585) 235-6393

Glasteel® Parts and Services
Rochester, New York
Tel: (1 585) 235-1010
Fax: (1 585) 235-7923

Worldwide Facilities

Chemical Reactor Services Ltd.
Bolton, England
Tel: (44 1204) 862-777
Fax: (44 1204) 577-484

GMM Pfaudler
Bombay, India
Tel: (91 22) 2047470
Fax: (91 22) 2049408

Pfaudler-Balfour Ltd.
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Tel: (44 1333) 423-020
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Pfaudler Equipamentos Industriais Ltda.
Taubate, SP, Brazil
Tel: (55 122) 326-244
Fax: (55 122) 217-662

Pfaudler S.A. de C.V.
Mexico City, Mexico
Tel: (52 5) 55 355 0100
Fax: (52 5) 55 355 0809

Pfaudler-Werke GmbH
Schwetzingen, Germany
Tel: (49 620) 2850
Fax: (49 620) 222412

Suzhou Pfaudler Glass-Lined Equipment Company Ltd.
Suzhou, China
Tel: (86 512) 534 1822
Fax: (86 512) 534 0870



1000 West Avenue
PO Box 23800
Rochester, NY 14682-3600
Tel: 585 235 1000
Fax: 585 235 6393
www.pfaudler.com

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*Final 7/22/03
mailed 7/27/03*



Pfaudler - U.S.
1000 West Avenue
PO Box 23600
Rochester, NY 14692-3600
Tel: 716-235-1000
Fax: 716-235-6393
E-Mail: btaylor@pfaudler.com

To: Dr. Scott Hubinger Date: July 22, 2003
From : Robert F. Taylor
Subject: Information Requested for Z196893

We have not been able to secure the requested data from GMM Pfaudler nor Suzhou Pfaudler. Please remember that the Bureau of Industry and Security has in its possession, GMM Pfaudler's Customer List and Internal Compliance System. Please also remember this J-clamp that we want to have made in India is available from a variety of manufacturers throughout the world. While the J-clamp is designed to Pfaudler US's specification, similar items are available in any industrialized country in the world.

We again request your approval to transfer the design and manufacturing specification for this J-clamp to Indian Suppliers so that we may reduce our cost and better enable Pfaudler US to compete with products being imported from "Low Cost Regions" of the world.

Regards

A handwritten signature in black ink, appearing to read "Robert F. Taylor", with a long horizontal flourish extending to the right.

Robert F. Taylor
Manager, Planning and Procurement

EXHIBIT 4



产品介绍
PRODUCT

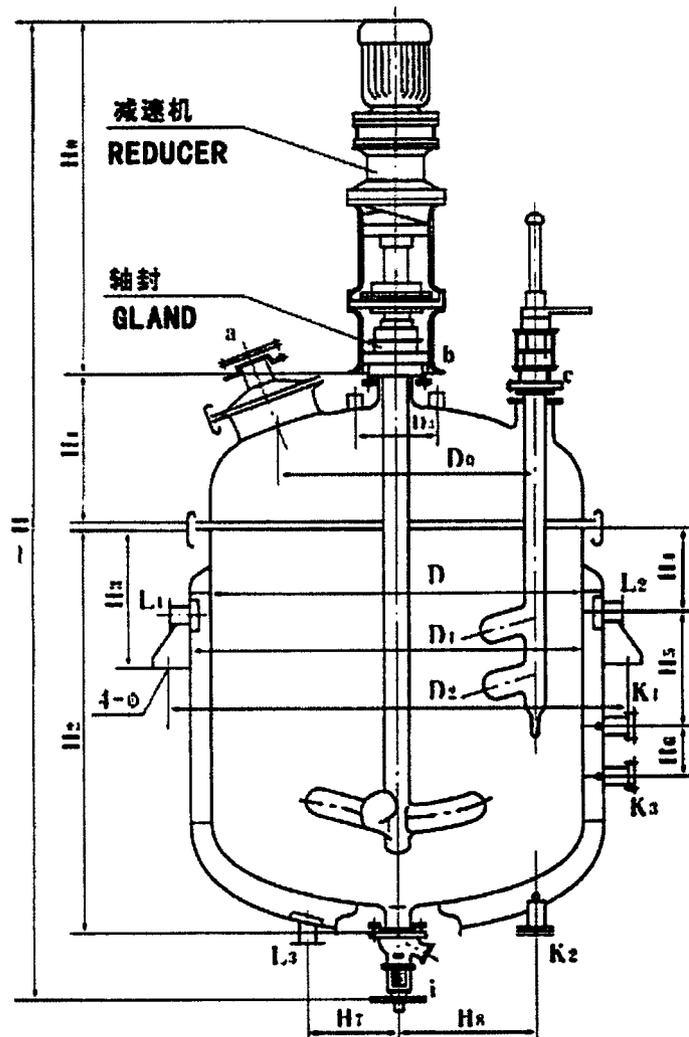
1-搪玻璃开式反应罐

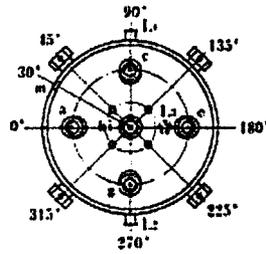
2-搪玻璃搅拌器

3-塑料容器及防腐衬里

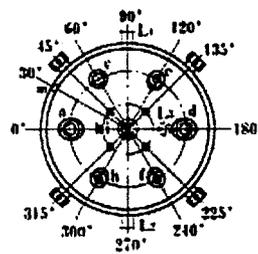
WWW.HUAGONG-ENAMEL.COM

搪玻璃开式反应罐 GLASS LINED REACTOR (OPEN TYPE)

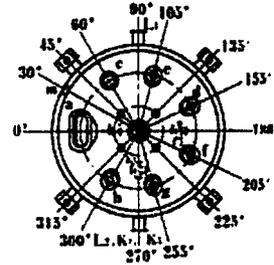




50L~100L



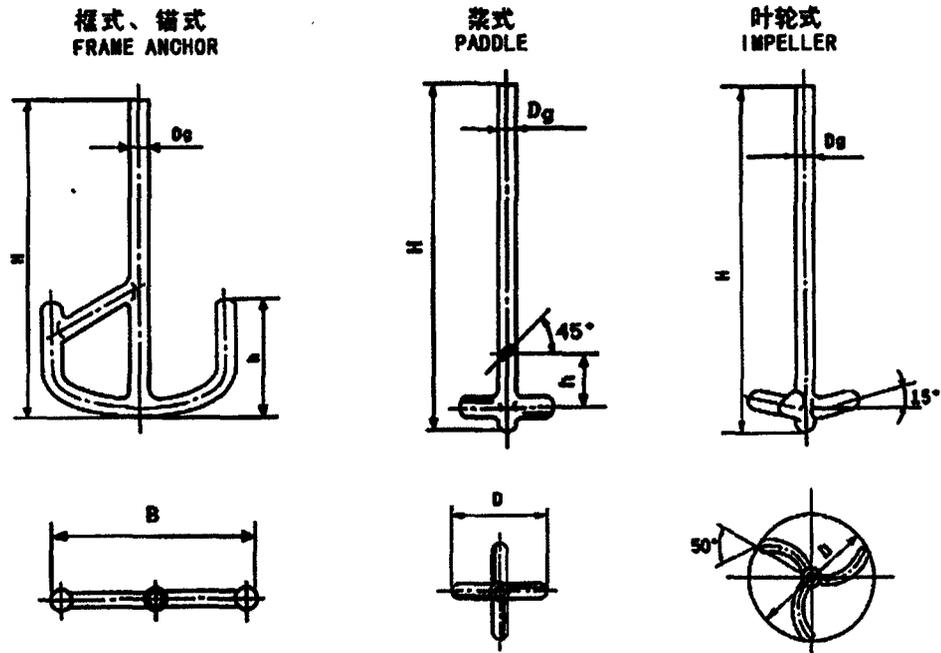
200L~500L



1000L~5000L

| 公称容积(L) | 50 | 100 | 200 | 400 | 500 | 1000 | 1500 | 1500 | 2000 | 2000 | 3000 | 5000 |
|-----------------------|------------------------|-------|-------|-------|-------|-------|-----------|-----------|-----------|-----------|-----------|-----------|
| 实际容积(L) | 71 | 128 | 247 | 369 | 388 | 1230 | 1600 | 1720 | 2160 | 2240 | 3360 | 5600 |
| 投影面积(m ²) | 0.34 | 0.66 | 1.26 | 1.73 | 2.64 | 4.34 | 3.97 | 3.34 | 7.02 | 6.8 | 8.61 | 13.5 |
| 电机功率(KW) | 0.8 | U.B | 1.1 | 3.0 | 3.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 5.5 | 7.5 |
| 搅拌转速(rpm) | 摆式、偏式 83、85；叶轮式、降式 130 | | | | | | | | | | | |
| D | 500 | 600 | 700 | 800 | 900 | 1200 | 1200 | 1300 | 1300 | 1450 | 1600 | 1750 |
| D ₀ | 350 | 420 | 490 | 560 | 630 | 840 | 840 | 910 | 910 | 1015 | 1120 | 1225 |
| D ₁ | 600 | 700 | 800 | 900 | 1000 | 1300 | 1300 | 1450 | 1450 | 1600 | 1750 | 1900 |
| D ₂ | 706 | 816 | 918 | 1028 | 1130 | 1468 | 1468 | 1623 | 1623 | 1772 | 1961 | 2192 |
| D ₃ | 270 | 270 | 300 | 350 | 350 | 400 | 400 | 400 | 400 | 400 | 450 | 500 |
| φ | 14 | 18 | 18 | 23 | 23 | 30 | 30 | 30 | 30 | 30 | 30 | 36 |
| H | 2030 | 2170 | 2440 | 2770 | 3030 | 3360 | 3740 | 3670 | 4010 | 3860 | 4185 | 4800 |
| H ₀ | 945 | 945 | 953 | 1154 | 1154 | 1276 | 1276 | 1276 | 1276 | 1276 | 1326 | 1451 |
| H ₁ | 265 | 300 | 345 | 380 | 405 | 480 | 480 | 505 | 505 | 552 | 560 | 637 |
| H ₂ | 465 | 565 | 770 | 870 | 1070 | 1270 | 1650 | 1470 | 1815 | 1570 | 1810 | 2430 |
| H ₃ | 300 | 300 | 350 | 350 | 400 | 500 | 500 | 500 | 500 | 500 | 600 | 650 |
| H ₄ | 220 | 220 | 230 | 340 | 250 | 250 | 250 | 310 | 310 | 310 | 310 | 350 |
| H ₅ | - | - | - | - | - | - | - | 690 | 690 | 690 | 937 | 740 |
| H ₆ | - | - | - | - | - | - | - | - | - | - | - | 420 |
| H ₇ | 250 | 250 | 250 | 250 | 270 | 315 | 315 | 315 | 315 | 315 | 315 | 350 |
| H ₈ | - | - | - | - | - | - | - | 307 | 307 | 307 | 614 | 650 |
| 下子数量 | 24 | 28/32 | 36/40 | 40/48 | 32/36 | 52/56 | 52/56 | 56/64 | 56/64 | 48/56 | 52/60 | 60/68 |
| 设备净重(kg) | 477 | 548 | 728 | 1020 | 1225 | 1906 | 2141 | 2383 | 2595 | 2700 | 3891 | 5622 |
| 管口公称尺寸 | a | 80 | 80 | 125 | 125 | 150 | 200 x 400 | 300 x 400 |
| | b | 70 | 70 | 80 | 100 | 100 | 125 | 125 | 125 | 125 | 125 | 150 |
| | c | 70 | 70 | 70 | 70 | 70 | 100 | 100 | 100 | 100 | 100 | 125 |
| | d | - | - | 80 | 80 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | e | 70 | 70 | 70 | 70 | 80 | 100 | 100 | 125 | 125 | 125 | 125 |
| | f | - | - | 70 | 70 | 125 | 125 | 125 | 125 | 125 | 125 | 125 |
| | k | 70 | 70 | - | - | 100 | 100 | 100 | 100 | 100 | 100 | 125 |
| | h | - | - | 70 | 70 | 80 | 100 | 100 | 125 | 125 | 125 | 125 |
| | i | 70 | 70 | 80 | 80 | 80 | 100 | 100 | 100 | 100 | 125 | 125 |
| | L1.2.3 | 20 | 20 | 25 | 25 | 32 | 32 | 32 | 40 | 40 | 50 | 50 |
| K1.2 | - | - | - | - | - | - | - | 30 | 30 | 70 | 70 | |
| K3 | - | - | - | - | - | - | - | - | - | - | 70 | |
| m | G1/2" | G1/2" | G1/2" | G1/2" | G1/2" | G1/2" | G1/2" | G1/2" | G1/2" | G1/2" | G1/2" | G1/2" |

搪玻璃搅拌器 AGITATOR FOR GLASS LINED



国家标准系列尺寸

| 规格型式 反应罐型号 | 框式、锚式 | | | | 叶轮式 | | | 桨式 | | | |
|---------------|-------|------|------|------|-----|-----|------|-----|-----|------|-----|
| | Dg | B | H | h | Dg | D | H | Dg | D | H | h |
| 80 | 40 | 420 | 880 | 250 | 40 | 300 | 830 | 40 | - | - | - |
| 100 | 40 | 520 | 1000 | 300 | 40 | 300 | 960 | 40 | - | - | - |
| 200 | 50 | 620 | 1240 | 350 | 50 | 400 | 1200 | 50 | - | - | - |
| 300 | 65 | 720 | 1390 | 400 | 65 | 500 | 1350 | 65 | - | - | - |
| 500 | 65 | 810 | 1620 | 450 | 65 | 300 | 1540 | 65 | 450 | 1540 | 220 |
| 1000 | 80 | 1080 | 1910 | 650 | 80 | 700 | 1840 | 80 | 600 | 1840 | 300 |
| 1500 | 80 | 1080 | 2290 | 650 | 80 | 700 | 2140 | 80 | 650 | 2140 | 320 |
| *1500 | 80 | 1180 | 2140 | 700 | 80 | 700 | 2090 | 80 | 650 | 2090 | 320 |
| 2000 | 80 | 1180 | 2480 | 700 | 80 | 700 | 2430 | 80 | 650 | 2430 | 320 |
| *2000 | 95 | 1300 | 2240 | 700 | 95 | 750 | 2200 | 95 | 725 | 2200 | 360 |
| 3000 | 95 | 1440 | 2500 | 800 | 95 | 800 | 2500 | 95 | 800 | 2500 | 400 |
| 5000 | 110 | 1580 | 3200 | 1000 | 95 | 850 | 3060 | 110 | 950 | 3060 | 470 |
| F3000 | - | - | - | - | 95 | 800 | 2500 | 95 | 800 | 2500 | 400 |
| F5000 | - | - | - | - | 95 | 850 | 3000 | 95 | 950 | 3060 | 470 |

注: *设备内径为1200、1450

辽阳标准系列尺寸表

| 规格型式 反应罐型号 | 框式、锚式 | | | | 叶轮式 | | | 桨式 | | | |
|---------------|-------|------|------|-----|-------|------|------|-------|-----|------|-----|
| | Dg | B | H | h | Dg | D | H | Dg | D | H | h |
| BF 50 | 40 | 420 | 760 | 250 | 40 | 300 | 760 | - | - | - | - |
| BF 100 | 40 | 500 | 925 | 250 | 40 | 360 | 925 | - | - | - | - |
| BF 200 | 50/60 | 620 | 1260 | 350 | 50/60 | 420 | 1260 | - | - | - | - |
| BF 300 | 50/60 | 703 | 1380 | 400 | 50/60 | 480 | 1360 | - | - | - | - |
| BF 500 | 50/60 | 803 | 1630 | 454 | 50/60 | 540 | 1545 | 50/60 | 400 | 1545 | 250 |
| BF 1000 | 65/70 | 1100 | 1960 | 600 | 65/70 | 720 | 1880 | 65/70 | 500 | 1880 | 250 |
| BF 1500 | 65/70 | 1100 | 2300 | 700 | 65/70 | 720 | 2230 | 65/70 | 500 | 2230 | 250 |
| BF 2000 | 70/83 | 1300 | 2300 | 755 | 70/83 | 840 | 2230 | 70/83 | 700 | 2230 | 250 |
| BFK 3000 | 95 | 1440 | 2550 | 900 | 95 | 800 | 2490 | 95 | 700 | 2490 | 265 |
| BFK 5000 | 95 | 1575 | 3190 | 900 | 95 | 850 | 3000 | - | - | - | - |
| BF 8000 | - | - | - | - | 110 | 1100 | 3750 | - | - | - | - |
| BF 10000 | - | - | - | - | 110 | 1100 | 3850 | - | - | - | - |
| BF 12500 | - | - | - | - | 110 | 1150 | 3920 | - | - | - | - |
| BF 15000 | - | - | - | - | 125 | 1300 | 4588 | - | - | - | - |
| BF 20000 | - | - | - | - | 140 | 1300 | 4856 | - | - | - | - |

注: Dg 中有斜线部分为密封处直径 / 搅拌轴

北京标准系列尺寸表

| 规格 罐型式 | 罐式 (框式) | | | | 碟式 | | | |
|-------------|---------|------|------|-----|-----|-----|------|-----|
| | Dg | B | H | h | Dg | D | H | Dg |
| DFK50-50 | 40 | 379 | 760 | 200 | - | - | - | - |
| DFK80-100 | 40 | 479 | 880 | 250 | - | - | - | - |
| DFK70-200 | 50 | 549 | 1100 | 330 | - | - | - | - |
| DFK80-300 | 50 | 649 | 1200 | 350 | - | - | - | - |
| DFK90-300 | 75 | 724 | 148 | 300 | 75 | 500 | 1480 | 370 |
| DFK110-1000 | 75 | 900 | 1780 | 600 | 75 | 500 | 1740 | 370 |
| DFK120-1800 | 100 | 1000 | 2100 | 700 | 100 | 700 | 2070 | 350 |
| DFK130-2000 | 100 | 1000 | 2200 | 700 | 100 | 700 | 2170 | 350 |
| DFK180-3000 | 100 | 1200 | 2400 | 860 | 100 | 700 | 2385 | 350 |
| DFK180-3000 | - | - | - | - | 100 | 800 | 3250 | 520 |
| DFK175-5000 | 100 | 1580 | 3250 | 950 | 100 | 900 | 3180 | 520 |
| DFK143-3000 | - | - | - | - | 100 | 700 | 2170 | 350 |

| 反应 罐型式 | 叶轮式 | | |
|-------------|-----|------|------|
| | Dg | D | H |
| FK120-1000 | 80 | 700 | 1880 |
| FK130-1500 | 80 | 700 | 2100 |
| FK130-2000 | 80 | 700 | 2450 |
| FK180-3000 | 95 | 800 | 2560 |
| FF175-5000 | 95 | 830 | 3175 |
| FF200-10000 | 127 | 1000 | 4500 |

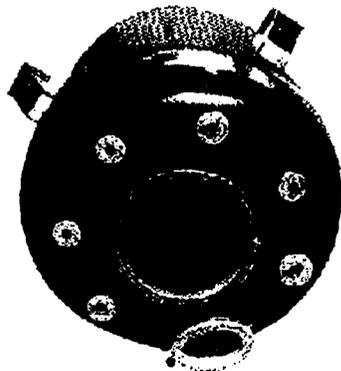
塑料容器及防腐衬塑 PLASTIC CONTAINER AND ANTICORROSION LINING PLASTIC

本公司采用旋转成型工艺,选用进口LLDPE高分子聚合材料,一次加工整体成型各种规格的中空塑料容器.主要产品有纯水箱(0.1吨~30吨),防腐容器(0.1吨~30吨),储存及包装罐,金属容器及金属管道的防腐衬塑?

