

**DEPARTMENT OF COMMERCE****Bureau of Industry and Security****15 CFR parts 740, 742, and 774**

[Docket No. 030304054-3054-01]

RIN 0694-AC22

**Revisions to the Export Administration Regulations Related to the Missile Technology Control Regime (MTCR)****AGENCY:** Bureau of Industry and Security, Commerce.**ACTION:** Final rule.

**SUMMARY:** The Bureau of Industry and Security (BIS) is amending the Commerce Control List (CCL) to reflect the reformatted Missile Technology Control Regime (MTCR) Annex of October 14, 1999. This final rule also amends Country Group A:2, MTCR, to add the Czech Republic, Korea (Republic of), Poland, Turkey, and Ukraine to reflect their membership in the MTCR. This revision also corrects the control text in 9B106 that erroneously captures standalone altitude chambers, and corrects the MT/ NP reason for control of spin forming and flow forming machines described in 2B009.

**DATES:** This rule is effective April 2, 2003.

**FOR FURTHER INFORMATION CONTACT:** Sharron Cook, Office of Exporter Services, Bureau of Industry and Security, Telephone: (202) 482-2440.

**SUPPLEMENTARY INFORMATION:** The Missile Technology Control Regime (MTCR) is an export control arrangement among 33 nations including the world's most advanced suppliers of ballistic missiles and missile-related materials and equipment. The regime is designed to stem the spread of rockets and unmanned air vehicles systems capable of delivering weapons of mass destruction by establishing a common export control policy (the Guidelines) and a shared list of controlled items (the Annex) that each country implements with its own national legislation.

While the MTCR was originally meant to prevent the spread of missiles capable of carrying a nuclear warhead, it was expanded in January 1993 to also cover delivery systems for chemical and biological weapons. The only absolute prohibition in the regime's Guidelines is on the transfer of complete "production facilities" for specially designed items in Category I of the MTCR Annex.

Unlike the Nuclear Non-Proliferation Treaty, which seeks to prevent the

spread of nuclear weapons, the MTCR is neither an international treaty nor a legally binding agreement. MTCR members voluntarily pledge to adopt the regime's export Guidelines and to restrict the export of items contained in the regime's Annex. Except for production facilities specially designed for Category I items, trade of MTCR controlled items is not absolutely prohibited by the Guidelines, but is constrained by national export control laws and policies.

**Membership**

The current membership of the MTCR includes: Argentina, Australia, Austria, Belgium, Brazil, **Canada**, the Czech Republic, Denmark, Finland, **France**, **Germany**, Greece, Hungary, Iceland, Ireland, **Italy**, **Japan**, Korea (Republic of), Luxembourg, The Netherlands, New Zealand, Norway, Poland, Portugal, Russia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, **United Kingdom**, and **United States** (original members in bold).

While all nations have been encouraged to abide by the MTCR's terms, not all states have been invited to become formal regime members. Membership decisions, like all other regime decisions, are made only by consensus. Regime partners attend annual meetings, share information about other nations' export control programs and proliferation concerns, conduct export control workshops and are involved in revising and updating the regime's Guidelines and technical Annex. Meetings are not public due to the sensitive nature of the discussions.

This final rule amends Country Group A:2, Missile Technology Control Regime (MTCR), to add the Czech Republic, Korea (Republic of), Poland, Turkey, and Ukraine. Country Groups are used to identify groups of countries for ease of reference when stating license requirements, license review policy or eligibility for License Exceptions. These countries were admitted to the MTCR. Consequently, the Export Administration Regulations (EAR) are amended to reflect the new status of these countries.

This rule also amends the Commerce Control List (CCL) to reflect the reformatted MTCR Annex of October 14, 1999 (Noordwijk/TEM). The reformatting of the MTCR Annex was an exercise in redrafting the Annex to conform to the former CoCom List structure that contains five individual groupings for the "Equipment, Assemblies and Components", "Test and Production Equipment", "Materials", "Software" and "Technology". Most of our MTCR

partners are intimately familiar with such a list structure and it facilitates ease in translating the MTCR Annex changes to national legislation. This is the same structure used in the CCL and European Union List. As a result of reformatting and the need to succinctly separate software and technology controls, the revisions in this rule provide clarity and ensure consistent interpretations. The MTCR adopted a software definition, general software note and general technology note, consistent with those outlined in the Wassenaar Arrangement. The reformatted MTCR Annex includes adopted changes to clarify the equipment intended to be controlled by the MTCR for testing, calibrating and aligning inertial equipment (e.g., balancing machines, motion simulators/ rate tables, positioning tables, etc.), production equipment for manufacturing propellants, and control of certain specialty steels for manufacturing missiles. These changes were published in the **Federal Register**/ Vol. 64, No. 25 on February 8, 1999.