塑料设备及衬里设备理化性能表

☆充分使用 ○可以使用 ×不可使用

| 化学药品名称 | 质量 (%) | 使用温度 | | 化学药品名称 | 质量 (%) | 使用温度 | | 化学药品名称 | 质量 (%) | 使用温度 | |
|--------|--------|------|-----|--------|--------|------|-----|--------|--------|------|-----|
| | | 20℃ | 60℃ | | | 20℃ | 60℃ | | | 20℃ | 60℃ |
| 硫酸 | 75 | ☆ | ○ | 氢氟酸 | 20 | ☆ | ☆ | 氯化铵 | | ☆ | ☆ |
| 硝酸 | 50 | ○ | ○ | 高氯酸 | 15 | ☆ | ○ | 碳酸钠 | | ☆ | ☆ |
| 盐酸 | 38 | ○ | ○ | 氯磺酸 | 液 | ☆ | ○ | 氯化钠 | | ☆ | ☆ |
| 磷酸 | 85 | ☆ | ☆ | 氯磷酸 | | ☆ | ☆ | 硫酸钾 | | ☆ | ☆ |
| 氢氟酸 | 50 | ☆ | ☆ | 甲酸 | 100 | ☆ | ○ | 氯化钾 | | ☆ | ☆ |
| 氢溴酸 | 50 | ☆ | ☆ | 醋酸 | 10 | ☆ | ☆ | 硫酸铝 | | ☆ | ☆ |
| 氯乙酸 | | ☆ | ☆ | 乳酸 | | ☆ | ☆ | 硫酸钙 | | ☆ | ☆ |
| 亚硝酸 | | ☆ | ☆ | 草酸 | | ☆ | ☆ | 氯化钙 | | ☆ | ☆ |
| 亚硫酸 | | ☆ | ☆ | 柠檬酸 | | ☆ | ☆ | 硝酸银 | | ☆ | ☆ |
| 磺酸 | | ☆ | ☆ | 甘油磷酸 | | ☆ | ☆ | 甲醇 | | ☆ | ☆ |
| 铬酸 | 50 | ○ | × | 氢氧化钠 | 20 | ○ | ○ | 乙醇 | | ☆ | ○ |
| 砷酸 | | ☆ | ☆ | 氢氧化钾 | 20 | ○ | ○ | 丁醇 | | ☆ | ○ |
| 硅酸 | | ☆ | ☆ | 氯化钙 | | ☆ | ☆ | 甲醇 | | ☆ | ☆ |
| 砷酸 | | ☆ | ○ | 氯化铝 | | ☆ | ☆ | 乙二醇 | | ☆ | ☆ |
| 溴酸 | 液 | ○ | ○ | 硫酸铵 | | ☆ | ☆ | 甲酸 | | ☆ | ☆ |



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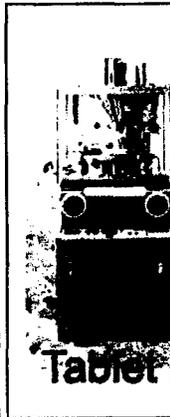
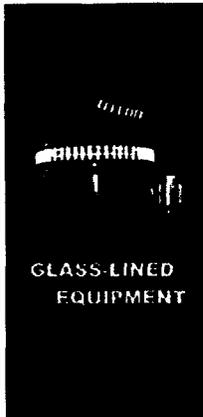
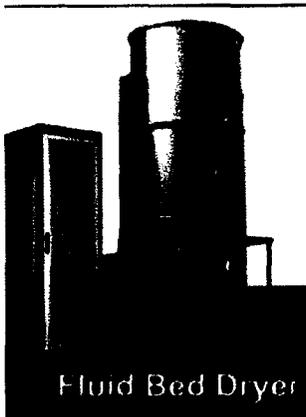
HOT SELLING

New Product Will Meet You Everyday

New Products

Following equipment in hand

- 3000L G/L Distillation System
The system are include following
BJK1000L G/L Receiver
BJK500L G/L Receiver
BHP-12M2 G/L Condenser
G/L Pump
- Spray Booth for Car
- BJK300 Metric Tank



TDP SINGLE PUNCH TABLET PRESS
It is used for research and development and to small-scale production.

Product Catalogue



» **Raw Pharmaceutical Material Equipment.**

[Glase-lined Equipment | Three-column Centrifuge | Disc Separator | Tubular Separator | Screen Machine | Dryer | Spray Dryer | Vacuum Dryer | Vacuum Press Filter | Starch Centrifuge | Screw Discharge Centrifuge

» **Preparation Production Equipment.**

[Capsule Filling Machine | Capsule | Pill-forming Machinery | Cover Rolling Machine | Plug Turning Machine | Capping Machine | Tablet Press | Polisher | Granulator | Ampoules | Coater | Printer | Mixer | Large-scale Infuson Machine | Labelling Machine | Filling Machine | Suppositories

» **Medical Packing Machinery.**

[Blister Packing Machine | Bag Packing Machine | Paper-cup Machine | Printing Machine | AI-AI Packing Machine | Boxing Machine | Packing Line | Counting Machine

» **Pharmaceutical Pulverizer Machinery.**

[Pulverizer | Mill

» **Pharmaceutical Water Supply Equipment.**

[Distilled Water Machine

» **Analyzing & Detecting Instrument and Equipment.**

[Polarimeter | Melting Point Tester | Spectrophotometer | Binocular | PH Meter | Tester | Experimental Machine | Polarimeter | Melting Point Measuring Device | Colorimeter | Turbidity Monitor

» **Pharmaceutical Production Line & Technical.**

[Production of 2000t/y Fructooligosaccharides | Inject Dextrose Investigation Project | Dimeyhyf Fumarate

» **Pharmaceutical Chemical Raw material.**

[2-Methylfuran | Ultraviolet absorber: BW-(UV-9) | Anti Oxiant | Sulfurized isobutylene | Food Additive

» **Others.**

[Ceramic Ball Valve | Compressor | Generator | Pump | Paper-cup Machine | Graphite Electrodes | Injection mold Machinery

Company: liaoyang Pharmaceutical Machinery Co., Ltd.

Address: No.2, Shengli Road, Liaoyang, Liaoning, China Homepage: www.lpmie.net

Tel: (86 419) 8601299 8601399 2262705 2261697 2262241 Fax: (86 419) 2262413 ZIP: 111004

EMAIL: lpmie@mail.lyptt.ln.cn lpmie@lpmie.net

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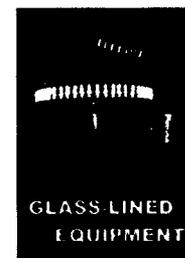
中文

Product Catalogue

| |
|--|
| Raw Pharmaceutical Material Equipment |
| Preparation Production Equipment |
| Medical Packing Machinery |
| Pharmaceutical Pulverizer Machinery |
| Pharmaceutical Water Supply Equipment |
| Analyzing & Detecting Instrument and Equipment |
| Pharmaceutical Production Line & Technical |
| Pharmaceutical Chemical Raw material |
| Others |

GLASS-LINED REACTOR

MAIN APPLICATION:



The glass-lined equipment is a pressure vessel whose main body is made of high quality carbon steel its lined with special ciliate glass by fritting at a high temperature. It is irreplaceable with stainless steel, engineering plastic and other alloy steel under a certain medium and temperature at corrosion resistance. It is also indispensable and economic and good corrosion resistance equipment (for hydrolysis, neutralization, crystallization distillation evaporation and storage in industries of production of pharmacy, chemicals, dyestuff, organic symthes, foodstuff, pesticide and defense.

MAIN STRUCTURE:

The glass-lined reactor has two kinds structure, one is opened structure, The other is closed structure. The type of opened structure reactor is BFK, main use in under 5000L vessel or vessel with frame agitator and anchor agitator; the type of closed structure reactor is BF, main use in over 5000L vessel or vessel with paddle agitator and impeller agitator.

THE ASSEMBLY TYPE OF AGITATOR AND THERMOMETER

Type of agitator:

Frame agitator, anchor agitator, paddle agitator, impeller agitator.

Type of thermometer:

The common and wing thermometer

The assembly type of agitator and thermometer has four kinds, please see

< The drawing of the assembly type of agitator and thermometer >

SEAL:

The quieting seal gasket of glass-lined reactor:

- 1) A three-in-one gasket was combined with asbestos, rubber and polytetrafluoroethylene. The gasket has good elasticity, so the seal effect is good too. But it was not suitable for temperature above 120°C or strong irradiation medium.
- 2) The asbestos enveloped teflon out.
- 3) The asbestos inner lined steel frame, enveloped teflon.

Movable seal gasket of glass-lined reactor:

- 1) Stuffing seal
- 2) Single mechanical seal
- 3) Double mechanical seal

DISCHARGE VALVE:

According the materials of valve, there is glass-lined discharge valve and stainless steel discharge

valve etc. Selection is by customer.

REDUCER:

According to the structure of reducer of glass-lined reactor, there is cycloid reducer and worm reducer. There is fixed speed and adjustable speed.

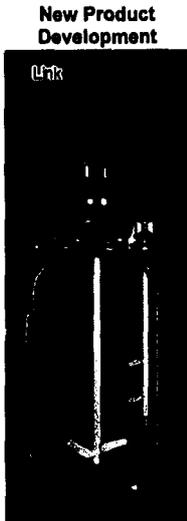
MAIN SPECIFACATION

- | | | | |
|----|--------------------------------|----|--------------------------------|
| 1 | BFK-50L Glass-lined Reactor | 2 | BFK-100L Glass-lined Reactor |
| 3 | BFK-200L Glass-lined Reactor | 4 | BFK-300L Glass-lined Reactor |
| 5 | BFK-500L Glass-lined Reactor | 6 | BFK-1000L Glass-lined Reactor |
| 7 | BFK-1500L Glass-lined Reactor | 8 | BFK-2000L Glass-lined Reactor |
| 9 | BFK-3000L Glass-lined Reactor | 10 | BFK-5000L Glass-lined Reactor |
| 11 | BFK-8000L Glass-lined Reactor | 12 | BFK-10000L Glass-lined Reactor |
| 13 | BFK-12500L Glass-lined Reactor | 14 | BFK-16000L Glass-lined Reactor |
| 15 | BFK-20000L Glass-lined Reactor | | |

Address: No.2, Shengli Road, Liaoyang, Liaoning, China **Homepage:** www.lpmie.net
EMAIL: lpmie@mail.lyptt.ln.cn lpmie@lpmie.net
Tel: (86 419)8601299 8601399 2262705 2261697 2262241 **Fax:**(86 419)2262413 **PC:**111004

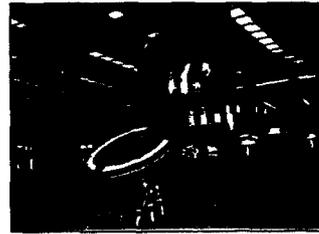
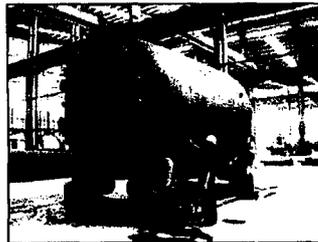


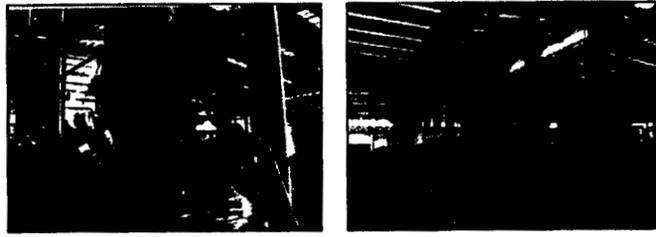
淄博太极工业搪瓷有限公司
ZIBO TAJI INDUSTRIAL ENAMEL CO.,LTD.



Present position: Products

| Glass-lined | |
|--|--|
| Glass-lined Reactors | KF Type Glass-lined Reactors FF Type Glass-lined Reactors |
| Glass-lined Storage Tank | ZK Type Glass-lined Storage Tank |
| | ZF Type Glass-lined Storage Tank |
| | ZW Type Glass-lined Storage Tank |
| Glass-lined Distillation Tank | Glass-lined Distillation Tank |
| Glass-lined Condenser | Glass-lined Condenser |
| Glass-lined Agitators | Glass-lined Agitators |
| Drives | Indefinite Speed Variator |
| | Reducer |
| Glass-lined accessories | |
| Gland Seal | Single Mechanical Seal |
| Double Mechanical Seal | Pressure Indicator |
| Glass-lined Flush Valve | Glass-lined Divide Valve |
| Split Flange | Mechanical Seal |
| Clamp | Reducing Joint |
| GLASS-LINED THERMOMETER POCKET | Pipe |
| Manhole | Glass-lined Fluid Meter |
| Other chemical equipment | |
| Heat Exchanger | Centrifuge |
| Glass-Lined and Stainless Steel Filter | Non-standard Pressure Vessel |
| Half Pipe Equipment | |





Address: East 205 Road,Guoli, Huantai, Zibo City, Shandong Province,China 256414 Tel:0086-533-8409980 Fax:0086-533-8409960
Website:<http://www.taiji-enamel.com> E-mail:taiji@taiji-enamel.com

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Search Product

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G-L reactor f series

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- ▶ U-Tube Heat Exchanger
- ▶ Floating-Heat Exchanger
- ▶ S.S.Reactor
- ▶ Fixed Tube-Sheet Heat Exchanger
- ▶ S.S.Reactor
- ▶ S.S.Storage Tank
- ▶ Reboiler
- ▶ G-L Storage Tank(F Series)
- ▶ G-L Storage Tank(K Series)
- ▶ Plate Column
- ▶ S.S.Reactor
- ▶ G-L reactor f series
- ▶ TBL Bucket Elevator
- ▶ DT II Fixed Belt Conveyor
- ▶ G-L reactor k series

More...

Product Catalog

- ▶ Glass-lined Equipment
- ▶ Reactor Storage Tank
- ▶ Carbon steel Pressure vessel
- ▶ Storage Tank Reactor Plate Column Reboiler
- ▶ Heat Exchanger
- ▶ Fixed Tube-Sheet Heat Exchanger U-Tube Heat Exchanger Floating-Heat Exchange
- ▶ conveying Machine
- ▶ JT Screw Conveyor DT II Fixed Belt Conveyor TBL Bucket Elevator
- ▶ Stainless Steel and Rare Metal Equipment
- ▶ S.S.Reactor S.S.Storage Tank
- ▶ Others
- ▶ Thin Film Evaporator

| 规格/Spec | FR-10000 | FR-12500 | FR-16000 | FR-20000 | FR-25000 | FR-30000 | FR-40000 | F |
|-----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----|
| 容积/Volume (m ³) | 11655 | 13000 | 17490 | 21800 | 26350 | 33261 | 42760 | |
| 面积/Area | 18.7 | 21.94 | 26.32 | 32.9 | 35.25 | 44.68 | 52.62 | |
| 型号/Type | BLD | |
| 功率/Power | 11 | 15 | 18.5 | 18.5 | 22 | 30 | 30 | |
| 桨叶/Paddle | 80/125 | 80/125 | 80/125 | 125 | 80/125 | 80/125 | 80 | |
| 叶数/Number | 125 | 125 | 125 | 125 | 125 | 125 | 80 | |
| D | 2400 | 2400 | 2600 | 2600 | 3000 | 3000 | 3200 | |
| D1 | 2600 | 2600 | 2800 | 2800 | 3200 | 3200 | 3400 | |
| D2 | 2912 | - | - | - | - | - | - | |
| D3 | 1950 | 1950 | 2100 | 2100 | 2400 | 2400 | 2550 | |
| D4 | 1450 | 1450 | 1750 | 1750 | 1750 | 1750 | 1750 | |
| h-f | 4-f 36 | - | - | - | - | - | - | |
| h-f1 | 4-f 36 | 4 |
| H | 3069 | 3499 | 3771 | 4581 | 4282 | 5282 | 5850 | |
| H1 | 1073 | 1073 | 1111 | 1111 | 1190 | 1190 | 1250 | |
| H2 | 1500 | - | - | - | - | - | - | |
| H3 | 1650 | 1850 | 1561 | 2261 | 2290 | 2640 | 3155 | |
| H4 | 2350 | 2750 | 2371 | 3441 | 3290 | 3640 | 5060 | |
| H5 | 470 | 470 | 470 | 470 | 470 | 470 | 470 | |
| H6 | 550 | 550 | 550 | 550 | 550 | 550 | 550 | |
| H7 | 560 | 560 | 650 | 650 | 650 | 650 | 650 | |
| H8 | 2629 | 2669 | 2875 | 2975 | 3075 | 3075 | 3170 | |
| L | 6984 | 7417 | 8123 | 8733 | 8252 | 9433 | 9937 | |
| L1 | 6810 | 7280 | 7986 | 8596 | 8115 | 9296 | 9800 | |
| h | 360 | 360 | 400 | 400 | 500 | 500 | 500 | |
| a | 125 | 125 | 150 | 150 | 150 | 150 | 150 | |
| b | 150 | 150 | 150 | 150 | 150 | 150 | 150 | |
| c | 125 | 125 | 150 | 150 | 150 | 150 | 150 | |
| d | 125 | 125 | 150 | 150 | 150 | 150 | 150 | |
| e | 200 | 200 | 200 | 250 | 250 | 250 | 250 | |
| f | 150 | 150 | 150 | 150 | 150 | 150 | 150 | |
| g | M27X2 | |
| s | 125 | 125 | 125 | 125 | 125 | 125 | 125 | |
| t | 150 | 150 | 150 | 150 | 150 | 150 | 150 | |
| k | G 1/2" | |
| l ₁₋₃ | 80 | 80 | 100 | 100 | 100 | 100 | 125 | |
| n ₁₋₃ | 80 | 80 | 100 | 100 | 100 | 100 | 125 | |
| m | 300 × 400 | 300 × 400 | 300 × 400 | 300 × 400 | 300 × 400 | 300 × 400 | 300 × 400 | 30 |
| PN0.25MPa | 60-BM16 | 60-BM16 | 68-BM20 | 68-BM20 | 68-BM20 | 68-BM20 | 68-BM20 | 64 |
| PN0.6MPa | 60-AM20 | 60-AM20 | 76-AM20 | 76-AM20 | 76-AM20 | 76-AM20 | 76-AM20 | 76 |
| PN1.0MPa | 60-AM24 | 60-AM24 | 76-AM24 | 76-AM24 | 76-AM24 | 76-AM24 | 76-AM24 | 76 |
| (Kg) Wt. | 9360 | 10375 | 12328 | 15906 | 18575 | 23961 | 25974 | |

Product Information

Product Model: KR 10000 to 50000

Description: The G-L equipment is made by coating the high silicon content enamel onto the surface of metal body and then firing it at high temperature(900;°C) in order to achieve a high adhesive strength of the enamel on the steel basic body. The equipment, therefore, has both high strength ability like metal and corrosion-resistance ability like inorganic nonmetallic materials. The surface of G-L equipment is very smooth and of thermal and chemical stability. So it is widely employed in the fields of chemical, petrochemical,

pesticide, medicine, dyestuff organic synthetic and food industries.

Corrosion resistance: very high corrosion resistance against inorganic acid organic and, organic solvent with different concentration and weak base but not applicable to strong alkali, fluorhydric acid, fluoride-bearing medium and phosphoric acid with above 30% concentration of and over 180°C of temperature.