However, our MTCR partners chose to wait for the adoption of the reformatted Annex before publishing these changes. Consequently, in this revision to the EAR, several Export Control Classification Numbers (ECCNs) had to be renumbered and/or subdivided into multiple entries. For example, the balancing machines, motion simulators/ rate tables, positioning tables, and centrifuges controlled in 7B104.a through .e have been moved to new individual entries under 2B119 through 2B122. Continuous mixers and fluid energy mills controlled in 1B117 have been moved to new ECCNs 1B118 and 1B119, respectively. Other revisions to the EAR include relaxation in the controls of certain metal fuels described in 1C111 by reducing their particle size. The metal fuels include magnesium, beryllium, boron, zirconium and spherical aluminum powders. For spherical aluminum powder an additional parameter on particle size distribution has been introduced to ensure that a sufficient amount of such powder with small enough particle sizes remains controlled. This revision also corrects the control text in 9B106 that erroneously captures standalone altitude chambers, and corrects the MT/ NP reason for control of spin forming and flow forming machines described in 2B009.

This rule replaces references to the "Office of Defense Trade Controls" with the "Directorate of Defense Trade Controls," because the State Department realigned responsibilities for

administering defense trade controls, on January 16, 2003.

The summary of changes listed here shows those ECCNs that are impacted by the reformatting and is not intended to be a comprehensive list of changes.

### Newly Added Export Control Classification Numbers (ECCNs)

- 1A101—Devices for reduced observables (previously 1C101).
- 1B102—Metal powder “production equipment” (formerly 1B117.d).
- 1B118—Continuous mixers (formerly 1B117.b).
- 1B119—Fluid energy mills (formerly 1B117.c).
- 1C102—Resaturated pyrolyzed carbon-carbon materials (previously 1A102)
- 2B119—Balancing machines and related equipment (previously 7B104.a and b)
- 2B120—Motion simulators or rate tables (equipment capable of simulating motion) (previously 7B104.c)
- 2B121—Positioning tables (equipment capable of precise rotary position in any axis), other than those controlled in 2B120 (previously 7B104.d)
- 2B122—Centrifuges able to imparting accelerations above 100 g and having slip rings capable of transmitting electrical power and signal information (previously 7B104.e)
- 6A103—Radomes usable in protecting rockets against nuclear effects. (DTC jurisdiction)
- 9C110—Resin impregnated fiber prepeg materials (previously 9A110)
- 9D104—Moved former 9D102 to this new entry and removed “use” software for those composite structures and prepgs controlled in 9A110.
- 9D105—Software which coordinates the function of more than one subsystem. (new entry under DTC jurisdiction).

### Deleted ECCN's

- 1D102—Removed “development” and “production” software in 1D102 for items in 1A, 1B and 1C. Other specially designed software for the “use” of MT items in 1A, 1B and 1C are now covered in 1D101.
- 3D102—No MT controls on development and production software for radiation hardened IC's (3A001.a.1.a) or accelerators (3A101).
- 4D102—No MT controls on software for the development, production, and use of equipment in 4A101.
- 5E111—Moved technology for the development, production and use of

software controlled by 5D101, to 5E101.

- 6D104—Removes “use” software controls for optical detectors (6A002), cameras (6A003), gravity meters & gravity gradiometers (6A007), radiation hardened detectors (6A102) and radar cross section measurement systems (6B108).
- 6E102—No MT controls on “use” technology for 6D001 & 6D002.
- 7B104—Moved specific production equipment for inertial systems to 2B119 through 2B122.
- 9D102—“Use” software combined into 9D104.

### Revisions

- 1A102—Moves materials to 1C102. This entry now controls carbon-carbon components, only.
- 1B101—Expands heading to clarify that this entry also controls equipment for the “production” of fibers, prepgs or preforms.
- 1B115—Combines 1B115 with 1B117.e and .f. This entry formerly controlled liquid propellant production equipment; but now controls both liquid and solid propellant production equipment, n.e.s.
- 1B117—Splits entry. This entry formerly controlled solid propellant production equipment; but now controls only batch mixers (previously 1B117.a) [ .b moved to 1B118; .c moved to 1B119; .d moved to 1B102; .e moved to 1B115.b; and .f moved to heading of 1B115]
- 1C010—Adds 9C110 to the Related Controls paragraph.
- 1C101—Splits the “devices” from this ECCN and moved them to 1A101.
- 1C107—Harmonizes list of items controlled with MTCR.
- 1C111—Relaxes controls on certain metal fuels, by reducing particle size for certain metal fuels.
- 1C118—Revises the heading, and harmonized the numbering with the EU list.
- 1D002—Removes MT controls, the MTCR does not control software for the development of organic matrix, metal matrix, or carbon matrix laminates or composites.
- 1D101—Adds MT controls for “use” software for propellant production equipment described in 1B102, 1B115, 1B117 to 1B119.
- 1D103—Revises the Heading, and adds a note in the Related Controls paragraph of the List of Items Controlled section that alerts exporters that similar items are controlled on the USML in the
- ITAR and clarifies what is controlled in this entry.
- 1E001—Conforming changes to MT controls.
- 1E101—Conforming changes to heading, added 1A101, 1B102, 1B115, 1B118, and 1B119.
- 1E102—Adds a note from the MTCR (17E1) to the Related Controls paragraph.
- 1E103—Clarifies the technology control to harmonize with the MTCR Annex (6.E.2).
- 1E104—Harmonizes the heading with the EU and MTCR Annex (7.E.1).
- 2B009—Corrects the MT reason for control.
- 2B104—Adds a technical note to the related definitions section.
- 2B109—Adds components to units paragraph and moves ECCN Notes to Technical notes.
- 2B116—Moves the definition of “bare table” from the Related Definitions paragraph to a technical note below paragraph .d in the list of items.
- 2D101—Adds software controls for the use of 2B119 to 2B122.
- 2E001, 2E002—Adds MT controls to technology for items controlled by 2B119 to 2B122.
- 2E101—Revised to make conforming change, because of revisions to 7B104 and 2B104, and adds 2D002 to heading and NP controls paragraph.
- 3A001—Clarifies MT control.
- 3A101—Harmonizes 3A101.b with MTCR Annex (15.b.5), to clarify that this commodity is controlled when usable in “missiles” or subsystems for “missiles.”
- 3D101—Revises the heading by adding the phrase “or modified” to conform with the MTCR Annex.
- 3E101—Revises the heading to clarify controls for 3A001 and adds 3D101.
- 4D001—Removed MT controls on software for the development, production and use of equipment in 4A001 to 4A003, as this software is not on the MTCR annex.
- 4D002—Removed MT controls on software for the development, production and use of technology controlled by 4E that was controlled for MT reasons, as this software is not on the MTCR annex.
- 4D994—Adds 4A101 to the heading.
- 4E001—Removes MT controls on technology for the development, production and use of equipment in 4A001.b, 4A002, 4A003, and software in 4D001, 4D002 & 4D102.
- 5A101—Adds clarifying language.
- 5D101—Removes MT controls on development and production software for telemetry equipment. Retained MT controls on the “use” software.

5E101—Adds technology for the development, production and use of software controlled by 5D101 (formerly 5E111).  
 6A002 & 6A102—Clarifies language for MT controls.  
 6A107—Adds harmonization language to heading and reformatted entry.  
 6A108—Adds clarifying language to .b.1.  
 6B108—Adds clarifying language.  
 6D102—Adds clarifying language to heading.  
 6D103—Adds clarifying language to heading.  
 6E101—Clarifies language in note 2 of the Related Definitions paragraph.  
 7B001—Clarifies language in the Related Controls paragraph.  
 7B003—Added related control to reference 7B994.  
 7B101—Makes conforming change, because 7B104 moved to 2B119 to 2B122.  
 7B102—Replaces the word “measurement” with “threshold” in the list of items.  
 7D101—Adds 7A116 to heading.  
 7D102—Limits integration software for inertial navigation systems to those that are specially designed.  
 7E001 & 7E101—Added a reference to 7D101, 7D102.a and 7D103 in “Related Controls.”  
 7E104—Adds clarifying language to the heading.  
 9A106—Adds harmonization language to heading.  
 9A110—Moves materials described in heading to 9C110.  
 9A115—Adds clarifying language.  
 9A117—Adds clarifying language.  
 9B005—Removes MT controls.  
 9B106—Restructures the control text to capture specific environmental and anechoic chambers to conform to the MTCR Annex. This correction clarified the controls on standalone altitude chambers which are now properly classified as EAR99.  
 9B116—Add 9A012 to Heading.  
 9D001 & 9D002—Removes MT controls for development and production software that was not reflected on the MTCR Annex.  
 9D101—Adds the word “modified”, and changes the word “goods” to “commodities” in the heading.  
 9D102—Moves to 9D104, and removed MT controls on “use” software for those composite structures and preprints controlled in 9A110.  
 9E101—Revises Heading and Related Controls to reflect movement of 9A120 to 9A012, adds technology controls for 9D101 and 9D103 to reflect MTCR Annex controls; and adds new entries 9D104 and 9D105.  
 9E102—Revises Heading to harmonize with European Union List with

regard to 9A004, revises Related Controls to reflect movement of 9A120 to 9A012, and adds new ECCN entries 9D104 and 9D105.

#### Saving Clause

This rule revises the numbering and structure of certain entries on the Commerce Control List. For items under such entries and for July 1, 2003, BIS will accept license applications for items described either by the entries in effect immediately before April 2, 2003 or the entries described in this rule. Shipments of items removed from License Exception eligibility or NLR authorization as a result of this regulatory action that were on dock for loading, on lighter, laden aboard an exporting carrier, or en route aboard a carrier to a port of export, on April 2, 2003, pursuant to actual orders for export to a foreign destination, may proceed to that destination under the previous License Exception eligibility or NLR authorization provisions so long as they have been exported from the United States before June 2, 2003. Any such items not actually exported before midnight, on June 2, 2003, require a license in accordance with this regulation.

Although the Export Administration Act expired on August 20, 2001, Executive Order 13222 of August 17, 2001 (66 FR 44025, August 22, 2001), as extended by the Notice of August 14, 2002 (67 FR 53721, August 16, 2002), continues the Regulations in effect under the International Emergency Economic Powers Act.