Thermal shock resistance: resistance to sudden cooling 110°C and sudden heating 120°C.

Resistance to impact: resistance to impact is 220J/10-3J, Keep the G-L from being hit by hard object during operation.

Insulation performance: The enamel surface has been strictly tested at 20KV.

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EXHIBIT 5



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Products (5)

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Glass-Tef Engineering

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Offline

Fep / Pfa Lined Jacketted Flush Bottom Valve



Model No: G-13

Fep / Pfa Lined Jacketted Flush Bottom Valve

Detailed Product Description

BODY: WCB BODY WITH JACKET,
LINING: FEP / PFA
LINING THICKNESS: 3.5 MM MINIMUM
TESTING: PRESSURE: BODY: 15Kg / Cm2 SEAT: 10 KG / Cm2
SPARK TEST: 15 KV
SIZES AVAILABLE (Inlet x Outlet) : 80NB X 50NB (3" X 2") ,
100 X 80 (4 " X 3")
150NB X 100NB (6" X4")
FLANGE END CONNECTION: SPLIT TYPE FLANGE
FLANGE END



Fep / Pfa Lined Jacketted Flush Bottom Valve

Other products from this supplier



M. S. PTFE Lined Dip



C Clamp For Glasslined



Fep / Pfa Lined



Fep / Pfa Lined Plug

| | | | |
|--|---------|-----------------|-------|
| Pipe / Sparger For Glasslined Reactor | Reactor | Diaphragm Valve | Valve |
|--|---------|-----------------|-------|

Contact Us

Glass-Tef Engineering [View Company Details] [India]

Address: Plot No. 5241 / A1, Nr. Khwaja Chokdi, P. O. Box No. 210, Gidc, Ankleshwar, Ankleshwar, Gujarat, India

Contact Now

Offline

View Contact Details

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EXHIBIT 6

EXPORT LICENSE

DENIAL NOTICE

CASE NUMBER: Z820551

ACTION DATE: FEB 17 2007



**UNITED STATES DEPARTMENT OF COMMERCE
BUREAU OF INDUSTRY AND SECURITY
P.O. Box 273, Ben Franklin Station
Washington, DC 20044**

PURSUANT TO SECTION 10 OF THE EXPORT ADMINISTRATION ACT OF 1979, AS AMENDED, THE REFERENCED APPLICATION FOR EXPORT LICENSE IS DENIED. IN REACHING THE DECISION, WE GAVE FULL CONSIDERATION TO ANY REBUTTAL YOU MAY HAVE MADE TO PREVIOUS COMMUNICATION FROM THIS OFFICE. THE RIGHT TO APPEAL THIS DECISION EXPIRES 45 DAYS FROM THE DATE OF THIS LETTER. THE APPEAL PROCEDURE IS OUTLINED IN PART 756 OF THE EXPORT ADMINISTRATION REGULATIONS. IF YOU HAVE QUESTIONS REGARDING EXPORT CONTROLS PLEASE CONTACT THE EXPORTER COUNSELING DIVISION AT 202-482-4811 OR THE WESTERN REGIONAL OFFICE AT 714-660-0144

APPLICANT REFERENCE NUMBER: PFA0018

**APPLICANT: P386305
PFAUDLER INC.
1000 WEST AVENUE
ROCHESTER, NY 14692**

**CONSIGNEE IN COUNTRY OF
ULTIMATE DESTINATION:
GUJARAT MACHINERY MANUFACTURERS PFA
1001 PENINSULA TOWERS
PENINSULA CORP. PARK
MUMBAI, INDIA**

ATTN: ROBERT TAYLOR

REASON:

THIS APPLICATION IS DENIED PURSUANT TO SECTION 10(F)(3) OF THE EXPORT ADMINISTRATION ACT OF 1979, AS AMENDED, AND IN ACCORDANCE WITH SECTION 750.6 OF THE EXPORT ADMINISTRATION REGULATIONS. THE DEPARTMENT OF COMMERCE, IN CONSULTATION WITH OTHER U.S. GOVERNMENT AGENCIES, HAS CONCLUDED THAT THIS EXPORT WOULD BE DETRIMENTAL TO U.S. FOREIGN POLICY INTERESTS.

**EILEEN ALBANESE
DIRECTOR
OFFICE OF EXPORTER SERVICES**

**OFFICE OF EXPORTER SERVICES
P.O. BOX 273
BEN FRANKLIN STATION
WASHINGTON, D.C. 20044**

*gary,
FYI
BIS is denying
our application to export
the information requested to
manufacture Pfaudler's
bottom out let valve
B.T.
1/9/07*



UNITED STATES DEPARTMENT OF COMMERCE
Bureau of Industry and Security
Washington, D.C. 20230

Pfaudler Inc
1000 West Avenue
Rochester NY 14692

JAN - 8 2007

Ref. No.: Z820551

Dear Ms. Taylor:

Pursuant to Section 10(f)(3) of the Export Administration Act of 1979, as amended, and in accordance with Section 750.6 of the Export Administration Regulations (EAR), we are informing you of our intent to deny this referenced application. The Department has concluded that approval of this license would be detrimental to United States foreign policy.

The Bureau of Industry and Security rejects this license application in furtherance of United States policy set forth in Section 3(2)(B) of the Export Administration Act, "to restrict the export of goods and technology where necessary to further the foreign policy of the United States or to fulfill its declared international obligations." The proposed export to the Gujarat Machinery Manufacturers PFA, India poses an unacceptable risk of diversion to the design, development, production, stockpiling, or use of chemical or biological weapons as set forth in Section 742.2 of the Export Administration Regulations.

We will withhold further action on this application for 20 calendar days from the date of this letter. Your application will be held and processing suspended, pending receipt of any comments or rebuttals you may wish to make on this matter.

Should you wish to respond to this letter, you may submit a response to this notification in accordance with Section 750.6 of the EAR. Your letter should be addressed to:

Elizabeth J. Scott
Director, Chemical and Biological Controls Division
Office of Nonproliferation Controls and Treaty Compliance
P.O. Box 273
Washington, D.C. 20044

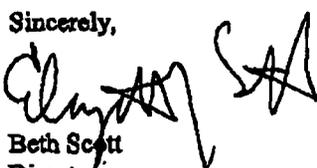
Please write the words "TTD Rebuttal" on the outside of your envelope and on the face of your letter to ensure that your rebuttal receives prompt attention. You may also forward a copy of your letter to this office by facsimile on (202) 482-2190.



Unless you receive other advice from the Bureau of Industry and Security, this denial will become final 45 days from the date of this letter. The process for appealing this final denial is described in Part 756 of the EAR. Any such appeal must be made within 45 days of the date of the final denial.

The Commerce employee available for consultation is Evangeline Reynolds, of my staff, who can be reached at (202) 482-2260 or via facsimile at (202) 482-2190.

Sincerely,



Beth Scott
Director

Chemical & Biological Controls Division



Glass-Lined Flush Valves

Data Sheet DS97-102-2



Figure 1: Manual glass-lined flush valve is simple, reliable and economical

Pfautler Glass-Lined Flush Valves

Installed on the bottom outlet nozzle of a glass-lined reactor or other vessel, the basic function of any glassed flush valve is simply to open and close the outlet to drain or retain the contents of the vessel. A manual flush valve is opened and closed by turning a handwheel. The two models of air-actuated flush valves employ air pressure to open the valve, spring action to close it.

Reliable Product Protection

Pfautler flush valves, manual as well as air-actuated, are lined with corrosion-resistant glass fused to a rigid, strong metal substrate on the process side. A one-piece, glassed valve head and stem closes against a self-sealing seat of glass-filled PTFE. Chevron-shaped packing rings seal the valve stem area.

Pfautler glass is durable, impermeable and inert to a broad spectrum of acids and alkalis. Since there is no exposed metal inside the valve, most powerful corrosives have no effect. There is no possibility of metallic contamination or catalytic side reaction to affect the purity of your product. In addition, the smooth glass surfaces resist product adherence to minimize build-up and reduce your maintenance requirements.

Even when you change the process or process conditions, there is no need to change the flush valve because of its remarkably broad range of resistance to corrosion. In fact, these valves can be specified to withstand the same service conditions of pressure, temperature and chemical exposure as your Glasteel® process equipment, except for full vacuum service. Therefore, you are assured a continuous return on your investment.

Key Features

- Complete selection of glass-lined flush valves for use on the bottom outlet nozzles of glass-lined vessels. You can choose from a manual design or two models of air-actuated flush valves that also permit diffusion, if desired.
- Glass-lined flush valves are lined with Pfautler's virtually inert, acid- and alkali-resistant glass to protect product purity. A Glasteel, one-piece valve head and stem seals reliably against a glass-filled PTFE seat, completing the internal protection.
- Air-actuated, glass-lined flush valves help prevent corrosion

and product contamination and promote personnel safety, operational speed and efficiency.

- Air-actuated valves are opened by air pressure, closed by spring action when pressure is removed, thus allowing convenient, remote control of the flush valve.
- Remotely controlled valves permit safer operation of reactors by eliminating the need to crawl underneath to operate a manual flush valve.
- Quicker shutdown, easier operation and a choice of operational options are facilitated by air-actuated flush valves. You can control valve operation from a local or remote panel or a control room.
- You can back-charge either model air-actuated flush valve to allow diffusion or sparging of gas into the reactor.
- Failure of the air actuator or loss of air pressure in either model results in the flush valve returning to the closed position. Manual override to drain the reactor is possible with either model.

Economical, Proven, Manual Flush Valve

The manual glass-lined flush valve (refer to Figure 1 and Table 1) provides long life and reliable operation on small glass-lined reactors or other vessels where speed of operation is not an important factor.

This valve employs a smooth-rimmed handwheel to prevent overtightening when opening or closing the valve. The valve is opened by turning the handwheel counterclockwise (viewed from below) and closed by clockwise rotation.





Figure 2: Low-profile, air-actuated flush valve mounts on reactor's bottom outlet nozzle; requires minimal clearance beneath the vessel.

Faster, Safer Operations with Air-Actuated Flush Valves

A manual flush valve serves its purpose well on a small reactor, where it can easily be reached from the side. On a larger reactor, however, a manual flush valve may offer some disadvantages.

- It could pose a potential safety hazard, since someone must crawl into the normally tight space beneath the reactor whenever the valve has to be opened or closed.
- The manual valve slows operations, since it requires several revolutions of the handwheel to open or close it completely.
- On reactors where the valve is more accessible, manual operation can delay the start of reactor shutdown and reloading.

Contrast these drawbacks to safe, convenient operation with Pfaudler air-actuated flush valves, which you control by the touch of a remotely located button, or even by a signal from a central control system.

The spring-to-close design provides a continuous seating force when the valve is in the closed position, not found on manual valves.

Choose from Two Air-Actuated Models

Two models of air-actuated glass-lined flush valves are available. Both are designed to mount on the bottom outlet nozzle of a glass-lined reactor and may be ordered with your choice of ANSI drillings as shown under the Flush Valve Operational Features section.

The low-profile air-actuated flush valve (see Figure 2, Tables 2 and 3) achieves its compactness by offsetting the air actuator and return spring from the valve centerline.

A pivoting lever transmits the actuating forces that operate the flush valve. The overall depth of this model below the bottom outlet nozzle is shown for each valve size in Table 2.

The vertically mounted, air-actuated flush valve (see Figure 3, Tables 2 and 3) has its air actuator and return spring located below the valve stem and linked directly to it for straight-through actuation. The overall depth below the bottom outlet nozzle appears in Table 2, but note that additional clearance is required for connection of the air line.

In both models, the valve is opened when sufficient air pressure is applied to the actuator to overcome the spring plus the effect of reactor pressure on the valve head. The required air pressure for each design is shown in Table 3.

Upon removal of air pressure from the actuator, the valve is closed by action of the return spring. Thus, the failure mode of either model is with the flush valve closed.

If desired, either air-actuated valve can be used to sparge gas through the flush valve into the bottom of the vessel. Sparging takes place when enough back-charge pressure is applied on the outlet side of the flush valve to overcome the return spring and lift the valve head away from the seat.

Flush Valve Operational Features

With the flush valve bolted to the bottom outlet nozzle of the reactor, the valve head and seat project up into the outlet opening. When the valve is opened, the head and stem push upward, tending to break up and free any layer of residue that might have collected in the vessel bottom.



Figure 3: Vertically mounted, air-actuated flush valve with straight-through actuation, suitable for reactors with adequate clearance below the bottom outlet.

With the valve closed, the hydraulic head of liquid in the vessel plus vessel pressure (if any) act on top of the valve head to help maintain a tight seal. However, the seal may not be completely tight if the vessel is operated under vacuum or if there is pressure on the outlet side of the valve.

Every Pfaudler flush valve is air-tested and hydro-tested for leakage through the head to seat, body to seat, and valve stem packing area. This testing assures that the valve you buy will function properly, right out of the box.

| Valve Size A x B | Class 150 | | Class 300 | |
|---------------------|------------|--------|------------|--------|
| | Height (H) | Weight | Height (H) | Weight |
| 2 x 1½ | 11 | 18 | 11½ | 25 |
| 3 x 2 | 12¾ | 28 | 13¾ | 46 |
| 4 x 3 | 13¾ | 42 | 15¾ | 60 |
| 6 x 4 | 20¾ | 100 | 20¾ | 115 |
| 8 x 6 | 20¾ | 135 | 22¾ | 150 |

Table 1: Manual Flush Valves
(Dimensions in inches; weights in pounds)

| Valve Size A x B | Low-Profile Model | | Vertically Mounted Model | |
|---------------------|-------------------|--------|--------------------------|--------|
| | Height (H) | Weight | Height (H) | Weight |
| 2 x 1½ | 13¾ | 40 | 24 | 42 |
| 3 x 2 | 13¾ | 47 | 24¾ | 52 |
| 4 x 3 | 14¾ | 61 | 24¾ | 66 |
| 6 x 4 | 22¾ | 150 | 33¾ | 160 |
| 8 x 6 | 23¾ | 185 | 34¾ | 195 |

Table 2: Air-Actuated Flush Valves
(Dimensions in inches; weights in pounds)

| Valve Size A x B | Low-Profile Model | | Vertically Mounted Model | |
|---------------------|-------------------|-----|--------------------------|-----|
| | Min | Max | Min | Max |
| 2 x 1½ | 60 | 100 | 25 | 100 |
| 3 x 2 | 60 | 100 | 40 | 100 |
| 4 x 3 | 60 | 100 | 45 | 100 |
| 6 x 4 | 30 | 100 | 25 | 50 |
| 8 x 6 | 30 | 100 | 35 | 50 |

Table 3: Actuator Air Pressure Requirements
(Minimum and maximum air pressure limits in psig to fully open valve against 0-100 psig vessel pressure)

Pfaudler flush valve bodies are available in the following drillings and pressure and temperature ratings:

Steel: Class 150 – 150 psig
-29°C to +232°C (-20°F to +450°F)
Class 300 – 300 psig
-29°C to +232°C (-20°F to +450°F)

The information contained in this bulletin is believed to be reliable general guidelines for consideration of the products and services described herein. The information is general in nature and should not be considered applicable to any specific process or application. Plaudier, Inc. and Glasteel® Parts and Services expressly disclaim any warranty, expressed or implied, of fitness for any specific purpose in connection with the information contained herein.



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Phone: 585 235 1000
Fax: 585 235 6993
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EXHIBIT 7



George T. Barbour
Pfaudler-Balfour
Riverside
Leven
Fife
Scotland
KY8 4RW

Department of
Trade and Industry

Export Control Organisation
Floor 3
4 Abbey Orchard Street
London
SW1P 2HT

Enquiries 020 7215 5000

Direct line 020 7215 0576
Local fax 020 7215 0572
Our ref 21094
Your ref GMM Tech
Date 30 March, 2001

URL <http://www.dti.gov.uk/>
Telex 8813148 DIHQ G
Minicom 020 7215 6740

Dear Mr Barbour

EXPORT LICENCE APPLICATION NO 21094

EXPORT LICENCE NO UK01/02105P

I am pleased to inform you that your application for a licence to export goods to India has been approved. Your export licence is enclosed.

Please read carefully all the conditions under which this licence has been issued, in particular any special conditions that may have been applied.

Yours sincerely

Janet Springer
Licensing Supervisor

Internet: Janet.Springer@dti.gsi.gov.uk

X.400: /G=Janet/S=Springer/OU1=XNPD/O=HMG Department of Trade and Industry/PRMD=HMG DTI/ADMD=Gold 400/C=GB

European Community

Export of Dual-Use Items (Reg (EC) 1334/2000)

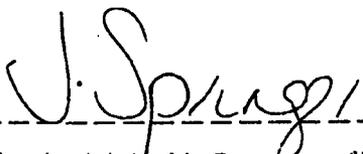
Department of Trade & Industry
Export Control Organisation



Export Licence

| | | |
|---|---|-----------------------------------|
| 1. Exporter <i>Pfandler-Balfour Riverside Leven Fife Scotland KY8 4RW United Kingdom</i> | 2. Licence Number <i>UK01/02105P</i> | 3. Expiry Date <i>30/03/03</i> |
| | 4a. Application Reference Number: <i>21094</i> | |
| | 4b. Exporter's Reference: <i>GMM Tech</i> | |
| 5. Consignee <i>GMM Pfandler Ltd. Vithal Udyognagar Karamsad 388325 Gujarat India India</i> | 6. Issuing Authority <i>Department of Trade and Industry Export Control Organisation 4 Abbey Orchard Street London SW1P 2HT United Kingdom</i> | |
| 10. End-User <i>GMM Pfandler Ltd. Vithal Udyognagar Karamsad 388325 Gujarat India India</i> | 8. Country of Origin (Transshipment) <i>Not Applicable</i> | |
| | 9. Consignee Country <i>India</i> | |
| | 13. End User Country <i>India</i> | |
| 21. Type of Licence <i>Permanent</i> | | |

The goods covered by this licence are listed on the following page(s).


Signed on behalf of the Department of Trade and Industry

Date: 30/03/2001

| Item | 14. Description of Goods | 18. Quantity | 17. Value |
|-----------------------|---|--------------|-----------|
| 1 | <i>Technical Drawings; Description of Manufacturing Processes; and Description of Tools & Equipment relating to Glass-lined Steel Cryolock Agitators consisting of: - 139 Technical Drawings covering the range of Designs and Dimensions of Cryolock Agitators; One description of the manufacturing procedures and processes relative to the manufacture of Cryolock Agitators; Six individual specifications of machines required for the manufacture of the range of Cryolock Agitators</i> | 1 | £1.00 |
| Total Value of Goods: | | | £1.00 |

STANDARD CONDITIONS

For the purposes of the Council Regulation (EC) No. 1334/2000, and the Dual-Use Items (Export Control) Regulations 2000 the Secretary of State licences the exporter above to export the above goods to the consignee and the end user above within a period up to the Expiry date shown in box 3 of this licence, subject to conditions attached or specified in this licence.

1. **Conditions of the licence** Subject to conditions 2 and 4 this licence must be produced to the proper officer of HM Customs and Excise with the shipping documents when the goods are presented to him for exportation unless that officer allows otherwise.
2. If the goods are being shipped to a destination in the territory of a Member State of the European Community, the exporter shall present this licence to the proper officer of HM Customs and Excise at least three working days before the date of the proposed shipment identifying a location where the goods will be capable of inspection at any time during those three days, or shall comply with such alternative arrangements as are agreed with an officer of HM Customs and Excise. This condition shall not apply where the goods being shipped are firearms covered by EC Directive 91/477/EEC or ammunition for use therewith.
3. If the goods are being shipped to a destination in the territory of a Member State of the European Community, a copy of this licence must accompany the goods to the destination.
4. If the goods are being sent by post, the licence must be surrendered at the time of posting by being attached in an envelope marked 'Export Licence' to the outside of the package, or if in a batch, to one package.
5. The licence must be returned to the Department of Trade and Industry (see address in box 6 on the front of this Export Licence form) on expiry even if not exhausted.
6. **Goods listed in Part III of Schedule I (known as 'The Military List') to an EC destination or destinations.**
Prior to the exportation of the goods to a destination in a Member State of the European Communities, the licensee shall complete to the best of his knowledge, a form entitled "Declaration on intra-community movement or transit of arms, munitions, war material and other military goods" available from the ECO Helpline (telephone 020 7215 8070). The completed declaration must be attached to the copy of the licence which accompanies the goods to their destination. The exporter shall keep copies of each completed declaration for at least four years from the date of the relevant exportation.

General Notes: This licence may be modified or revoked at any time by the Department of Trade and Industry. The licence is not transferable and may not be altered except by the Department of Trade and Industry.

Nothing in this Licence shall affect any prohibition or restriction on the exportation or the carrying out of any other act with respect to the exportation of any of the goods concerned under, or by virtue of, any enactment other than a prohibition or restriction in the legislation under which this Licence was issued, as set out above.

If the goods are being sent by post the licence is valid for one posting only, even if the quantity of goods is less than that shown on the licence.

The licence may also be subject to further conditions, please read it carefully.

Details of any changes to export control regulations are published in Lloyd's List every Thursday.

The box numbers used on the licence form follow those in the model annexed to Council Regulation (EC) No. 1334/2000.

Warning Failure to comply with any condition attaching to this licence may lead to forfeiture of the goods or to prosecution under the Customs and Excise Management Act 1979, or in the case of military goods, the Export of Goods (Control) Order 1994, or, in the case of dual-use goods, the Dual-Use Items (Export Control) Regulations 2000.

FOR GOODS LICENSABLE UNDER COUNCIL REGULATION (EC) No. 1334/2000 ('Dual-Use Goods')

This licence is a Community Licence for the purposes of the above Regulation and the Dual-Use Items (Export Control) Regulations 2000.

Where the goods are to be exported out of the Community from another Member State this licence shall be presented to the appropriate authorities in that Member State if requested.

NB: If this licence has been issued for an export to another Member State, then these goods will require a further licence if they are to be exported from the Community.

Last page of licence - this licence has 4 pages

EXHIBIT 8



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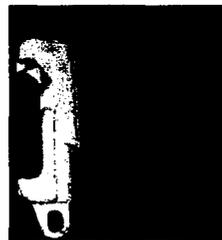
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Glass-Tef Engineering

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C Clamp For Glasslined Reactor



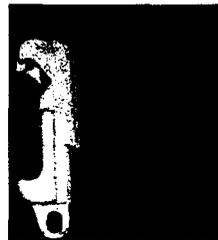
Place of Origin: India

Model No: G-11

C Clamp For Glasslined Reactor

Detailed Product Description

FORGED C-CLAMPS FOR GLASSLINED REACTOR J-BOLTS FOR MANHOLE RING
 C-CLAMP SIZES AVAILABLE: 1) M16 X 80 CLAMPING LENGTH 2) M16 X 100 CLAMPING LENGTH 3) M 20X 100 CLAMPING LENGTH 4) M 20X 125 CLAMPING LENGTH 5) M 20 X135 CLAMPING LENGTH 6) M 24 X110 CLAMPING LENGTH 7) M 24 X125 CLAMPING LENGTH 8) M 24 X135 CLAMPING LENGTH



C Clamp For Glasslined Reactor

Other products from this supplier



M. S. PTFE Lined Dip Pipe / Sparger For Glasslined Reactor



Fep / Pfa Lined Jacketed Flush Bottom Valve



Fep / Pfa Lined Diaphragm Valve



Fep / Pfa Lined Plug Valve

Contact Us

Glass-Tef Engineering [View Company Details] [India] 

Address: Plot No. 5241 / A1, Nr. Khwaja Chokdi, P. O. Box No. 210, Gidc, Ankleshwar, Ankleshwar, Gujarat, India

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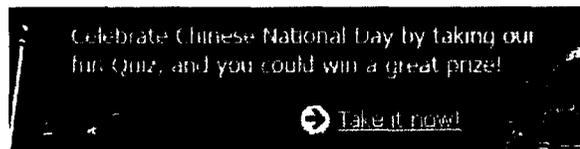
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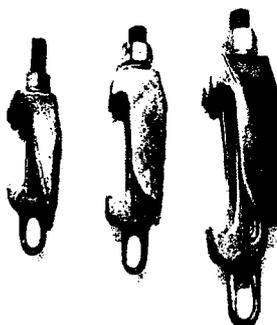
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TongYang Industry

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Pressure Vessel Clamp



Pressure Vessel Clamp

Place of Origin: China Shandong

Model No: M20-M27

MATERIAL: Fo 24CrMo5 & SCI

Brand Name: TONGYANG

Terms of Payment: T/T
Minimum Order: 50 Set/Sets

Supply Ability: 500 Set/Sets per M
Delivery Lead Time: 10

Detailed Product Description

Feature:

Pressure Vessel clamps offer an economic & safe to pressure vessel or reactor wh is opening or closure.

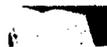
1. Reducing both the production costs & time
2. No drilled flanges
3. Preventing the loss of bolts & nuts
4. Application of Many option
- Material type & surface finishes etc.
5. Reducing the dimensions of main flange section

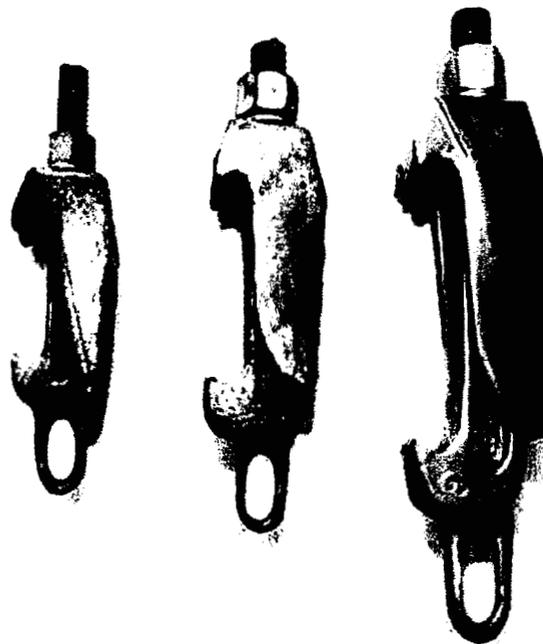
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Pressure Vessel Clamp

Contact Us

TongYang Industry [View Company Details] [South Korea] 

Address: # 865-6, Hwajang-Dong, Yeosu-Si, Jeollanam-Do, South Korea

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Michelle D. Christy
Director



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November 1, 2007

Mr. Timothy Mooney
Office of Exporter Services
Regulatory Policy Division
Bureau of Industry and Security
Department of Commerce
14th St. & Pennsylvania Ave., N.W., Room 2705
Washington, D.C. 20230

ATTN: Notice of Inquiry- CCL (Fed. Reg. Vol. 72, No. 136, p. 39052)

Dear Mr. Mooney,

We are pleased that the Commerce Department Bureau of Industry and Security (BIS) has taken the opportunity to systematically review the Commerce Control List (CCL) and is seeking public comments. Most of our concerns with regard to the CCL have focused on the implications for deemed exports particularly with regard to technologies controlled for "use" that are involved in university research. Our comments focus on the structure of the CCL and its applicability to control deemed exports at U.S. educational institutions.

The BIS Notice asks for comments on the overall structure of the CCL, including suggestions for how the structure "may be changed to better advance national security, foreign policy, and economic interests." As pointed out at the Commerce Deemed Export Advisory Committee (DEAC) meeting at MIT this past June, the existing Commerce Control List (CCL) is overly complex, too long and overbroad, perhaps reflecting these multiple purposes. The CCL should be updated and streamlined to better reflect the narrow set of technologies that should be protected for national security reasons and which are not already readily available overseas. For example, we believe that many of the technologies controlled under the CCL are not typically seen as "cutting edge," and they often tend to be available elsewhere in more state of the art form. Imposing controls on such technologies creates costs and burdens without corresponding benefits to U.S. national security interests, and diminishes the overall credibility. The CCL needs to be shorter, tighter and more dynamic with regard to technologies of real national security concern.

Moreover, the CCL primarily regulates actual exports, and was not designed with deemed exports in mind, and certainly not as it relates to risks associated with the conduct of campus-based research. Given that the deemed export rule is largely a U.S. construct, we suggest that Commerce consider developing a significantly shorter list for deemed exports more commensurate with the risks posed. While we recognize the inherent difficulties of maintaining separate lists, the fact is that the CCL presently comprises multiple lists. The existing multilateral export control regimes cited in the Notice

primarily regulate tangible exports, and should not present a serious obstacle to the U.S. rethinking a new and more simplified approach to deemed exports that would minimize burdens while assuring effective protection for cutting edge technologies where the U.S. clearly has the technological advantage, and where the potential of reverse engineering through dissemination to foreign sources raises legitimate national security concerns. COGR and AAU would be excellent partners in helping BIS assess where risks actually do and do not exist and in establishing a more streamlined CCL that is appropriate to protect areas where the U.S. is the clear technological leader.

With regard to the types of items listed on the CCL, one difficulty is that the CCL encompasses very different technologies with very different characteristics. Some of the technology areas covered by the EAR are rapidly evolving; others less so. The CCL "one size fits all" approach to listing and delisting items does not adequately acknowledge these differences. For example, items like human pathogens and toxins listed under ECCN 1C351 are not likely to require relatively frequent revisions, while items included in Categories 3 and 4 (Electronic and Computer items) change very rapidly, rendering the list obsolete within a relatively short period of time.

There needs to be clear recognition that the CCL is, in fact, not a list of comparable technologies. The controls need to be administered differently depending on the regulated area of technology. The role of technical experts in other government agencies perhaps could be enhanced in determining both the items that should be listed in particular technology areas and the appropriate level of controls. University experts also could be helpful, perhaps through expanded participation in the Technical Advisory Committees, particularly in those areas where technology is rapidly evolving.

We appreciate the opportunity to comment and look forward to working with the Department of Commerce to improve the process.

Sincerely,

Michelle D. Christy

AAU Association of American Universities
COGR Council on Governmental Relations

November 1, 2007

Mr. Timothy Mooney
Office of Exporter Services
Regulatory Policy Division
Bureau of Industry and Security
Department of Commerce
14th St. & Pennsylvania Ave., N.W., Room 2705
Washington, D.C. 20230

ATTN: Notice of Inquiry—CCL (Fed. Reg. Vol. 72, No. 136, p. 39052)

Dear Mr. Mooney,

On behalf of the Association of American Universities (AAU) and the Council on Governmental Relations (COGR), we write to provide comments in response to the systematic review of the Commerce Control List (CCL) that is being undertaken by the Commerce Department Bureau of Industry and Security (BIS). AAU represents 60 leading U.S. public and private research universities and is devoted to maintaining a strong national system of academic research and education. COGR is an association of 175 research-intensive universities, affiliated hospitals, and research institutes that is specifically concerned with the impact of government regulations, policies, and practices on the performance of research conducted at U.S. colleges and universities.

We are pleased that BIS is conducting a thorough review of the CCL and is seeking public input. We believe this review is timely and appropriate, particularly given the recent review and pending report on deemed exports by the Commerce Deemed Export Advisory Committee (DEAC).

Many of the concerns of the university community with regard to the CCL have focused on the implications of deemed exports on U.S. institutions of higher education, particularly with regard to technologies controlled for “use” that are involved in university research. Our comments focus mainly on the structure of the CCL and its applicability to activities of U.S. educational institutions. In general, we believe the CCL should be shortened, simplified, and focused on cutting-edge technologies where the U.S. is a clear leader and that have a real bearing on national security.

1) *The CCL should be simplified to help to ensure understandability and compliance.* The current structure of the CCL and the way technologies are listed and described make it difficult for well-meaning individuals—even those with a fair amount of experience working with the CCL—to ascertain when technologies are covered and if export licenses are required. Interpreting the list in order to evaluate an ECCN entry requires significant technical expertise. This may lead to inadvertent non-compliance. We encourage BIS to find ways to make the list clearer and more user-friendly, and to scale the amount of effort needed to interpret the list to the degree of risk associated with specific institutions.

2) The CCL should be updated and streamlined to better reflect the narrow set of technologies that should be protected for national security reasons and which are not already readily available overseas. AAU and COGR are willing to work to provide campus-based experts to assist in making such assessments of the CCL on an ongoing basis. As noted in our comments to the DEAC, we believe the existing CCL is overly complex, too long, and overbroad, perhaps reflecting its multiple purposes. We have heard frequently from universities that many CCL-controlled technologies are not viewed by their researchers as “cutting edge,” and often are available worldwide in a more recent, state-of-the-art form. Imposing controls on such technologies creates costs and burdens, fails to benefit U.S. national security interests and diminishes the credibility of the control list.

Similar points were made at a hearing on export controls held July 26, 2007 held by the House Foreign Affairs Subcommittee on Terrorism, Nonproliferation and Trade. Specific examples were discussed, including some provided by the Commerce Department. The CCL needs to be shorter, continually updated, and focused on technologies of real concern.

AAU and COGR would like to discuss with Commerce /BIS staff how university experts in specific science and technology fields might play a greater role in helping determine which technologies should be on the control list particularly for deemed exports. We also are willing to encourage such campus experts to participate in the existing BIS technical advisory committees that review the various CCL categories.

3) Sunset provisions should be built into the CCL to ensure it is regularly updated and that certain non-cutting-edge, widely available technologies are removed from the list. Under current rules, a technology on the CCL is assumed to be a threat to national security, even if it has become widely available both in the U.S. and abroad. The unilateral Antiterrorism controls on the CCL provide many such examples. For instance, the CCL at ECCN 5E991 controls technology for the development, production, or use of mobile telecommunications equipment. Much of the equipment controlled there, such as that used in civilian cell phones, is a ubiquitous technology for which regulation makes no sense. The CCL should be scrubbed and such technologies should be removed from the list.

A process for regularly pruning the CCL should be developed based on availability of the technology in the U.S. or abroad. Given the rapid pace of technological advances, it would be useful to presume that certain technologies will be removed from the list after a certain period of time, unless their potential threat to security is such that they should remain on the CCL.

4) The CCL should be re-examined to eliminate technologies that are now being created and developed overseas -- An additional dysfunctional feature of the treatment of 'technology' under the CCL is that it reaches information that is predominantly or entirely of “foreign content.” Although the Export Administration Regulations (EAR) do not apply to “re-export” of predominantly foreign content technology, once the technology enters the United States, it becomes subject to the EAR. In general, this type of export licensing obstacle undermines the scientific and economic competitiveness of US universities by reducing our ability to recruit top foreign students to our campuses. And when technologies have been created overseas and are widely available, such rules do not even serve clear national security or foreign policy purposes. A good example of this is the control placed on “design rules” for manufacturing integrated circuits (ECCN 3A991; 3E991). Leading foundries for chip manufacturing are located in Taiwan. When these companies’ technologies enter the U.S, they become subject to the EAR, which means an export license may be needed for students to access their design technology. Thus, requiring licenses in such cases delays and obstructs US research, with no discernible benefit.

5) Protection of commercial proprietary information should not be considered in adding or excluding technologies in the CCL.

While one of the primary purposes of the EAR is to protect US commercial interests, in an age of globalization and free trade agreements, we believe that the proprietary nature of technologies should not be a significant factor in deciding if those technologies are included in the CCL, especially for deemed export purposes. The existing “one size fits all” approach to proprietary information in the EAR fails to recognize that information may be proprietary for reasons of private economic interests having little to do with national security. Private companies may at any time choose to publicly release information previously held as proprietary.

Such private interests should not determine whether a particular technology is controlled by the government, particularly when unauthorized disclosure can result in criminal sanctions. Moreover, imposing controls on university research which are based on the financial decisions of private companies is inconsistent with National Security Decision Directive -189, which states there shall be no controls on the conduct of fundamental research unless required by statute. If export controls are needed for certain non-classified, proprietary information at universities, it would be better for these determinations to be made based on national security goals as opposed to private commercial interests.

6) Given that the deemed export rule is largely a U.S. construct and unilateral in nature, we suggest that the Commerce Department consider developing a significantly shorter list for deemed exports than for actual physical exports. The current structure of the CCL was intended primarily to regulate export of commodities. It was not designed to address deemed exports nor risks associated with the conduct of campus-based research. For example, some types of equipment that might have national security implications and so ought to be on the CCL for tangible export purposes are difficult to manufacture and to re-engineer, even if certain information about their technical makeup is known. Even when they are accompanied by commercially proprietary information, many of these potentially controllable pieces of equipment do not convey information about their technologies merely through visual inspection or use. Therefore, they should not be on the CCL for deemed export purposes. We suggest that Commerce seriously consider developing a considerably shorter list for deemed exports of technologies more commensurate with the risks posed. For example, carbon fiber tape is classified as controlled under the EAR at ECCN 1C010. Controls on actual export of these materials may be reasonable, but controlling them under deemed export rules may inhibit sharing them for research purposes, with no clear benefit for national security.

While we recognize the inherent difficulties of maintaining separate lists, the current CCL already is comprised of multiple lists. The existing multilateral export control regimes cited in the *Federal Register* notice primarily regulate tangible exports. They should not present a serious obstacle to the U.S. rethinking a new and more simplified approach to deemed exports. Such a separation of lists would minimize the regulatory burden, while assuring protection of cutting-edge U.S. technologies where the potential for reverse engineering through dissemination to foreign sources raises legitimate national security concerns.

7) The Commerce Department should recognize that the CCL is, in fact, not a list of comparable technologies, and that controls should be designed and administered differently depending on the specific nature of the area of technology being regulated. On many occasions we have discussed with BIS the difficulties universities have faced in determining the applicability of the CCL to technologies used in university research. One difficulty is that the CCL encompasses very different technologies with very different characteristics. Some of the technology areas covered by the EAR are rapidly evolving; others less so. The CCL “one size fits all” approach to listing and delisting items does not adequately acknowledge these differences.

As an example, the human pathogens and toxins listed under ECCN 1C351 are not likely to require relatively frequent revisions (although it may be necessary to add to the list as new virulent disease agents are identified). On the other hand, a very different situation exists for electronic and computer items. Here rapid technology changes are likely to render any list obsolete within a relatively short time.

There needs to be clearer recognition that the CCL is not a list of comparable technologies. Controls need to be administered differently depending on the regulated area of technology. The Department might wish to consider bolstering the role of technical experts in other government agencies in helping determine both the items that should be listed in particular technology areas and the appropriate level of controls. University experts also could be helpful, perhaps through expanded participation in the technical advisory committees, particularly in those areas where technology is rapidly evolving.

8) The Commerce Department should reconsider the need for EAR 99, particularly since the Office of Foreign Assets Control (OFAC) already sanctions the same countries.

At the very least, the Commerce Department should consider clarifying the CCL to provide that information about technologies controlled only at the level of EAR 99 is not subject to deemed exports. The vagueness of the EAR 99 concept makes the application of deemed export rules to such technologies particularly difficult.