#### Rule Making Requirements

1. This final rule has been determined to be not significant for purposes of E.O. 12866.

2. Notwithstanding any other provision of law, no person is required to respond to nor be subject to a penalty for failure to comply with a collection of information, subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a current valid OMB Control Number. This rule involves a collection of information subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*). This collection has been approved by the Office of Management and Budget under control number 0694-0088. There are neither additions nor subtractions to these collections due to this rule.

3. This rule does not contain policies with Federalism as that term is defined in Executive Order 13132.

4. The provisions of the Administrative Procedure Act (5 U.S.C. 553) requiring notice of proposed

rulemaking, the opportunity for public participation, and a delay in effective date, are inapplicable because this regulation involves a military and foreign affairs function of the United States (5 U.S.C. 553(a)(1)). Further, no other law requires that a notice of proposed rulemaking and an opportunity for public comment be given for this final rule. Because a notice of proposed rulemaking and an opportunity for public comment are not required to be given for this rule under the Administrative Procedure Act or by any other law, the analytical requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) are not applicable. Therefore, this regulation is issued in final form. Although there is no formal comment period, public comments on this regulation are welcome on a continuing basis. Comments should be submitted to Sharron Cook, Office of Exporter Services, Bureau of Industry and Security, Department of Commerce, P.O. Box 273, Washington, DC 20044.

#### List of Subjects

##### 15 CFR Part 740

Administrative practice and procedure, Exports, Foreign trade, Reporting and recordkeeping requirements.

##### 15 CFR Parts 742 and 774

Exports, Foreign trade.

■ Accordingly, parts 740, 742, and 774 of the Export Administration Regulations (15 CFR parts 730–799) are amended as follows:

#### PART 740—[AMENDED]

■ 1. The authority citation for 15 CFR part 740 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; Sec. 901–911, Pub. L. 106–387; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 14, 2002, 67 FR 53721, August 16, 2002.

■ 2. Supplement No. 1 to part 740, Country Groups, Country Group A, is amended in Column A:2, Missile Technology Control Regime, by adding an “X” for countries: “Czech Republic”, “Korea, South”, “Poland”, “Turkey”, and “Ukraine”.

#### PART 742—[AMENDED]

■ 3. The authority citation for 15 CFR part 742 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 18 U.S.C. 2510 *et seq.*; 22 U.S.C. 3201 *et seq.*; 42 U.S.C. 2139a; Sec. 901–911, Pub. L. 106–387; Sec. 221, Pub. L. 107–56; E.O. 12058, 43 FR 20947, 3 CFR,

1978 Comp., p. 179; E.O. 12851, 58 FR 33181, 3 CFR, 1993 Comp., p. 608; E.O. 12938, 59 FR 59099, 3 CFR, 1994 Comp., p. 950; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR., 2001 Comp., p. 783; Notice of November 9, 2001, 66 FR 56965, 3 CFR, 2001 Comp., p. 917; Notice of August 14, 2002, 67 FR 53721, August 16, 2002.

- 4. Section 742.5 is amended by revising the phrase “ECCN 1B115.a” to read “ECCN 1B117” in paragraph (c)(1).

## PART 774—[AMENDED]

- 5. The authority citation for 15 CFR part 774 continues to read as follows:

**Authority:** 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 10 U.S.C. 7420; 10 U.S.C. 7430(e); 18 U.S.C. 2510 *et seq.*; 22 U.S.C. 287c, 22 U.S.C. 3201 *et seq.*, 22 U.S.C. 6004; 30 U.S.C. 185(s), 185(u); 42 U.S.C. 2139a; 42 U.S.C. 6212; 43 U.S.C. 1354; 46 U.S.C. app. 466c; 50 U.S.C. app. 5; Sec. 901–911, Pub. L. 106–387; Sec. 221, Pub. L. 107–56; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR., 2001 Comp., p. 783; Notice of August 14, 2002, 67 FR 53721, August 16, 2002.

- 6. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins) is amended by adding Export Control Classification Number (ECCN) 1A101, to read as follows:

**1A101 Devices for reduced observables such as radar reflectivity, ultraviolet/infrared signatures and acoustic signatures, for applications usable in “missiles” and their subsystems.**

### License Requirements

*Reason for Control:* MT, AT

Control(s)	Country Chart
MT applies to entire entry	MT Column 1
AT applies to entire entry	AT Column 1

### License Exceptions

LVS: N/A  
GBS: N/A  
CIV: N/A

### List of Items Controlled

*Unit:* \$ value

*Related Controls:* See also 1C101. For commodities that meet the definition of defense articles under 22 CFR 120.3 of the International Traffic in Arms Regulations (ITAR), see also 22 CFR 121.16, Item 17-Category II of the (ITAR), which describes similar commodities under the jurisdiction of the Department of State, Directorate of Defense Trade Control.