Conclusion

On behalf of the research university community, we want to again express our appreciation to BIS for the opportunity to comment. AAU and COGR value the good working relationship we have established with BIS and look forward to the opportunity for further discussion of these matters.

Thank you for your consideration of our comments.

Sincerely,



Robert M. Berdahl
President
Association of American Universities



Anthony P. DeCrappeo
President
Council on Governmental Relations

The Boeing Company
1700 Wilson Blvd
Arlington, VA 22209-1380

November 1, 2007



Mr. Timothy Mooney
Office of Exporter Services
Regulatory Policy Division
Bureau of Industry and Security
Department of Commerce
14th St. & Pennsylvania Avenue, NW
Room 2705
Washington, DC 20330

ATTN: Notice of Inquiry—CCL

Dear Mr. Mooney,

Thank you for the opportunity to respond to your Notices of Inquiry, published in the Federal Register on September 6 and July 17, 2007 to request public comments on a systematic review of the Commerce Control List (CCL).

Our comments focus on a number of proposed changes related to specific Export Control Classification Numbers (ECCNs), in particular technical parameter revision suggestions based on the progress of technology and foreign availability, as well as on two general topics that are of special interest to Boeing, multilateral harmonization and clarity of jurisdiction.

On the subject of ECCNs, enclosed for your consideration, as Attachment A, is a list of forty-nine ECCNs that includes proposed changes and rationale for those changes. These ECCNs are regularly exported by Boeing; our engineers and export management personnel, who are familiar with the conditions for export for each ECCN, as well as with respect to whether they are available overseas, and where, have determined that the proposed changes would greatly enhance not only our ability to export those items in a more efficient, consistent and compliant manner, but also our competitive posture in the presence of foreign availability. In fact, for about half of the ECCNs listed, which fall mostly under Categories 1, 2, or 9, the change requested is to technical parameters for reasons of foreign availability.



Other but not all changes requested have to do with lack of clarity in definitions and with respect to the proper use of a particular ECCN, lack of consistency which is needed for understanding definitions and what is being controlled, confusion created by the lack of definition leading to subjective assumptions about meaning and scope of the undefined term, and unnecessary restrictions on the use of license exceptions. We also propose an updated License Exception LVS. Please refer to Attachment A for more detail. It should be noted that the Department's Technical Advisory Committees are working many of these ECCNs, especially the composite ECCNs by the Composites Working Group (CWG) within the MTAC. The TRANSTAC is also working many of the 7E and 7D ECCNs, and hopefully the information provided in the Attachment will support those efforts.

More generally, we have the following comments:

1. Harmonization of Control Lists

In a global environment which is marked by great advances in technological know-how by an increasingly larger number of countries, export controls more than ever have become an important discriminator with respect to the ability of companies to remain competitive in the international marketplace. For that reason, the goal of all major trading partners should be to harmonize controls, and that should mean beginning with the basics, i.e., operating under the same control lists and having similar controls to the maximum extent possible. That is not currently the case with the U.S. dual use export control system; there are differences between, for example, its lists and the EU lists, and a significant portion (reportedly near 30%) of the controls on the CCL are unilateral.

- We understand that national security (NS) controls on the CCL reflect the Wassenaar Arrangement controls that are applied to dual use goods and technologies covered by the regime; however, according to a Commerce Department Office of Inspector General report dated March 2001, a number of items controlled on the CCL for national security reasons are not controlled by Wassenaar. If that is the case, it could be assumed that no other Participating Member State imposes controls on those items. National security controls for items on the CCL that are not controlled by Wassenaar should be removed, if they have not already been removed pursuant to the March 2001 recommendation.
- A significant number of Missile Technology Control Regime (MTCR) Annex items are dual use items; as such, they are controlled under the CCL. The United States Government imposes a license requirement on all items on the CCL that are controlled pursuant to the MTCR, i.e., controlled for missile technology (MT) reasons, for all countries, with only one exception. However, we understand that the European Union (EU) has a significant number of dual use MTCR items on Annex I of its



Dual Use List which means that they can be exported without a license within the EU, and under a general license (we believe that license to be similar to NLR) to seven allied countries--one of which is the U.S.--outside of the EU. The MTCR guidelines should be similarly implemented by all MTCR members; at the very least, the USG should harmonize its MT controls on the CCL with those on the EU Dual Use List to avoid disadvantaging U.S. exporters with respect to its major trading partners within the EU, and the six common allies outside of the EU. The Bureau of Industry and Security (BIS) should work with the U.S. Congress with the goal of removing licensing requirements on MT controlled items if they are not controlled under the EU List--as long as they are not also controlled for national security reasons pursuant to Wassenaar--when exported to the EU member countries or the six other common allies.

- There have been reports that certain organizations, academic or otherwise, that provide training on dual U.S. export controls to foreign governments recommend to these governments that they use the EU dual use list as the basis for their own export controls. If this is the case, the U.S. and the EU lists should be the same, otherwise the U.S. system will lose multilateral influence, which in turn will adversely impact U.S. exporters.

Within the context of list harmonization and multilateral controls, we would offer that it is no longer enough for exporters to understand the U.S. control lists. It is imperative for them, their foreign offices, and their foreign subsidiaries, to have a clear understanding of how the lists relate to each other and what they mean with respect to compliance with the various export control regimes, to competitiveness and to future operations. For that reason, it is recommended that the Bureau of Industry and Security (BIS) establish a mechanism, possibly under the Office of Technology Evaluation (OTE), for increasing understanding within the exporting community of the multilateral lists and what they mean for international collaboration, so that exporters can have the opportunity to demonstrate how they are affected by the global export control environment and to seek solutions in a spirit of transparent collaboration.

2. Commodity Jurisdictions and Commodity Classifications

Commodity jurisdiction is becoming an increasingly complex issue, representing growing challenges for U.S. exporters which can have not only important consequences for their operations but also present significant compliance risks. For that reason, commodity jurisdiction considerations must be an essential part of a CCL review.

- Keeping an item on the CCL, and technology related to its design, production and development on the United States Munitions List (USML) can be confusing for exporters and result in significant compliance

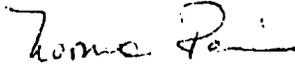


difficulties, particularly for small companies that may not have personnel experienced enough to sort out requirements. We propose that once an item is on the CCL, all technology related to the item remain also on the CCL, subject to appropriate controls. Whenever an item on the CCL is subject to a licensing requirement, controls for the export of that item can be and often are as stringent as those in place for items on the USML, and therefore making the change would not have a negative impact on national security considerations. The Department of Defense has a similar process for reviewing applications for the export of defense and of dual use items, and often imposes strict conditions on licenses for CCL items. BIS should work with the Department of State to establish CCL jurisdiction for design, production and development data related to dual use items.

- An item should either be on the USML or on the CCL, rather than on one list or the other on the basis of a case-by-case review. We realize that there is only one item on the CCL that falls under that category, a component of commercial aircraft, but once a precedent such as this is set, it is only a matter of time before the situation arises again, and as long as the U.S. export control system continues to consist of two lists, applying that approach would further complicate, and even disrupt the dual use system of controls. We sincerely hope that BIS will maintain the current momentum on the Hill regarding this issue, so that it will be possible to reach a permanent solution that will protect Commerce jurisdiction for commercial aircraft parts and equipment based on regulations and statute, rather than on a case-by-case review.
- The CCL lists should be reviewed side by side with the USML, to ensure that exporters are not confused as to whether their item is on the CCL or the USML because of the manner in which the items on each are described. In other words, the language on each list as it relates to similar items that may fall on one list or the other depending on their technical characteristics, should be correctly correlated to avoid misinterpretations and errors.
- The CCL should undergo a disciplined, periodic review.
- A systematic review of the CCL should be done in concert with the Militarily Critical Technologies List (MTCL) to ensure alignment.
- With respect to commodity classifications, we recommend a coordinated approach among the agencies that will result in challenge-proof classification decisions, so that companies holding classifications issued by BIS can rest assured that they will not suffer costly consequences from an unexpected and sudden jurisdictional change.

In closing, we appreciate the continuing efforts of BIS to engage with industry, in a spirit of collaboration and to seek input regarding all aspects of export controls, as well as its willingness to make changes based on that input. We are available for further discussion on this issue, should you have any questions or concerns.

Sincerely,



Norma Rein
Senior Manager, Global Trade Controls Policy
(703)465-3655



Attachment A

| ECCN | Summary Description | Change | Rationale |
|------------------------|---|--|--|
| 1C001 | Materials specially designed for use as absorbers of electromagnetic waves, or intrinsically conductive polymers: | CIV = Yes | Allowance for Lightning strike application on commercial aircraft |
| 1C008 | Non-Fluorinated polymeric substances | LVS: \$400 | The Value established in LVS should increase in order to keep up with inflation. LVS value has not changed since 1985. |
| 1C008(a)1-4 | Non-Fluorinated polymeric substances | Establish a Tg standard as applied to 1C010 for all four 1C008 (a) 1-4 | Establish consistency in performing regulatory analysis of material system and alignment with 1C010 |
| 1C008 (technical note) | Non-Fluorinated polymeric substances (technical note): The glass transition temperature (Tg) for 1C008 materials is determined using the method described in ISO 11357-2 (1999) or national equivalents. | Establish Tg standard as applied to 1C010 for 1C008.a-f | Establish consistency in performing regulatory analysis of material system and alignment with 1C010 Use of ASTM method as proposed by the Composite Working Group ASTM D-7028 for the purpose of establishing Tg. |
| 1C010 | "Fibrous or filamentary materials" which may be used in organic "matrix", metallic "matrix" or carbon "matrix" "composite" structures or laminates: | Define the differences between "organic" "metallic" and "carbon" | Establish consistency in understanding the definitions between various terms used in the regulations to ensure consistent use in industry. |
| 1C010 | "Fibrous or filamentary materials" which may be used in organic "matrix", metallic "matrix" or carbon "matrix" "composite" structures or laminates. | LVS: \$3000 | The Value established in LVS should increase in order to keep up with inflation. LVS value has not changed since 1985. Establishing the \$3000 LVS standard does not allow enough pre-preg for production. |
| 1C010.b | "Fibrous or filamentary materials" which may be used in organic "matrix", metallic "matrix" or carbon "matrix" "composite" structures or laminates: NOTE: 1C010.b does not control fabric made from "fibrous or filamentary materials" for the repair of aircraft structures or laminates, in which the size of individual sheets does not exceed 50 cm x 90 cm. | Size to increase to 100cm x 100 cm | Per the Wassenaar submission approval in 2005 the regulations should be drafted to reflect the change to 100cm x 100cm. |
| 1C010e.2.d | "Fibrous or filamentary materials" which may be used in organic "matrix", metallic "matrix" or carbon "matrix" "composite" structures or laminates. When impregnated with materials controlled by 1C008 or 1C009.b, having a glass transition temperature (Tg) exceeding 383 K (110 c) or with phenolic or epoxy resins, having a glass transition temperature (Tg) equal to or exceeding 418 K (145 c) | Establish Tg standard as applied to 1C010 for 1C008 and 1C009 | Establish consistency in performing regulatory analysis of material system and alignment with 1C008, 1C009, and 1C010. |
| 1C010.e Notes: | "Fibrous or filamentary materials" which may be used in organic "matrix", metallic "matrix" or carbon "matrix" "composite" structures or laminates: NOTES: Epoxy resin "matrix" impregnated carbon "fibrous or filamentary materials" (prepregs) for the repair of aircraft structures or laminates, in which the size of individual sheets of prepreg does not exceed 50 cm x 90 cm | Increase individual sheet size of prepreg to 100cm x 100 cm. | Per the Wassenaar submission approval in 2005 the regulations should be drafted to reflect the change to 100cm x 100cm. |

Attachment A

| ECCN | Summary Description | Change | Rationale |
|----------------------|--|---|--|
| 1C010.e Note (1): | "Fibrous or filamentary materials" which may be used in organic "matrix", metallic "matrix" or carbon "matrix" "composite" structures or laminates: NOTE(1): Epoxy resin "matrix" impregnated carbon "fibrous or filamentary materials" (prepregs) for the repair of aircraft structures or laminates, in which the size of individual sheets of prepreg does not exceed 50 cm x 90 cm | NOTES: 1C008, 1C009 or thermoset resin "matrix" impregnated carbon "fibrous or filamentary materials" (prepregs) for the repair of aircraft structures or laminates, in which the size of individual sheets of prepreg does not exceed 100 cm x 100 cm | Allows sharing of high temperature prepreg materials for the repair of commercial aircraft without a license and limited to repair material no greater than 100cm x 100cm. |
| 1C010.e Note(2): | "Fibrous or filamentary materials" which may be used in organic "matrix", metallic "matrix" or carbon "matrix" "composite" structures or laminates: NOTE(2): Prepregs when impregnated with phenolic or epoxy resins having a glass transition temperature (Tg) less than 433 K (160 c) and a cure temperature lower than the glass transition temperature. | NOTES: Prepregs when pre-impregnated with 1C008, 1C009 or thermoset resins having a glass transition temperature (Tg) less than 433 K (160 c) and a cure temperature lower than the glass transition temperature | |
| 1C210 | Fibrous or filamentary materials or prepregs, other than those controlled by 1C010.a, .b, .e, as follows: | See rationale. | Clarification of the language to ensure proper use of the ECCN for its original intent by the GOV for placement in the regulations. |
| 1C210.a and .b | "Fibrous or filamentary materials" or prepregs, other than those controlled by 1C010.a, .b, .e, as follows: .a: Carbon or aramid "fibrous or filamentary materials" having a "specific modulus" of 12.7×10^3 m or greater or a "specific tensile strength" of 235×10^3 m or greater except Aramid "fibrous or filamentary materials" having 0.25 percent or more by weight of an ester based fiber surface modifier. .b: Glass "fibrous or filamentary materials" having a "specific tensile strength" of 76.2×10^3 m or greater; | Add Note to 1C210.a and .b: "fibrous or filamentary materials" or prepregs for the repair of aircraft structures or laminates, in which the size of the individual sheets of prepreg does not exceed 100cm x 100cm. | Establishes consistency with 1C010 for the repair of commercial aircraft. |
| 1C210.c | "Fibrous or filamentary materials" or prepregs, other than those controlled by 1C010.a, .b, .e, as follows: c. Thermoset resin impregnated continuous "yarns", "rovings", "tows", or "tapes" with a width no greater than 15 mm (prepregs), made from carbon or glass "fibrous or filamentary materials" controlled by 1C210.a or .b. | Define "Thermoset" resin. | This category established a new category of resin "Thermoset" which should be defined to establish consistency in its use by industry. |
| 1C990 | 1C990 "Fibrous and filamentary materials", not controlled by 1C010 or 1C210, for use in "composite" structures and with a specific modulus of 3.18×10^6 m or greater and a specific tensile strength of 7.62×10^4 m or greater. | 1C990 "Fibrous and filamentary materials" and prepregs, not controlled by 1C010 or 1C210, for use in "composite" structures or laminates and with a specific modulus of 3.18×10^6 m or greater and a specific tensile strength of 7.62×10^4 m or greater. | Add the terms prepregs and laminates for consistency in the regulations. |
| 1E002 f Note | Other "technology", as follows: NOTE 1E002.f does not control "technology" for the repair of "civil aircraft" structures using carbon "fibrous or filamentary materials" and epoxy resins, contained in aircraft manufacturers' manuals. | Other "technology", as follows: NOTE: 1E002.f does not control "technology" for the repair of "civil aircraft" structures using carbon "fibrous or filamentary materials" and thermoset resins, contained in aircraft manufacturers' manuals. | Allows sharing of high temperature technology (BMI) for the repair of commercial aircraft without a license. |

Attachment A

| ECCN | Summary Description | Change | Rationale |
|-----------------|--|--|--|
| 7D003.d.3 | Other "software", as follows d.3: fly-by-wire or fly-by-light control systems | Source Code used for the development of fly-by-wire or fly-by-light control system "software". 7D003.d.3 does not control the fly-by-wire or fly-by-light control system itself. | Prefer to see 7D003 d.3 removed however, if unable to do so, in order to clear up the vagueness of what is written the requested change is to ensure industry understands what is truly being controlled. |
| 7E004.a.5 | Other "technology" as follows: a.5: Electric actuators (i.e. electromechanical, electrohydrostatic and integrated actuator package) specially designed for "primary flight control" | provide note: 7E004 a.5 does not control electric actuators designed for use on "civil aircraft" primary flight controls. | This technology is available domestically and internationally and is not new or unique. |
| 7E004.b.2 | Other "technology" as follows: b.2: Control law compensation for sensor location of dynamic airframe loads, i.e. compensation for sensor vibration environment or for variation of sensor location from the center of gravity. | Remove: i.e. compensation for sensor vibration environment or for variation of sensor location from the center of gravity. | The example provided within the regulations causes confusion in its applicability. |
| 7E101 | "Technology", according to the General Technology Note for the "use" of equipment controlled by 7A001 to 7A006, 7A101 to 7A106, 7A115 to 7A117, 7B001, 7B002, 7B003, 7B101, 7B102, 7B103, or 7D101 to 7D103. | Add text to allow for Test Use. | Technology to permit use of accelerometers for wind tunnel model testing is not sufficient to enable accelerometer use for navigation. |
| 9B005 | On-line (real time) control systems, instrumentation (including sensors) or automated data acquisition and processing equipment, specially designed for use with any of the following wind tunnels or devices | CIV = Yes | Reason for control is NS. Equipment is readily available from non-US Suppliers |
| 9B105 | Wind tunnels for speeds of Mach 0.9 or more, usable for "missiles" and their subsystems | Set Mach limit to 1.1 | Revise speed restriction to permit testing of commercial airplane configurations in transonic wind tunnels. Affects the Technology limitation of 9E102 |
| 9D001 | "Software" specially designed or modified for the "development" of equipment or "technology" controlled by 9A (except 9A018, 9A990 or 9A991), 9B (except 9B990 or 9B991) or 9E003. | CIV = Yes | Software for commercial development of wind tunnel data systems and mach 0.9 or greater wind tunnels is available for Items controlled for NS reasons. |
| 9E003 | Other "technology" as follows | CIV = Yes | Technology for wind tunnel model design is widely known in aerospace industry around the world. Controlled for items controlled for NS Reasons. |
| 9E102 | "Technology" according to the General Technology Note for the "use" of space launch vehicles specified in 9A004, or commodities or software controlled by 9A005 to 9A012, 9A101, 9A104 to 9A111, 9A115 to 9A119, 9B105, 9B106, 9B115, 9B118, 9B117, 9D101, 9D103, 9D104 or 9D105 | CIV = Yes for 9B105 Wind Tunnels | Allow troubleshooting of wind tunnel related problems that the permit the tunnel to be repaired or return to baseline condition in Support of a commercial product wind tunnel test. Only for items controlled for NS Reasons. |
| General Note 1: | | Define the term "Software" | Ensure consistency in understanding what is being controlled: Software Embedded Source Code vs. Compound Software |
| General Note 2: | | Remove the word "Structure" from the regulations. | There is no industry standard definition for the term "Structure" which causes confusion being undefined as there are assumptions to its definition |

Attachment A

| ECCN | Summary Description | Change | Rationale |
|-------------------------|---|---|---|
| General Note 3 1A002 | ECCN 1A002 refers to "automotive industry". Boeing requests the DoC define the term automotive to include all self-propelled vehicles and machines | Define the term "Automotive" | See Attached Word Document: Etymology and Definition of Automotive |
| | | Remove restrictions to allow GOV exports for all allowable ECCNs to all Country Group B Countries | Example: The FAA counterpart in the EU is EASA and they support all EU countries. Restriction prevents exports to EASA under GOV for certain technologies |
| | | Add Australia for use with TSR Exception regarding 1E001. | Australia is missing from the list of countries allowed for use of TSR Exception regarding 1E001. |
| 9A004 | 9A004 Space launch vehicles and "spacecraft". Reason for Control: NS and AT All specially designed or modified components, parts, accessories, attachments, and associated equipment for "spacecraft" that have been determined by the Department of State through the commodity jurisdiction process to be under the licensing jurisdiction of the Department of Commerce and that are not controlled by any other ECCN on the Commerce Control List will be assigned a classification under this ECCN 9A004. Currently 9A004 items that are launched for NASA by foreign governments must attain the appropriate DoC export license. Currently Technical data identified under Note 6 of ECCN 9A004 that is not ITAR or is ITAR but can be provided as "necessary and reasonable" to the ISS International Partners is classified as EAR 99. 3. Under Note #6 of ECCN 9A004: reads "US Built" | For items going to Russia in support of the Space Station Program, delete NS as reason for control in this situation. This change will eliminate the licensing requirement for these types of items. All other International Partners involved in the process do not have this restriction. License Exception for 9A004/ ISS items ultimately bound for International Space Station. No license required to ship 9A004 items abroad to be launched by Foreign government or entity if the ultimate destination of that item is the International Space Station Add another ECCN to address technical data identified under Note 6 of ECCN 9A004 Change to "U.S. Owned" | Items are often required to go to Russia to place on the Progress or Soyuz vehicles on short turnaround schedules in support of the Space Station. The time it takes to get a BIS license impacts the resupply of the Space Station. Frequently there are abrupt manifest changes and ISS equipment requirements that warrant immediate launch of 9A004 items when the only available launch platform is in a country that requires an DoC Export license. Even though DoC is very prompt in turning these license requests around, it is still an extra and unnecessary administrative function. DoC says that EAR 99 is not supposed to be used to classify tech data but there is no other ECCN to cover this use and this data should be controlled at least to the International Partners. Because there are numerous items that NASA has purchased from foreign vendors for ISS which NASA/Boeing subsequently has to provide technical data as outlined in Note 6 of 9A004 to International Partners |
| 1C007 | Ceramic base materials, non 'composite' ceramic materials, ceramic 'matrix' 'composite materials and precursor materials, | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia |
| 1C101 | Materials for Reduced Observables such as Radar Reflectivity, Ultraviolet/Infrared Signatures and Acoustic Signatures (i.e., Stealth Technology), Other than Those Controlled by 1C001, for applications usable in rockets, missiles, or unmanned aerial vehicles capable of achieving a "range" equal to or greater than 300km, and their subsystems. | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |

Attachment A

| ECCN | Summary Description | Change | Rationale |
|------------|---|--|--|
| 1C107-a, d | Graphite and ceramic materials, other than those controlled by 1C007 | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 1C990 | Fibrous and filamentary materials, not controlled by 1C010 or 1C210, for use in "composite" structures and with a specific modulus of 3.18 x 106 m or greater and a specific tensile strength of 7.62 x 104 m or greater. | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 1E001 | "Technology" according to the General Technology Note for the "development" or "production" of items controlled by 1A001.b, 1A001.c, 1A002, 1A003, 1A004, 1A005, 1A101, 1B (except 1B999), or 1C (except 1C355, 1C980 to 1C984, 1C988, 1C990, 1C991, 1C992, 1C995 to 1C999). | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 1E002 | Other "technology". | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 1E101 | "Technology", in accordance with the General Technology Note, for the "use" of commodities and software controlled by 1A101, 1A102, 1B001, 1B101, 1B102, 1B115 to 1B119, 1C001, 1C007, 1C011, 1C101, 1C107, 1C111, 1C116, 1C117, 1C118, 1D001, 1D101, or 1D103 | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 1E103 | "Technical data" (including processing conditions) and procedures for the regulation of temperature, pressure or atmosphere in autoclaves or hydroclaves, when used for the "production" of "composites" or partially processed "composites", usable for equipment or materials specified in 1C007, 1C102, 1C107, 1C116, 1C117, 1C118, 9A110, and 9C110. | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 1E104 | "Technology" for the "production" of pyrolytically derived materials formed on a mold, mandrel or other substrate from precursor gases which decompose in the 1,573 K (1,300 °C) to 3,173 K (2,900 °C) temperature range at pressures of 130 Pa (1 mm Hg) to 20 kPa (150 mm Hg), including "technology" for the composition of precursor gases, flow-rates and process control schedules and parameters | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 1E994 | Technology" for the "development", "production", or "use" of fibrous and filamentary materials controlled by 1C990 | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |

Attachment A

| ECCN | Summary Description | Change | Rationale |
|-------------|---|--|--|
| 2E001 | "Technology" according to the General Technology Note for the "development" of equipment or "software" controlled by 2A (except 2A983, 2A991, or 2A994), 2B (except 2B991, 2B993, 2B996, 2B997, or 2B998), or 2D (except 2D983, 2D991, 2D992, or 2D994) | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US |
| 2E002 | "Technology" according to the General Technology Note for the "production" of equipment controlled by 2A (except 2A983, 2A991, or 2A994), or 2B (except 2B991, 2B993, 2B996, 2B997, or 2B998). | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US |
| 2E101 | "Technology" according to the General Technology Note for the "use" of equipment or "software" controlled by 2B004, 2B009, 2B104, 2B105, 2B109, 2B116, 2B117, 2B119 to 2B122, 2D001, 2D002 or 2D101 | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 2E201 | "Technology" according to the General Technology Note for the "use" of equipment or "software" controlled by 2A225, 2A226, 2B001, 2B006, 2B007.b, 2B007.c, 2B201, 2B204, 2B206, 2B207, 2B209, 2B225 to 2B232, 2D002, 2D201 or 2D202 for NP reasons. | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 9B006 | Acoustic vibration test equipment capable of producing sound pressure levels of 160 Db or more (referenced to 20 µPa) with rated output of 4 kW or more at a test cell temperature exceeding 1,273 K (1,000°C), and specially designed quartz heaters therefore | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US |
| 9B106.a | Environmental chambers and anechoic chambers | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 9E001 | "Technology" according to the General Technology Note for the "development" of equipment or "software" controlled by 9A001.c, 9A004 to 9A012, 9B (except 9B990 or 9B991), or 9D (except 9D990 or 9D991). | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 9E002 | "Technology" according to the General Technology Note for the "production" of equipment controlled by 9A001.c, 9A004 to 9A011 or 9B (except 9B990 or 9B991). | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |
| 9E003.1.1.d | Other "technology". | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |

Attachment A

| ECCN | Summary Description | Change | Rationale |
|-------|---|--|--|
| 9E991 | "Technology", for the "development", "production" or "use" of equipment controlled by 9A991 or 9B991. | Technical parameters need to be reviewed | Foreign Availability in the following countries: EU, Japan, Russia. The restrictiveness of ECCN serves to undermine the ability to generate a self sustaining industrial base in the US. |

ICOTT INDUSTRY COALITION ON TECHNOLOGY TRANSFER

1700 K Street, N.W., Washington, D.C. 20006 (202) 282-5994

November 1, 2007

VIA E-MAIL AND FIRST CLASS MAIL

Mr. Timothy Mooney
Office of Exporter Services
Regulatory Policy Division
Bureau of Industry and Security
Room 2705
U.S. Department of Commerce
14th Street & Pennsylvania Avenue, N.W.
Washington, D.C. 20230

ATTN: Notice of Inquiry -- CCL

Re: Request for Public Comments on a Systematic Review of the Commerce Control List (72 Fed. Reg. 39052 (July 17, 2007) and 72 Fed. Reg. 51213 (Sept. 6, 2007))

Dear Mr. Mooney:

The Industry Coalition on Technology Transfer ("ICOTT") appreciates the opportunity to comment on the Commerce Control List ("CCL") in the Export Administration Regulations ("EAR") and, in particular, on the request by BIS for recommendations regarding a systematic review of the CCL.

ICOTT and its member associations recognize the importance of protecting the national security of the United States and support effective and reasonable export controls. The many companies represented by ICOTT's member associations are on the frontline of the U.S. export control process and devote considerable time, effort and expense to assure that export transactions comply with applicable export regulations. It is from this vantage point that we respond to the above-captioned request for comments.

At the outset, ICOTT applauds the decision by BIS to seek comments on the CCL from the broader exporting public, in addition to the comments that it has previously requested from members of its Technical Advisory Committees. If it is listened to *and acted upon*, broad public input regarding the structure and coverage of the CCL -- and the Department's export controls generally -- can help to eliminate unnecessary, ineffective, outdated or unintended burdens to U.S. export trade. At the same time, such public participation can significantly strengthen controls by sharpening the focus of controls on the items that pose the greatest risks to U.S. national security. This, in turn, can help to assure the compliance and enforcement resources of

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both the government and the private sector are used to their greatest effect in protecting the national security.

In recent years, there have been a number of instances in which broad public input has improved controls from the standpoint of both industry and BIS. The Department's review of industry submissions regarding microprocessor controls and its review of industry data regarding its recently-completed China regulation are two examples of how controls can be made both more effective and less burdensome if the Department actively solicits and acts upon suggestions from the exporting public.

ICOTT strongly encourages BIS to similarly use ideas from industry to eliminate inefficiencies, inconsistencies and deadwood from the CCL. In enacting the Export Administration Act ("EAA") over twenty-five years ago, Congress instructed the government to "prune the control lists and . . . concentrate licensing requirements where they can be most effective." S. Rep. No. 96-169, at 3 (1979). BIS should use a systematic review of the CCL and specific recommendations from the exporting public to make such changes in the CCL.

In particular, ICOTT urges BIS to act boldly and aggressively in paring down U.S. export controls to those that are absolutely vital to defending U.S. national security in the modern era.

There is wide agreement that the U.S. export control system and many specific U.S. controls are relics of the Cold War and must be updated and more clearly focused on the new and substantially different threats of the 21st Century. Recently, for example, former National Security Advisor Brent Scowcroft urged a wholesale re-orientation of U.S. export controls, noting that it is "self-defeating" to "build a wall around everything, which, in essence, is what we're doing now." Instead, he urged that U.S. export controls concentrate specifically on controlling those technologies that are essential to the national security of the United States.

The current system of U.S. export controls often can weaken rather than strengthen U.S. national security. Congressional critics and others, for example, note that the failure of U.S. controls to keep pace with technological and geopolitical developments has often led to situations in which U.S. suppliers are denied foreign business opportunities that suppliers in allied countries can readily exploit. In other instances, foreign purchasers refuse to purchase from U.S. suppliers in order to avoid the bureaucratic and business restrictions imposed by U.S. extraterritorial controls. These and other unnecessary restrictions imposed by overly broad controls can degrade the U.S. industrial base and the leadership positions of U.S. firms in key technologies. In a number of key sectors, such controls serve as little more than a mechanism to encourage the export of U.S. jobs. Moreover, our multinational allies have repeatedly observed that U.S. export controls can delay the transfer of vital information necessary for military interoperability and the support and protection of war fighters.

The effectiveness of U.S. export controls is also undermined by their unnecessary complexity. Many of the companies represented by ICOTT's member associations have highly sophisticated export compliance operations and play a key role in the export control process.

However, even these highly knowledgeable exporters find that some U.S. export controls, such as the multiple performance thresholds governing computers, are nearly incomprehensible. If experienced exporters have these difficulties, such controls must be particularly befuddling to the average exporter. If U.S. exporters cannot readily understand U.S. export controls, they cannot be effective partners in export compliance and enforcement.

Criticism of current U.S. export controls is not limited to those outside the Department. At a recent meeting of the Deemed Export Advisory Committee, Secretary Gutierrez observed that U.S. controls are "over-designed" and noted that the complexity of U.S. controls often reduces their effectiveness. He also criticized the assumption that specific controls and policies can be retained without change for "years and years and years" and emphasized that greater "practicality" and "flexibility" are necessary to assure that controls can be effective in a rapidly changing world.

ICOTT recognizes that wholesale change in U.S. export controls will also require legislative and regulatory initiatives that go beyond the current CCL review. However, a careful review of the CCL is an excellent place to begin the much-needed process of export control reform because the CCL represents the point at which U.S. export control policies and practices are made concrete for U.S. exporters. We urge BIS to eliminate or modify CCL items that are not absolutely vital to protection of U.S. national security. To the extent that these reforms would require changes in law or regulation, we strongly urge BIS to make or seek such changes.

We set forth below a number of ICOTT's recommendations for improving the CCL:

1. Focus on Effective Multilateral Controls. In enacting the EAA in 1979, Congress established as the policy of the United States that export controls be uniform among the United States and its allies. *See* 50 U.S.C. App. § 2402(3). Among other things, Congress recognized that the vital economic security of the United States can suffer significantly when the United States imposes export restrictions that are more extensive than those imposed by other countries. *See* 50 U.S.C. App. § 2401(2). Over the years, however, U.S. export controls on the CCL have increasingly departed from this Congressionally established policy and have repeatedly gone beyond control decisions reached with our allies. ICOTT strongly believes that the effectiveness of U.S. controls on the CCL could be improved significantly if the CCL's focus were more strictly limited to multilateral controls.

In deciding to retain items on the CCL -- or add or delete items -- BIS should strictly adhere to the principles adopted by the Wassenaar Arrangement for evaluating proposed controls. These principles require that proposed controls be evaluated against two criteria -- (i) the foreign availability of the item outside Wassenaar-member countries and (ii) the ability to effectively control exports of the item. Absent exceedingly extraordinary circumstances, controls that fail to meet these criteria should not be included on (and should be removed from) the CCL. ICOTT urges BIS to aggressively apply these tests in a comprehensive review of specific items on the CCL and to remove items that fail these tests from the CCL.

For export controls to be effective, they must be premised on a key assumption – that an adversary does not already have or cannot otherwise obtain a controlled item. Unilateral U.S. controls on items that are freely available in the global marketplace are inherently ineffective. Unilateral controls are like damming half a river. The builder may take pride in the majesty of the dam but there is every bit as much water downstream as before the first shovelful of earth was turned. At the same time, such controls can place U.S. industry at a serious disadvantage with respect to competitors in other countries, including Wassenaar-member countries. For these reasons, unilateral controls should be invoked—or continued—only in exceptional circumstances and only where the resulting (and often serious) injury to American workers and businesses can be justified when balanced against the symbolic character of the restrictions. Congress has explicitly recognized that “national security” includes economic as well as military security, and both of these elements must be taken into account in the administration of our export control system through the CCL.

As BIS is well aware, an argument frequently advanced in support of unilateral controls is that their imposition is necessary while the United States seeks multilateral support. The historical record of this approach has been mixed at best. At a minimum, controls imposed unilaterally under this rationale should be of a very limited duration unless sufficient multilateral control is achieved. Similarly, in any comprehensive review of the CCL, BIS should, absent extremely extraordinary circumstances, eliminate current unilateral controls for which anticipated multilateral support has failed to materialize.

2. Focus Specifically on Nuclear, Chemical Weapons, Missile Technology and Wassenaar "Sensitive" List Items. In the view of ICOTT members and others with long experience in the export control process, virtually all of those items and technologies that pose the greatest risk to U.S. national security are contained on the munitions list and the multilateral control lists of the Nuclear Suppliers Group, the Australia Group, the Missile Technology Control Regime. The CCL should be re-focused to concentrate on items and technologies on these lists that are within BIS' jurisdiction.

With respect to controls on dual use items under the Wassenaar Arrangement, ICOTT recommends that the United States should reduce the scope of its Wassenaar-based controls by focusing the CCL only on items contained on the Wassenaar "Sensitive List." Unlike Wassenaar "Basic List" items, the export of Sensitive List items can be monitored on an international basis because they are subject to multinational reporting requirements. At the same time, the United States should significantly step up pressure on its Wassenaar allies to more effectively control Sensitive List items and should work with allies to remove items from that list that do not meet the basic Wassenaar control principles outlined above. (For example, the Sensitive List currently controls computer technology at the 0.1 WT level, despite the fact that countries like China possess computers up to the 0.5 WT level.)

Absent extraordinary circumstances, items and technologies that are not on the foregoing multinational control lists should not be on the CCL. In particular, as noted above, the United

States should impose largely symbolic unilateral controls only in highly exceptional situations in which no other diplomatic, foreign policy or enforcement tool are available.

This sharpening of the control list would enhance U.S. national security by assuring that the limited export control resources of the government and the private sector are used to prevent the most serious threats. Such an approach would better support enforcement of vital multilateral controls and would better align U.S. export control policies and practices with those of our multilateral allies. Additionally, this emphasis on vital multilateral controls would provide a more level playing field for U.S. industry as it competes against the many foreign suppliers subject to less extensive and less bureaucratic controls. This, in turn, will help strengthen the U.S. industrial base by stemming the export of U.S. production capacity and jobs attributable to over-extensive U.S. controls.

3. Facilitate Intracompany Transfers by Trusted Exporters. The U.S. system of export controls makes industry a key partner in export compliance, and U.S. exporters devote very significant personnel, corporate and financial resources in assuring such compliance. In many instances, the overall effectiveness of current U.S. exports controls ultimately rests on the trust placed by BIS in U.S. exporters. ICOTT believes that the effectiveness of U.S. dual use controls could be further enhanced if the cooperative relationship between BIS and industry were expanded. Specifically, ICOTT recommends that U.S. exporters that can demonstrate their reliability in export compliance should be permitted to make transfers within their corporate enterprises without the need for further approvals, as long as they can assure that an exported item stays within the bounds of the enterprise. This broader authority should apply to all dual use items, other than those subject to proliferation regimes, and could operate much like the current encryption control regime. Because exporters can differ significantly in size, business operations and products, exporters should be afforded considerable flexibility in how they assure that items will not leave the exporter's enterprise. Such a system could significantly aid the competitiveness of U.S. exporters and would provide a more direct link between exporter compliance efforts and the benefits that exporters are afforded by BIS.

4. Reform Denied Party Screening. Current export control requirements require the screening of thousands of denied parties for even the most trivial of export transactions such as, for example, the export of paper clips. Government and industry export compliance resources could be utilized much more effectively if screening were not required for transactions that have no reasonable bearing on U.S. national security interests. This could be done, for example, by exempting transfers of EAR99 items from screening requirements, requiring screening only for specified categories of items, or establishing exceptions based on value or the export cooperation of the country of destination.

5. Adopt a Coherent Definition of "Specially Designed." In any review of the CCL, ICOTT strongly urges BIS to explicitly restore the long-settled understanding -- by both government and industry -- that the term "specially designed" as employed in the CCL means "exclusively useful for" a given purpose rather than merely "capable of" use for that purpose. This important and necessary clarification in the CCL can readily be accomplished by simply

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eliminating the proviso in the current definition of "specially designed" (in section 772.1 of the EAR) that limits this "exclusive use" definition to the "MCTR context" only. By doing so, BIS would make clear that this definition now applies to all aspects of the EAR and the CCL.

Explicitly confirming that BIS will hereafter define "specially designed" on an exclusive use basis is important for a number of reasons.

Defining "specially designed" as "capable of" puts the United States out of step with the longstanding custom and usage of our multilateral allies, who consistently have viewed "specially designed" as meaning "exclusively used for." For many years, the multinational system has painstakingly constructed on a commodity-specific spectrum of export controls. The scope of each particular control has varied depending on the weighing, on a multinational basis, of national security, foreign availability, technological and other factors. Broader controls have employed such phrases as "capable of" and "designed for," while narrower controls have used phrases like "modified for" and "required for," and the narrowest controls have employed "specially designed."