*Related Definitions:* N/A

*Items:* The list of items controlled is contained in the ECCN heading.

- 7. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins) is amended by revising the heading of Export Control Classification Number (ECCN) 1A102, to read as follows:

**1A102 Resaturated pyrolyzed carbon-carbon components designed for “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.)**

- 8. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins) is amended by revising the heading and the Related Definitions paragraph of the List of Items Controlled section of Export Control Classification Number (ECCN) 1B101, to read as follows:

**1B101 Equipment, other than that controlled by 1B001, for the “production” of structural composites, fibers, preprints or preforms as follows (see List of Items Controlled); and specially designed components, and accessories therefor.**

\* \* \* \* \*

### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* \* \* \*

*Related Definitions:* Examples of components and accessories for the machines controlled by this entry are molds, mandrels, dies, fixtures and tooling for the preform pressing, curing, casting, sintering or bonding of composite structures, laminates and manufactures thereof.

*Items:*

\* \* \* \* \*

- 9. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins) is amended by adding Export Control Classification Number (ECCN) 1B102 to follow ECCN 1B101, to read as follows:

**1B102 Metal powder “production equipment,” other than that specified in 1B002, and components as follows (see List of Items Controlled).**

### License Requirements

*Reason for Control:* MT, AT

Control(s)	Country Chart
MT applies to entire entry	MT Column 1

Control(s) Country Chart

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; components in \$ value

*Related Controls:* 1.) See also 1B115.b.

*Related Definitions:* N/A

*Items:*

- a. Metal power “production equipment” usable for the “production,” in a controlled environment, of spherical or atomized materials specified in 1C011.a, 1C011.b, 1C111.a.1, 1C111.a.2, or on the U.S. Munitions List.
- b. Specially designed components for “production equipment” specified in 1B002 or 1B102.a.

**Note:** 1B102 includes:

- a. Plasma generators (high frequency arc-jet) usable for obtaining sputtered or spherical metallic powders with organization of the process in an argon-water environment;
- b. Electroburst equipment usable for obtaining sputtered or spherical metallic powders with organization of the process in an argon-water environment;
- c. Equipment usable for the “production” of spherical aluminum powders by powdering a melt in an inert medium (e.g., nitrogen).

- 10. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins), Export Control Classification Number (ECCN) 1B115 is amended by revising the Heading, and the Related Controls and Items paragraphs in the List of Items Controlled section, to read as follows:

**1B115 Equipment, other than that controlled in 1B002 or 1B102, for the “production” of propellant or propellant constituents, and specially designed components therefor.**

\* \* \* \* \*

### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* For the control of batch mixers, continuous mixers and fluid energy mills, see 1B117, 1B118 and 1B119.

*Related Definitions:* \* \* \*

*Items:*

- a. “Production equipment” for the “production”, handling or acceptance testing of liquid propellants or propellant constituents controlled by 1C011.a, 1C011.b, 1C111 or on the U.S. Munitions List;

b. "Production equipment," for the production, handling, mixing, curing, casting, pressing, machining, extruding or acceptance testing of solid propellants or propellant constituents described in 1C011.a, 1C011.b or 1C111, or on the U.S. Munitions List.

**Note:** 1B115.b does not control batch mixers, continuous mixers or fluid energy mills. For the control of batch mixers, continuous mixers and fluid energy mills see 1B117, 1B118, and 1B119.

**Note 1:** [RESERVED].

**Note 2:** 1B115 does not control equipment for the "production," handling and acceptance testing of boron carbide.

■ 11. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, "Microorganisms," and Toxins), Export Control Classification Number (ECCN) 1B117 is amended by revising the Heading and the *Related Controls*, the *Related Definitions*, and the *Items* paragraphs in the List of Items Controlled section, to read as follows:

**1B117 Batch mixers with provision for mixing under vacuum in the range from zero to 13.326 kPa and with temperature control capability of the mixing chamber and having all of the following characteristics (see List of Items Controlled), and specially designed components therefor.**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* N/A

*Related Definitions:* N/A

*Items:*

a. A total volumetric capacity of 110 liters (30 gallons) or more; and  
b. At least one mixing/kneading shaft mounted off center.

■ 12. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, "Microorganisms," and Toxins) is amended by adding Export Control Classification Number (ECCN) 1B118 to follow ECCN 1B117, to read as follows:

**1B118 Continuous mixers with provision for mixing under vacuum in the range from zero to 13.326 kPa and with temperature control capability of the mixing chamber and having all of the following characteristics (see List of Items Controlled), and specially designed components therefor.**

#### License Requirements

*Reason for Control:* MT, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1
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; components in \$ value

*Related Controls:* N/A

*Related Definitions:* N/A

*Items:*

- a. Two or more mixing/kneading shafts; and
- b. Capability to open the mixing chamber.

■ 13. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, "Microorganisms," and Toxins) is amended by adding Export Control Classification Number (ECCN) 1B119 to follow ECCN 1B118, to read as follows:

**1B119 Fluid energy mills usable for grinding or milling propellant or propellant constituents specified in 1C011.a, 1C011.b or 1C111, or on the U.S. Munitions List, and specially designed components therefor.**

#### License Requirements

*Reason for Control:* MT, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1
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; components in \$ value

*Related Controls:* N/A

*Related Definitions:* N/A

*Items:* The list of items controlled is contained in the ECCN heading.

■ 14. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, "Microorganisms," and Toxins) is amended by revising the Related Controls paragraph in the List of Items Controlled section of Export Control Classification Number (ECCN) 1C010, to read as follows:

**1C010 "Fibrous or filamentary materials" which may be used in organic "matrix", metallic**

"matrix" or carbon "matrix" "composite" structures or laminates, as follows (see List of Items Controlled).

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* (1) See ECCNs 1E001 ("development" and "production") and 1E201 ("use") for technology for items controlled by this entry. (2) Also see ECCNs 1C210 and 1C990. (3) See also 9C110 for material not controlled by 1C010.e, as defined by notes 1 or 2.

*Related Definitions:* \* \* \*

*Items:*

\* \* \* \* \*

■ 15. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, "Microorganisms," and Toxins) is amended by revising the Heading and the *Unit*, the *Related Controls*, and the *Items* paragraphs in the List of Items Controlled section of Export Control Classification Number (ECCN) 1C101, to read as follows:

**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 "missiles" and their subsystems.**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \$ value

*Related Controls:* (1) Materials controlled by this entry include structural materials and coatings (including paints), specially designed for reduced or tailored reflectivity or emissivity in the microwave, infrared or ultraviolet spectra. (2) This entry does not control coatings (including paints) when specially used for the thermal control of satellites. (3) For commodities that meet the definition of defense articles under 22 CFR 120.3 of the International Traffic in Arms Regulations (ITAR), see 22 CFR 121.16, Item 17-Category II of the (ITAR), which describes similar commodities under the jurisdiction of the Department of State, Directorate of Defense Trade Control.

*Related Definitions:* \* \* \*

*Items:* The list of items controlled is contained in the ECCN heading.

■ 16. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, "Microorganisms," and Toxins) is amended by adding Export Control Classification

Number (ECCN) 1C102 to follow ECCN 1C101, to read as follows:

**1C102 Resaturated pyrolyzed carbon-carbon materials designed for space launch vehicles specified in 9A004 or sounding rockets specified in 9A104.** (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.)

■ 17. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, "Microorganisms," and Toxins) is amended by revising the *Related Controls* paragraph and the *Items* paragraph in the List of Items Controlled of Export Control Classification Number (ECCN) 1C107, to read as follows:

**1C107 Graphite and ceramic materials, other than those controlled by 1C007, as follows (see List of Items Controlled).**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* (1) See also OC005 and 1C004. (2) For commodities that meet the definition of defense articles under 22 CFR 120.3 of the ITAR, see 22 CFR 121.16, Item 8-Category II of the International Traffic in Arms Regulations (ITAR), which describes similar commodities under the jurisdiction of the Department of State, Directorate of Defense Trade Control.

*Related Definitions:* \* \* \*

*Items:*

a. Fine grain recrystallized bulk graphites with a bulk density of 1.72 g/cm<sup>3</sup> or greater, measured at 288 K (15 °C), and having a particle size of 100 micrometers or less, usable for rocket nozzles and reentry vehicle nose tips as follows:

a.1. Cylinders having a diameter of 120 mm or greater and a length of 50 mm or greater;

a.2. Tubes having an inner diameter of 65 mm or greater and a wall thickness of 25 mm or greater and a length of 50 mm or greater;

a.3. Blocks having a size of 120 mm x 120 mm x 50 mm or greater.

b. Pyrolytic or fibrous reinforced graphites, usable for rocket nozzles and reentry vehicle nose tips;

c. Ceramic composite materials (dielectric constant less than 6 at frequencies from 100 Hz to 10 GHz), for use in "missile" radomes; and

d. Bulk machinable silicon-carbide reinforced unfired ceramic, usable for nose tips.

■ 18. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1

(Materials, Chemicals, "Microorganisms," and Toxins) is amended by revising the Heading and the *Related Controls* and the *Items* paragraphs in the List of Items Controlled section of Export Control Classification Number (ECCN) 1C111, to read as follows:

**1C111 Propellants and constituent chemicals for propellants, other than those specified in 1C011, as follows (see List of Items Controlled).**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* Butacene as defined by 1C111.c.1 is subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (See 22 CFR 121.12.(b)(6), other ferrocene derivatives)

*Related Definitions:* \* \* \*

*Items:*

a. Propulsive substances:

a.1. Spherical aluminum powder, other than that specified on the U.S. Munitions List, with particles of uniform diameter of less than 200 micrometer and an aluminum content of 97% by weight or more, if at least 10 percent of the total weight is made up of particles of less than 63 micrometer, according to ISO 2591:1988 or national equivalents such as JIS Z8820.