A "capable of" definition is also inconsistent with longstanding U.S. practice and the understanding of U.S. exporters. For example, the active participants in ICOTT's monthly meetings include trade association staff members, export control officials of major exporters and attorneys with many years of experience in export controls. Many of these individuals have served as export control officials at the Commerce, State or Defense Departments. The unanimous understanding of all our ICOTT participants is and has been that "specially designed" has the meaning of "exclusively for."

Making "specially designed" synonymous with "capable of" obliterates years of multilateral deliberations and consequent Commerce Department practice in calibrating the reach of specific export controls. A "capable of" definition creates inconsistencies between U.S. and multilateral controls. It also places additional regulatory burdens on U.S. exporters and thereby puts them at a competitive disadvantage with respect to their foreign competitors. This muddled situation does nothing to promote the U.S. national security. BIS should remedy this situation by making clear that that "specially designed" is to be interpreted according to the traditional, narrow definition.

6. Add Additional Cross References to CCL Entries. ICOTT recommends that BIS consider adding additional cross references that would link ECCN entries for related hardware, software and technology items. In recent years, BIS has added a significant number of such cross references to the CCL, and ICOTT believes that this trend should continue and be accelerated by any CCL review. Adding cross references for additional ECCNs could significantly aid readers of the CCL, particularly those readers who begin their analysis of applicable controls by first identifying controls on hardware, software or technology that are related to a specific item. These additional cross references would also add redundancy to the CCL and thereby reduce the risk that readers would fail to note applicable requirements for related controls.

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Founded in 1983, ICOTT is a group of major trade associations whose hundreds of individual member firms export controlled goods and technology from the United States. ICOTT's principal purposes are to advise U.S. Government officials of industry concerns about export controls, and to inform ICOTT's member trade associations (and in turn their member firms) about U.S. Government export control activities.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric L. Hirschhorn". The signature is fluid and cursive, with a long horizontal stroke at the end.

Eric L. Hirschhorn
Executive Secretary



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November 1, 2007

Mr. Timothy Mooney
Office of Exporter Services
Regulatory Policy Division, Bureau of Industry and Security
U.S. Department of Commerce
14th Street & Pennsylvania Avenue, N.W.
Room 2705
Washington, DC. 20230

Re: Request for Public Comments on a Systematic Review of the
Commerce Control List (72 Fed. Reg. 39,052 (July 17, 2007))

Dear Mr. Mooney:

Semiconductor Equipment and Materials International ("SEMI") is pleased to submit to the Commerce Department's Bureau of Industry and Security ("BIS") the following comments on BIS' systematic review of the Commerce Control List ("CCL") of the Export Administration Regulations ("EAR").

SEMI represents over 2,000 global companies that provide equipment, materials and services used to manufacture semiconductors, displays, nano-scaled structures, microelectromechanical systems and related technologies. SEMI's over 700 U.S. members are comprised of both large and small companies that make a critical contribution to the advance of microelectronics technologies and that are central to communities of highly skilled and educated engineers and technologists in many regions of the United States.

We commend the Commerce Department for this timely review of the Commerce Control List and an assessment of its relevance to a modern export control policy. This project holds the potential to strengthen national and economic security by allowing the government to finely target limited resources for export administration and enforcement and by improving the environment for U.S. companies in global industries to thrive and provide the basis for U.S. technological leadership. To reach this potential, it is imperative to maintain an active and on-going government-industry dialogue beyond this first step of a public comment period. SEMI is committed to export control reform and looks forward to working together with the government to help achieve these goals.

The following letter outlines SEMI's recommendations for the modernization of U.S. export control policy and practice. As background, we will provide an overview of our industry and the impact of current U.S. export controls on our member companies. Our primary recommendation is for a systematic review of all relevant semiconductor equipment and materials controls similar to the Core List review of the early 1990s. While this process takes place, we urge the government

to establish non-licensable paths for exports of semiconductor equipment and materials products to civil semiconductor fabrication facilities through expanded application of License Exceptions such as GBS and CIV (or possibly others) and expanded application of the Validated End-User (“VEU”) program to all countries and additional fabrication facilities.

About the Semiconductor Equipment and Materials Industry

The tools and materials that SEMI member companies produce are used principally to manufacture integrated circuits or semiconductors. These products are designed and used to manufacture commercial and civilian electronic devices. The principal customers of semiconductor equipment and materials (“SEM”) companies are large, well-known semiconductor fabrication operators, which are readily distinguishable from military entities. Semiconductor equipment and materials are inherently civilian in character and their availability generally offers no unique military edge in and of themselves. As with basic energy or telecommunications products, SEM are foundational technologies far removed from any direct military contribution.

U.S. SEM companies are competing head-on with Asian and European SEM firms for business around the world. These regions have highly competitive SEM industries. As the following chart shows, only four of the top ten global semiconductor equipment companies are from the United States.

| 2006 rank | 2005 rank | Supplier | HQ Region | 2006 sales |
|-----------|-----------|--------------------------|--|-----------------------|
| 1 | 1 | Applied Materials |  | \$6.49 billion |
| 2 | 2 | Tokyo Electron |  | \$4.48 billion |
| 3 | 3 | ASML |  | \$4.00 billion |
| 4 | 5 | KLA-Tencor |  | \$2.06 billion |
| 5 | 7 | Lam Research |  | \$1.88 billion |
| 6 | 4 | Advantest |  | \$1.79 billion |
| 7 | 6 | Nikon |  | \$1.52 billion |
| 8 | 8 | Novellus Systems |  | \$1.39 billion |
| 9 | 9 | Dainippon Screen |  | \$0.99 billion |
| 10 | 11 | Canon |  | \$0.92 billion |

Source: Gartner Dataquest April 2007

The U.S. industry is still strong competitively, but it serves a global customer base and companies must export to survive. The average U.S. maker of semiconductor production equipment receives over 80 percent of its revenues from overseas sales. These firms cannot be world leaders or, for that matter, sustainable enterprises unless they engage in substantial export sales.

A regular stream of revenue from export sales is needed, among other things, to fund U.S. SEM firms’ enormous research and development (“R&D”) investments. Semiconductor equipment companies reinvest, on average, 10 to 15 percent of their revenues in R&D and these costs are

escalating.¹ This level of R&D is necessary for these companies to remain world leaders. The ability to fund these investments has always been dependent on export revenues, so access to overseas markets and the ability to compete in these markets with leading edge technology is vital to the long term health of the U.S. semiconductor equipment and materials infrastructure

Another critical success factor in our industry is the ability to gain “tool of record” designation with a customer. This is particularly an issue in the burgeoning China market where access is needed to provide the next opportunity for market leadership for those companies able to establish a presence as reliable suppliers and build key relationships with leading Chinese customers.

SEMI expects 2007 to be the second largest year for sales of new semiconductor equipment. The equipment market is estimated to grow by one percent to a \$40.9 billion in 2007. The global semiconductor materials market is estimated to reach \$41.3 billion in 2007. Please see Attachments One and Two for additional details on the semiconductor equipment and materials markets and forecasted growth by region.

These forecasts confirm that Asia is where the majority of advanced semiconductor fabs are being built. U.S. SEMI members need to have the same access to these Asian customers that their non-U.S. competitors have. They must participate fully in the Chinese and other Asian markets to be world leaders and even to survive.

Much of the focus of export control policy for semiconductor equipment and materials is on China. Access to the Chinese SEM market is pivotal to the health of U.S. SEM companies and, by extension, U.S. leadership in SEM technologies. With China representing the fastest growing SEM market, U.S. firms cannot remain top suppliers if they do not participate broadly in this market. While other more established markets may be larger in size, the China market enjoys the fastest growth rates and provides the industry with the most opportunities to establish new business.

Industry Impact of Export Controls

The semiconductor equipment and materials industry is highly controlled. The equipment for many of the key process steps for manufacturing semiconductors is subject to control. Among other things, the equipment controls in Category 3B include equipment for: epitaxial growth; ion implantation; etch; chemical vapor deposition; lithography; and certain masks. A wide range of materials are covered in Category 3C.

The controls for semiconductor equipment and materials are out of date. The U.S. government has not completed a thorough examination of SEM controls since the “Core List” exercise of 1990-91. Despite being commercial items, SEM products remain subject to restrictive and out-of-date Cold War-era export rules. Current controls capture mainstream commercial manufacturing technologies and they have not kept pace with the rapidly changing marketplace.

¹ For more details, please see the SEMI R&D White Paper at www.semi.org/r&d.

The U.S. SEM industry is challenged by current export controls in several ways. This includes application processing times, the repetitive nature of licensing, and in some cases lost sales. A SEMI survey² of U.S. members highlights these issues which bear heavily on companies' ability to compete in China.

- **License Processing Times.** One-half of the respondents reported that their average processing periods range from two-to-four months. One-quarter of the respondents indicated that their average processing times were four-to-six months. We are pleased to see that U.S. processing times have been declining in recent years and expect that the VEU program will help address this issue with some customers. At the same time, this area continues to merit attention given our understanding that application-processing times among other countries are substantially shorter than U.S. times and tend to be measured in weeks or even days.
- **Repetitive Licensing and Inconsistent Conditions.** Our members report that they must obtain successive licenses to ship the same types of equipment to the same Chinese customers. Sixty-four percent of the respondents reported that these follow-on licenses have represented 75-to-100 percent of their licensing volume. Apart from the needless expense to government and industry of obtaining successive licenses for similar products to the same group of customers, the licenses commonly include varying types of conditions for no discernable reason. This complicates company compliance and makes it more expensive. Again, the VEU program will help alleviate this problem for a few major customers, but this remains a problem that should be addressed by additional measures.
- **Lost Sales.** Forty-two percent of respondents reported that export controls have contributed to lost sales in China. A few survey respondents' estimated lost sales totaled several millions of dollars each. While the numbers of BIS license denials have been limited, U.S. producers have sometimes found that the delays and other complications involved in seeking a license have led them not to pursue sales opportunities in China. We believe that in most cases these sales were still made by overseas suppliers.

Current U.S. export control policies and practices also strain U.S. SEM companies given the nature of our technology-intensive industry. The SEM producers must be able to effect prompt delivery of the latest technology, fulfill long-term commitments of service and support, and collaborate with customers on the adaptation and improvement of technology. United States SEM producers' ability to act quickly and make long-term commitments is restricted by current export control requirements.

There are no multilateral rules on SEM licensing policy, procedures or processing times. We have found that non-U.S. licensing policies and practices are far more flexible and favorable

² SEMI conducted a survey of U.S. member companies in April-May 2006 regarding the impact of export controls on the industry. The survey was sent to those companies participating in the association's export control activities. We received a high response rate of 43 percent with 12 companies responding out of a pool of 28 survey recipients. Half of the respondents were equipment suppliers and the other half were divided among subassembly and component suppliers and materials companies. Most respondents had over \$500 million in annual revenues and five had over \$1 billion in revenue.

than U.S. export controls, putting U.S. SEM companies at a disadvantage. Given the widespread foreign availability in the industry, the result is that overseas suppliers have a competitive edge. In addition, lack of multilateral consensus on the implementation of SEM controls means that current SEM controls generally are ineffective and do not have a material effect on the global accessibility of semiconductor equipment and materials.

SEMI and our member companies are committed to export compliance and to modernization of the U.S. export control system. Our companies devote considerable resources and executive attention to these issues. SEMI organizes annual programs at our trade shows in China and the United States to promote compliance. We serve as an information resource to the government for market data, business developments and industry forecasts. We act as a liaison to members of the business community, including to customer companies in China. SEMI and member companies participate in the Information Systems Technical Advisory Committee ("ISTAC") and each year we provide proposals and comments for the Wassenaar review process.

SEMI has deepened our industry's longstanding commitment to export control policy during the past few years. A major example of this is the industry delegation we recruited and led for a special Wassenaar session in Vienna in 2004. The U.S. delegation of 17 representatives from 11 companies provided Wassenaar delegates with a detailed overview of the SEM industry, an explanation of the primary semiconductor manufacturing processes, and presentations on how the relevant technologies are evolving. Four non-U.S. companies participated as well.

With this high level of engagement, we have been pleased to see some progress over the past few years. The new VEU program is a great example of creative thinking to address challenges associated with a high number of repetitive licenses to trusted commercial customers. We commend the government for this new approach which will allow both government and companies to focus their resources on more difficult and non-routine cases while still maintaining visibility with important end-users in China and elsewhere. Other accomplishments include the 2005 reform of semiconductor test equipment controls and some reduction in license processing times.

In general, there are productive and on-going discussions between government and industry about day-to-day licensing and outreach activities. However, there is some frustration in the industry with the type of broad export control reform that is needed. For example, we have submitted a number of Wassenaar proposals in the past and most have not gone anywhere. This and other experiences have contributed to a genuine lack of understanding among our industry's experts about the basis for many SEM controls. We would like to remedy this situation since the potential for progress and mutual understanding is necessary to facilitate the productive role that SEMI and its members would like to have in helping the government execute its export control policymaking function. The following outlines our specific recommendations.

I. CCL Review: We urge the U.S. government to conduct a comprehensive review of SEM controls with full government and industry participation.

The last comprehensive review of SEM controls occurred 17 years ago while the semiconductor industry creates a new technology generation approximately every 18 months. Put another way, the semiconductor industry has progressed about ten generations since the SEM controls were last seriously reviewed. The incremental changes made during this time have been inadequate and have not kept pace with advances in technology. This has led to an export control

treadmill. The industry is required to continually request that the Commerce Department make incremental adjustments to the CCL to comport with current or future technology levels. The treadmill approach has not worked, and SEMI remains largely subject to transaction-by-transaction licensing for exports to key international markets.

A comprehensive review could be quite beneficial. If unnecessary and ineffective controls were eliminated, industry's ability to compete in key markets such as China would be enhanced. Companies would face lower costs, less uncertainty and fewer of the challenges currently associated with export administration. The government would benefit as well. This would allow limited resources to be better targeted, controls to be more effective and enforcement operations to be more efficient.

Working with the industry, the U.S. government should be able to fashion export control policies that minimize the licensing burden while maximizing national security. This would require a concerted effort over a period of time. While some may have hoped the SEMI comment letter would provide specific recommendations for individual ECCNs, the scope of that type of project is too large for industry to undertake without a commitment from the interagency group to work together on a serious and collaborative list review. Attachment Three provides two examples of the types of issues we would seek to include in such a review. If the government is willing to commit to this kind of a project, SEMI proposes to coordinate industry participation.

The approach SEMI recommends is to start with a blank piece of paper and figure out what genuinely merits control and where true multilateral consensus can be achieved for effective control. The conceptual framework would be to scrap current SEM controls. The U.S. government should promulgate new controls on only those SEM products that are found to be strategically critical and where Wassenaar partners would agree to implement consequential controls. We recognize this kind of project would require an SEM review within Wassenaar, an effort which has been primed by the 2004 technical session. This approach would presumably result in a much smaller and more targeted set than the current controls.

In approaching this review or any examination of dual-use controls, there are several principles we suggest guide the assessment.

- **Justifiability.** SEM controls should be maintained only if and while they are supported by an explicit national security justification. A license requirement should be maintained only as long as there is a clear, valid strategic justification for it. We are unaware of any up-to-date U.S. government justification for today's CCL entries for SEM either for national security or antiterrorist reasons.
- **Effectiveness and Foreign Availability.** Controls should be maintained only if there is true multilateral consensus. Other Wassenaar participants administer the requirements far more liberally than does the United States. In effect, they impose no meaningful restriction on SEM exports to any significant SEM market rendering the U.S. controls largely ineffective. Export controls generally cannot be justified if the restricted items are readily available from a non-U.S. source. Surely SEM controls are not advisable if, as is the case, buyers in restricted countries like China can easily and quickly obtain the equivalent of export controlled U.S. products from another country.

- **Clarity.** Controls should be clear and understandable. They should not be imposed or retained if they cannot reasonably be understood. That is, different government officials and industry professionals should ordinarily reach the same conclusions about the scope of any given control.
- **Transparency.** Controls should be the subject of an ongoing government-industry dialogue, and the government should be transparent about control justifications.
- **Continuous Improvement.** Controls should continually be improved in light of technological and other developments. The Commerce Department should conduct regular examinations of export license requirements to assess whether their retention remains advisable or whether they should be adjusted in light of the principles described above.

II. CCL Content: We urge the government to reassess the parameters for SEM controls.

If SEM license requirements will continue to be based on CCL product descriptions, SEMI urges the Commerce Department to reassess its approach to control parameters. ECCN 3B001's use of possible output results – such as, “feature size of 180 nm or less” – to establish the scope of equipment controls has proven to be particularly problematic. This is because many factors other than operating characteristics determine output results. These factors include the skill of persons operating the machines, the equipment system into which the equipment at issue is integrated, and the quality and character of materials that are used. Depending on the type of tool, use of output results to define control parameters can be essentially meaningless.

Without question, use of output result parameters has led to enormous confusion. Given the many variables, system engineers do not know how to test for inclusion under control parameters that are defined by output results. Also, terms that ECCN 3B001 uses to describe output results, like “critical dimension,” do not have a fixed meaning. Process engineers refer to a “critical dimension” as the size of a portion of a device for which they are developing a process. Consequently, in process engineering any given device has multiple critical dimensions.

III. Other Reforms: Make License Requirements Depend on Character of End-users and End-uses.

Pending completion of a new Core List exercise, we urge that the government establish license-free paths for SEM exports to civil semiconductor fabrication facilities. Again, SEMI believes that the proper approach would be to start over and completely reconsider whether any SEM should be controlled and, if so, which products should be covered in light of the principles discussed above. The priority, in SEMI's view, should be eliminating unnecessary and counterproductive controls on shipments of conventional, civilian SEM products to conventional, civilian fabrication facilities.

While this is taking place, there are other measures that could be adopted to improve SEM controls. It may be more effective to base controls on end-use and end-user restrictions than on an assessment of technical capability. For example, use for military applications or by military entities could be restricted. SEM companies are in a good position to comply with such

restrictions because of the difficulty of diverting semiconductor equipment and materials and the generally high level of service and support that is necessary from the supplier.

Standing alone, a piece of SEM has no function or utility. It must be combined with equipment and technology to contribute to the production of an integrated circuit. SEM are designed to function in a semiconductor fabrication facility. These fabs are among the most complex and expensive manufacturing facilities in the world. For this reason, there are relatively few end-users for SEM. SEM systems are, by and large, high-value and highly visible. Diversion risk is minimal, and sales to China are dominated by a relatively few, large commercial semiconductor manufacturing facilities. The limited end-use and end-users for SEM provide an effective avenue to exercise export control.

Expanded License Exception Coverage for SEM. BIS could ensure a license-free path for SEM exports to civil fabrication facilities by enlarging the extent to which existing license exceptions apply to SEM. For example, License Exceptions GBS and CIV could apply fully to Subcategories 3B, 3C, 3D and 3E.

Alternatively, BIS could create a new license exception especially for SEM and related software and technology. A new license exception could essentially replicate full GBS and CIV coverage. So, for example, unlicensed exports to Country Group D:1 countries would be permitted only to civil end-users. BIS might prefer to achieve this result with a new license exception to build on an already high level of visibility for SEM exports. In this regard, a separate license exception might make it easier for the government to segregate information about unlicensed SEM shipments.