*Technical Note:* A particle size of 63 micrometer (ISO R-565) corresponds to 250 mesh (Tyler) or 230 mesh (ASTM standard E-11).

a.2. Metal fuels, other than that controlled by the U.S. Munitions List, in particle sizes of less than  $60 \times 10^{-6}$  m (60 micrometers), whether spherical, atomized, spheroidal, flaked or ground, consisting 97% by weight or more of any of the following:

a.2.a. Zirconium;  
a.2.b. Beryllium;  
a.2.c. Magnesium; or  
a.2.d. Alloys of the metals specified by a.2.a to a.2.c above.

*Technical Note:* The natural content of hafnium in the zirconium (typically 2 % to 7%) is counted with the zirconium.

a.3. Liquid oxidizers, as follows:

a.3.a. Dinitrogen trioxide;  
a.3.b. Nitrogen dioxide/dinitrogen tetroxide;

a.3.c. Dinitrogen pentoxide;  
b. Polymeric substances:

b.1. Carboxy-terminated polybutadiene (CTPB);  
b.2. Hydroxy-terminated polybutadiene (HTPB), other than that controlled by the U.S. Munitions List;

b.3. Polybutadiene-acrylic acid (PBAA);

b.4. Polybutadiene-acrylic acid-acrylonitrile (PBAN);  
c. Other propellant additives and agents:

c.1. Butacene;  
c.2. Triethylene glycol dinitrate (TEGDN);  
c.3. 2-Nitrodiphenylamine;  
c.4. Trimethylolethane trinitrate (TMETN);  
c.5. Diethylene glycol dinitrate (DEGDN).

■ 19. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, "Microorganisms," and Toxins), Export Control Classification Number (ECCN) 1C118 is amended by revising the Heading and the *Items* paragraph in the List of Items Controlled section, to read as follows:

**1C118 Titanium-stabilized duplex stainless steel (Ti-DSS), having all of the following characteristics (see List of Items Controlled).**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* \* \* \*

*Related Definitions:* \* \* \*

*Items:*

a. Having all of the following characteristics:

a.1. Containing 17.0–23.0 weight percent chromium and 4.5–7.0 weight percent nickel;

a.2. Having a titanium content of greater than 0.10 weight percent; and  
a.3. A ferritic-austenitic

microstructure (also referred to as a two-phase microstructure) of which at least 10 percent is austenite by volume (according to ASTM E-1181-87 or national equivalents), and

b. Having any of the following forms:

b.1. Ingots or bars having a size of 100 mm or more in each dimension;

b.2. Sheets having a width of 600 mm or more and a thickness of 3 mm or less; or

b.3. Tubes having an outer diameter of 600 mm or more and a wall thickness of 3 mm or less.

■ 20. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, "Microorganisms," and Toxins) is amended by removing ECCN 1D102.

■ 21. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, "Microorganisms," and Toxins) is amended by revising the License Requirements section and the License Exceptions section of Export Control Classification Number (ECCN) 1D002, to read as follows:

**1D002 "Software" for the "development" of organic**

**“matrix”, metal “matrix” or carbon “matrix” laminates or “composites”.**

#### License Requirements

*Reason for Control:* NS, AT

Control(s)	Country chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1

**License Requirement Notes:** See § 743.1 of the EAR for reporting requirements for exports under Exceptions.

#### License Exceptions

CIV: Yes

TSR: Yes

\* \* \* \* \*

■ 22. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins), Export Control Classification Number (ECCN) 1D101 is amended by revising the Heading, to read as follows:

**1D101 “Software” specially designed or modified for the “use” of commodities controlled by 1B101, 1B102, 1B115, 1B117, 1B118, or 1B119.**

\* \* \* \* \*

■ 23. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins), Export Control Classification Number (ECCN) 1D103 is amended by revising the Heading, and Related Controls paragraph of the List of Items Controlled section, to read as follows:

**1D103 “Software” specially designed for reduced observables such as radar reflectivity, ultraviolet/infrared signatures and acoustic signatures, for applications usable in “missiles” or their subsystems.**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

**Related Controls:** (1) This entry includes “software” specially designed for analysis of signature reduction. (2) For software that meets the definition of defense articles under 22 CFR 120.3 of the International Traffic in Arms Regulations (ITAR), see 22 CFR 121.16, Item 17-Category II of the (ITAR), which describes similar software that are under the jurisdiction of the Department of State, Directorate of Defense Trade Control.