Expansion of VEU. Another means of ensuring a license-free path for exports to civil end-users would be through expanded end-user and end-user-based authorizations. BIS has usefully moved in this direction with the VEU initiative. Broad VEU approval of civil semiconductor fabs in China and elsewhere could greatly improve the situation.

SEMI recommends that BIS approve additional Chinese producers and facilities under VEU and establish that VEU approvals can be granted for trusted civil end-users in any non-embargoed country -- not just China and India, as is the case today. Limiting the VEU initiative to specified countries appears to SEMI to be unnecessary and inconsistent with the rationale of basing non-licensed treatment on attributes of end-users rather than attributes of entire countries.

This approach isn't the answer for all civilian end-users since smaller companies may determine that their licensing activities are not sufficient to warrant VEU application. However, VEU expansion holds a great deal of potential for larger end-users for whom a high volume of licenses is required.

Conclusion

SEMI commends BIS for soliciting public comment on CCL controls. SEM controls are perhaps the purest example of CCL controls that cry out for fundamental reform. As was last done 17 years ago, the U.S. government should start from scratch and determine what, if any SEM controls, should be in place based on a collaborative project with the industry. At the same time, we urge that the U.S. government immediately expand application to SEM of license exceptions and

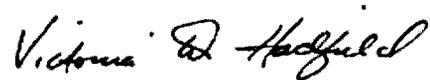
SEMI Comments on U.S. Commerce Control List
November 1, 2007

verified end-user authorizations to ensure that modern SEM products can be exported to civilian, commercial semiconductor production facilities without a license.

* * *

SEMI appreciates the opportunity to address this important initiative. Please do not hesitate to contact me if you have questions about our submission.

Sincerely,

A handwritten signature in black ink that reads "Victoria D. Hadfield". The signature is written in a cursive style with a small dot above the 'i' in Victoria.

Victoria D. Hadfield
President, SEMI North America

Attachments

**SEMI Attachment One
Comments on the Systematic Review of the CCL
November 1, 2007**

Semiconductor Equipment Forecast

SEMI Announces Mid-year Consensus Forecast for Chip Equipment Industry

Semiconductor Equipment Companies Expect Sales of \$40.9 Billion in 2007

SAN FRANCISCO, Calif. – July 16, 2007 -- The leading manufacturers of semiconductor equipment expect 2007 to be the second largest year ever for sales of new semiconductor equipment according to the mid-year edition of the SEMI Capital Equipment Consensus Forecast, released here today by SEMI at the annual SEMICON West exposition.

The forecast indicates that, following a very strong year 23 percent in 2006, the equipment market will grow one percent to \$40.9 billion in 2007. Survey respondents see about seven percent growth in 2008, and about four percent growth the following year to reach \$45.5 billion in 2009.

"Semiconductor equipment suppliers saw strong sales surpassing \$40 billion last year and expect to reach similar sales levels this year, driven by continued investment in 300 mm technology and growing investment in 45 nm tools," said Stanley T. Myers, president and CEO of SEMI.

The SEMI Mid-Year Consensus Forecast indicates that the wafer processing equipment segment will experience the most significant level of growth this year at an estimated four percent to \$29.8 billion. Survey respondents anticipate that the market for assembly and packaging equipment will remain flat at \$2.5 billion in 2007. The market for equipment to test semiconductors is expected to decline about eight percent to \$5.9 billion this year.

The market in Taiwan for new equipment leads the growth trend in 2007, with a projected market increase of greater than 20 percent, followed by China (about 15 percent growth), Korea (one percent growth). Japan is expected to remain flat, while North America and Europe expect declines of about nine percent, and the rest of world expects a decline of about 14 percent.

The SEMI Mid-Year Consensus Forecast is based on interviews conducted between late May and June 2007 with companies representing a majority of the total sales volume for the global semiconductor equipment industry.

The following survey results are given in terms of market size in billions of U.S. dollars and percentage growth over the prior year:

Forecast by Equipment Segment

| | 2006 Actual | 2007 | % Chng | 2008 | % Chng | 2009 | % Chng | 2010 | % Chng |
|----------------------|----------------|---------|--------|---------|--------|---------|--------|---------|--------|
| Equipment Type | \$B | \$B | | \$B | | \$B | | \$B | |
| Wafer Processing | \$28.74 | \$29.75 | 3.5% | \$31.18 | 4.8% | \$32.97 | 5.8% | \$35.21 | 6.8% |
| Assembly & Packaging | 2.46 | 2.46 | 0.0% | 2.70 | 9.8% | 2.76 | 1.9% | 2.92 | 5.9% |
| Test | 6.42 | 5.92 | -7.8% | 6.88 | 16.2% | 6.87 | -0.1% | 7.28 | 6.0% |
| Other | 2.85 | 2.78 | -2.6% | 2.83 | 1.7% | 2.92 | 3.2% | 3.10 | 6.3% |
| Total Equipment* | \$40.47 | \$40.91 | 1.1% | \$43.58 | 6.5% | \$45.51 | 4.4% | \$48.51 | 6.6% |

Forecast by Region

| | 2006 Actual | 2007 | % Chng | 2008 | % Chng | 2009 | % Chng | 2010 | % Chng |
|------------------|----------------|---------|--------|---------|--------|---------|--------|---------|--------|
| Market Region | \$B | \$B | | \$B | | \$B | | \$B | |
| North America | \$7.32 | \$6.68 | -8.8% | \$6.99 | 4.7% | \$7.05 | 0.8% | \$7.31 | 3.7% |
| Japan | 9.21 | 9.23 | 0.2% | 9.65 | 4.5% | 9.89 | 2.5% | 10.55 | 6.6% |
| Taiwan | 7.31 | 8.80 | 20.4% | 9.54 | 8.5% | 9.89 | 3.6% | 10.70 | 8.3% |
| Europe | 3.59 | 3.28 | -8.7% | 3.52 | 7.2% | 3.52 | 0.0% | 3.69 | 4.9% |
| South Korea | 7.01 | 7.07 | 0.8% | 7.57 | 7.1% | 7.76 | 2.5% | 8.17 | 5.3% |
| China | 2.31 | 2.65 | 14.5% | 2.56 | -3.4% | 3.48 | 35.9% | 3.95 | 13.4% |
| Rest of World | 3.71 | 3.20 | -13.8% | 3.75 | 17.3% | 3.92 | 4.5% | 4.14 | 5.5% |
| Total Equipment* | \$40.47 | \$40.91 | 1.1% | \$43.58 | 6.5% | \$45.51 | 4.4% | \$48.51 | 6.6% |

*Totals and percentages may differ due to rounding of numbers

**SEMI Attachment Two
Comments on the Systematic Review of the CCL
November 1, 2007**

Semiconductor Materials Forecast

The following is the SEMI 2007 Materials Forecast by market region. The source is the SEMI Materials Market Data Subscription, August 2007.

| | 2004 | 2005 | 05/04 % Growth | 2006 | 06/05 % Growth | 2007F | 07/06 % Growth | 2008F | 08/07 % Growth | 2009F | 09/08 % Growth |
|---------------|---------|---------|-------------------|---------|-------------------|---------|-------------------|---------|-------------------|---------|-------------------|
| China | \$1.26 | \$1.62 | 28% | \$2.20 | 36% | \$3.06 | 39% | \$3.75 | 22% | \$4.26 | 14% |
| Europe | \$2.72 | \$2.81 | 3% | \$3.33 | 19% | \$3.54 | 6% | \$3.79 | 7% | \$3.93 | 4% |
| Japan | \$7.67 | \$7.81 | 2% | \$8.87 | 13% | \$9.48 | 7% | \$10.29 | 9% | \$10.89 | 6% |
| Korea | \$3.66 | \$4.26 | 17% | \$5.28 | 24% | \$6.22 | 18% | \$6.68 | 7% | \$6.91 | 3% |
| North America | \$4.45 | \$4.55 | 2% | \$5.02 | 10% | \$5.39 | 7% | \$5.75 | 7% | \$5.99 | 4% |
| Taiwan | \$5.30 | \$5.72 | 8% | \$6.99 | 22% | \$7.82 | 12% | \$8.56 | 10% | \$9.59 | 12% |
| ROW | \$3.75 | \$4.26 | 14% | \$4.99 | 17% | \$5.80 | 16% | \$6.46 | 11% | \$6.66 | 3% |
| Total | \$28.81 | \$31.04 | 8% | \$36.67 | 18% | \$41.31 | 13% | \$45.28 | 10% | \$48.23 | 7% |

**SEMI Attachment Three
Comments on the Systematic Review of the CCL
November 1, 2007**

Examples of ECCN-level Recommendations

The main body of SEMI's comments discusses SEMI's view that the U.S. government should pursue a threshold examination of U.S. policy with respect to SEM exports that is similar to the 1990-91 Core List exercise. The government would start with a clean slate and establish what, if any, controls should be imposed on SEM exports. This addendum is to identify two examples of controls that should clearly, in SEMI's view, be eliminated through this exercise. There are many other specific changes we would recommend in a collaborative review of SEMI controls.

Cluster Tools, ECCN 3B001.e: The cluster tool control is an excellent example of the type of license requirement that, in our view, could not survive a full, objective assessment of SEM export control policy. This control applies to certain "multi-chamber wafer handling systems" that have "interfaces for wafer input and output to which more than two pieces of semiconductor processing equipment are to be connected."

SEMI and our industry experts cannot discern any strategic attribute of cluster tools that would justify this control. Almost all semiconductor fabrication facilities being built today employ multiple parallel process chambers on one mainframe. This approach is not to achieve the ability to produce more advanced devices. Rather, it is to achieve production economies, something that is not a priority for production of specialized integrated circuits for military applications. Semiconductor production is simply more efficient -- not more technologically advanced -- by virtue of cluster technology.

Furthermore, even if there were any strategic value in withholding cluster tools from, for example, China, it would be impossible to do so. Almost all types of semiconductor production equipment -- etchers, chemical vapor deposition systems, etc. -- are normally clustered today. Apart from companies in Wassenaar partners Japan and Korea, these tools are being supplied by producers in Taiwan and even China itself. Domestic capability and widespread foreign availability should independently result in lifting of this control.

Pressure Transducers, ECCN 2B230: This control applies to certain devices that convert pressure measurements into electrical signals. The rationale for this control is to limit proliferation of nuclear weapons. This is unlike the rationale for most SEM controls, which is to preserve national security.

It is SEMI's understanding that this license requirement was not developed to restrict shipments of equipment used in semiconductor manufacturing. There would seem to be no justification for controlling such equipment. Consequently, our view is that ECCN 2B230 should be modified to specify that the control does not extend to pressure transducers for civilian production of semiconductors.

From: "Roberts, Cynthia L (SABIC Innovative Plastics)" <Cynthia.Roberts@sabic-ip.com>
To: <publiccomments@bis.doc.gov>
Date: Fri, Nov 2, 2007 7:16 AM
Subject: Notice of Inquiry--CCL

> Timothy Mooney
> Office of Exporter Services,
> Regulatory Policy Division,
> Bureau of Industry and Security,
> Department of Commerce
> 14th St. & Pennsylvania Avenue NW, Room 2705
> Washington, DC. 20230,

>
> Dear Sir:

>
> In response to the BIS request for public comments, SABIC Innovative Plastics wishes to endorse the "1C010 Wassenaar proposal" put forth to the Materials Technical Advisory Committee (TAC) by the Composite Technical Working Group (CWG) on October 11.

>
> The CWG proposal:

- > • raises the control thresholds of specific modulus and specific tensile strength to recognize industry process improvements that have increased these properties for the lower class of materials;
- > • more clearly specifies the resins of concerns for prepregs; and,
- > • eliminates unnecessary controls on molding compounds with fibers whose reduced size no longer enables them to provide controlled reinforcement .

>
> It is the position of SABIC Innovative Plastics that implementation of the CWG proposal would provide appropriate controls for potential materials of concern, while eliminating the inadvertent capture of non-critical items with broad global availability.

>
> Your consideration of this recommendation is appreciated.

>
> Yours sincerely,
> Cindy Roberts

>
> Cynthia L. Roberts
> SABIC Innovative Plastics
> Global International Trade Compliance Leader

>
>
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❖ AAEI American Association of Exporters and Importers
The Voice of the International Trade Community Since 1921

November 1, 2007

Via E-Mail publiccomments@bis.doc.gov

Mr. Timothy Mooney
Office of Exporter Services
Regulatory Policy Division, Room 2705
Bureau of Industry and Security
14th Street and Pennsylvania Avenue, N.W.
Washington, D.C. 20230

ATTN: Notice of Inquiry-CCL

Re: Request for Comments – Systematic Review of The Commerce Control List
Docket No.: 070619210-7489-02

Dear Mr. Mooney:

We are writing to submit comments in response to the above-captioned Federal Register Notice, which specifically solicits comments on the type of items that should be listed on the Commerce Control List, 15 C.F.R. Part 774 (the "CCL"), and the appropriate levels of controls to be placed on those items, while taking into account technology levels, markets, and foreign availability. See, 72 Fed. Reg. 51213 dated September 6, 2007. The American Association of Exporters and Importers ("AAEI") greatly appreciates the opportunity to submit these comments, and we fully support the Bureau of Industry and Security's ("BIS") systematic review of the Export Control Classification Numbers ("ECCNs") on the CCL. We hope that our comments below assist the BIS in its review efforts.

Introduction

AAEI has been a national voice for the international trade community in the United States since 1921. Our unique role in representing the trade community is driven by our broad base of members, including manufacturers, importers, exporters, retailers and service providers, many of which are small businesses seeking to export to foreign markets. With promotion of fair and open trade policy and practice at its core, AAEI speaks to international trade, supply chain, export controls, non-tariff barriers, and customs and border protection issues covering the expanse of legal, technical and policy-driven concerns.

As a representative of private sector participants engaged in and impacted by developments pertaining to international trade, national security and supply chain security, AAEI is deeply interested in the policies and practices of foreign governments that affect U.S. companies. Therefore, the comments below describe government policies and interventions related to restraints on U.S. exports in foreign markets.

1. Consumer Goods Classified under EAR99

The purpose of this comment is to draw attention to the disparity between, on the one hand, the EAR99 classification given consumer goods and certain other goods even though they contain negligible amounts of certain precursor chemicals and, on the other hand, the more restrictive classification treatment given medical reagents with only trace amounts of

the same chemicals. Currently, for example, consumer goods packaged for retail sale for personal use that include precursor chemicals controlled under ECCN 1C350 and 1C355 are classified EAR99. But medical reagents which are used for common diagnostic tests and treatment of medical conditions with even lower levels of these same chemicals are classified instead in ECCNs that are subject to anti-terrorism (AT) controls. As a result, these common medical products are not eligible for export licensing for humanitarian purposes to countries such as Sudan, Syria and Iran.

2. Classification of Medical Reagents

AAEI, on behalf of members that manufacture and export medical reagents, questions whether medical reagents with only trace amounts of CCL-controlled chemicals should be subject to AT controls. We are unaware of any particular policy reason for this disparity in treatment with consumer goods, since the EAR99 consumer goods generally have the same chemicals, potentially in higher concentrations, than the AT-controlled medical reagents. We discuss the precise classification criteria that currently apply, in more detail below, to demonstrate why we believe that this disparity should not exist for export control purposes.

* * * *

Medical reagents are occasionally supplied as stand-alone products but are more commonly included as part of medical, analytical, and diagnostics testing kits. Many such medical reagents and kits are classified EAR99, but some medical reagents (or the related calibrator and control solutions) that include trace amounts (*i.e.*, less than 0.5% by weight) of precursor chemicals that are controlled under ECCNs 1C350 and 1C355 are subject to controls under either ECCN 1C395 ("Mixtures and medical, analytical, diagnostic, and food testing kits not controlled under ECCN 1C350") or ECCN 1C995 (covering certain mixtures with controlled precursor chemicals as well as "medical, analytical, diagnostic, and food testing kits not controlled by ECCN 1C350 or ECCN 1C395 that contain chemicals controlled by ECCN 1C350.d").¹

Medical reagent kits classified in either ECCN 1C395 or ECCN 1C995 because of the presence of these trace amounts of controlled precursor chemicals are subject to anti-terrorism (AT) controls. As a result, such reagents and the related kit components are not eligible for licensing by the Treasury Department's Office of Foreign Assets Control ("OFAC") under the Trade Sanctions Reform and Export Enhancement Act of 2000 (the "TSRA"), Pub. L. 106-387.²

Medical reagents containing less than 0.5% by weight of a precursor chemical controlled by ECCNs 1C350 or 1C355 do not pose proliferation or terrorism concerns and should accordingly be classified EAR99. At least two "License Requirement Notes" in Category 1 of the CCL make clear that such trace amounts do not pose proliferation or any other

¹ As an example, a diagnostic test kit used by physicians to monitor procainamide drug levels in a patient's serum or plasma in order to control dosing includes 9 small vials (2.5 ml each) of calibrator and control solutions. These solutions consist primarily of human plasma, and contain trace amounts (e.g., 0.42% by weight) of sodium fluoride. Sodium fluoride is identified on the CCL under ECCN 1C350.d.18. As a result, the procainamide diagnostic test kit is presently controlled under 1C995.

² See *e.g.*, Sudanese Sanctions Regulations, 31 C.F.R. § 538.523 (requiring Official Commodity Classification rulings of EAR99 from BIS for medical devices).

concerns, and support the Agency's review of the CCL to exclude such medical reagents from the scope of ECCNs 1C395 and 1C995. We offer two reasons to support the exclusion of medical reagents from these ECCNs.

First, the License Requirement Notes included in ECCNs 1C350, 1C355, and 1C995 currently exempt mixtures that contain precursor chemicals identified in 1C350 and 1C355 when the controlled chemical "is a normal ingredient in consumer goods packaged for retail sale for personal use." The License Requirement Notes make clear that such consumer goods are classified as EAR99. From a national security, as well as a foreign policy perspective, we are puzzled as to why consumer goods benefit from an EAR99 classification when medical reagents used widely in medical diagnosis and treatment for the benefit of general public health are not similarly classified, even though the medical reagents may contain precursor chemicals in significantly lower concentrations.

Second, the License Requirement Note presently included in ECCN 1C995 excludes "mixtures containing less than 0.5% of any single toxic or precursor chemical controlled by ECCN 1C350.b, .c, or .d or ECCN 1C355 as unavoidable by-products or impurities." Such mixtures are classified as EAR99. Here again, we have difficulty understanding based on national security or other grounds, why a product is classified EAR99 when trace amounts of a controlled chemical are present in a mixture unintentionally, as a by-product or impurity, but medical reagents with trace amounts or the same chemical are subject to AT controls: AAEI requests that BIS consider making a *de minimis* exemption available for common medical reagents used widely in medical diagnosis and treatment.

Conclusion

For these reasons, AAEI supports the Agency's review of the CCL and respectfully requests that BIS consider excluding from the reach of ECCNs 1C395 and 1C995 medical reagents that contain less than 0.5% of any single toxic or precursor chemical controlled by ECCN 1C350.b, .c, or .d or ECCN 1C355. We believe that reassessment of the proper classification and limited exemption of medical reagents for export control purposes will achieve the Agency's regulatory oversight goals while appropriately calibrating the impact on U.S. exports.

If you have any questions regarding these comments, or wish to discuss our position in further detail, please do not hesitate to contact us.

Sincerely,



Hallock Northcott
President & CEO

cc: Melvin Schwechter, Co-Chair, AAEI Export Compliance & Facilitation Committee
Phylliss Wigginton, Co-Chair, AAEI Export Compliance & Facilitation Committee