**Related Definitions:** \* \* \*

*Items:* \* \* \*

■ 24. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins), Export Control Classification Number (ECCN) 1E001 is amended by revising the Heading, and the License Requirements section, to read as follows:

**1E001 “Technology” according to the General Technology Note for the “development” or “production” of items controlled by 1A001.b, 1A001.c, 1A002, 1A003, 1A005, 1A101, 1B, or 1C (except 1C355, 1C980 to 1C984, 1C988, 1C990, 1C991, 1C992, and 1C995).**

#### License Requirements

*Reason for Control:* NS, MT, NP, CB, AT

Control(s)	Country chart
NS applies to “technology” for items controlled by 1A001.b and .c, 1A002, 1A003, 1A005, 1B001 to 1B003, 1B018, 1C001 to 1C010, or 1C018.	NS Column 1
MT applies to “technology” for items controlled by 1A101, 1B001, 1B101, 1B102, 1B115 to 1B119, 1C001, 1C007, 1C011, 1C101, 1C102, 1C107, 1C111, 1C116, 1C117, or 1C118 for MT reasons.	MT Column
NP applies to “technology” for items controlled by 1A002, 1B001, 1B101, 1B201, 1B225 to 1B233, 1C002, 1C010, 1C116, 1C202, 1C210, 1C216, 1C225 to 1C240 for NP reasons.	NP Column 1
CB applies to “technology” for items controlled by 1C351, 1C352, 1C353, or 1C354.	CB Column 1
CB applies to “technology” for materials controlled by 1C350.	CB Column 2
AT applies to entire entry.	AT Column 1

**License Requirements Note:** See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

\* \* \* \* \*

■ 25. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins) is amended by revising the Heading of Export Control Classification Number (ECCN) 1E101, to read as follows:

**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.**

\* \* \* \* \*

■ 26. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins), Export Control Classification Number (ECCN) 1E102 is amended by revising the Heading, and the Related Controls paragraph of the List of Items Controlled section, to read as follows:

**1E102 “Technology” according to the General Technology Note for the “development” of software controlled by 1D001, 1D101 or 1D103.**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

**Related Controls:** This entry includes databases specially designed for analysis of signature reduction.

**Related Definitions:** \* \* \*

**Items:** \* \* \*

■ 27. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins), Export Control Classification Number (ECCN) 1E103 is amended by revising the Heading, to read as follows:

**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.**

\* \* \* \* \*

■ 28. In Supplement No. 1 to part 774 (the Commerce Control List), Category 1 (Materials, Chemicals, “Microorganisms,” and Toxins), Export Control Classification Number (ECCN) 1E104 is amended by revising the Heading and the Related Controls paragraph in the List of Items Controlled section, to read as follows:

**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.**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* N/A

*Related Definitions:* \* \* \*

*Items:* \* \* \*

■ 29. In Supplement No. 1 to part 774 (the Commerce Control List), Category 2 (Materials Processing), ECCN 2B009 is amended by revising the License Requirements and the *Related Controls* paragraph and the *Items* paragraphs in the List of Items Controlled section, to read as follows:

**2B009 Spin-forming machines and flow-forming machines, which, according to the manufacturer's technical specifications, can be equipped with "numerical control" units or a computer control and having all the characteristics (see List of Items Controlled).**

#### License Requirements

*Reason for Control:* NS, MT, NP, AT

Control(s)	Country chart
NS applies to entire entry	NS Column 2
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.	MT Column 1
NP applies to flow-forming machines, and spin-forming machines capable of flow-forming functions, that meet or exceed the parameters of 2B209.	NP Column 1
AT applies to entire entry	AT Column 1

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* (1) See ECCN 2D001 for "software" for items controlled under this entry. (2) See ECCNs 2E001 ("development"), 2E002 ("production"), and 2E101 ("use") for technology for items controlled under this entry. (3) Also see ECCNs 2B109 and 2B209 for additional flow-forming machines for MT and NP reasons.

*Related Definitions:* N/A

*Items:*

a. Two or more controlled axes of which at least two can be coordinated simultaneously for "contouring control"; and

b. A roller force more than 60 kN.

*Technical Note:* Machines combining the function of spin-forming and flow-forming are for the purpose of 2B009 regarded as flow-forming machines.

■ 30. In Supplement No. 1 to part 774 (the Commerce Control List), Category 2 (Materials Processing), ECCN 2B104 is amended by revising the *Related Definitions* paragraph in the List of Items Controlled section, to read as follows:

**2B104 "Isostatic presses", other than those controlled by 2B004, having all of the following characteristics (see List of Items Controlled).**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* \* \* \*

*Related Definitions:* The inside chamber dimension is that of the chamber in which both the working temperature and the working pressure are achieved and does not include fixtures. That dimension will be the smaller of either the inside diameter of the pressure chamber or the inside diameter of the insulated chamber, depending on which of the two chambers is located inside the other.

*Items:* \* \* \*

■ 31. In Supplement No. 1 to part 774 (the Commerce Control List), Category 2 (Materials Processing), ECCN 2B109 is amended by removing the *ECCN Controls* paragraph in the List of Items Controlled section and by revising the *Unit* paragraph, the *Related Controls* paragraph, and the *Items* paragraph in the List of Items Controlled section, to read as follows:

**2B109 Flow-forming machines, other than those controlled by 2B009, and specially designed components therefor.**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* Equipment in number; components in \$ value.

*Related Controls:* (1) See ECCN 2D101 for "software" for items controlled under this entry. (2) See ECCNs 2E001 ("development"), 2E002 ("production"), and 2E101 ("use") for technology for items controlled under this entry. (3) Also see ECCNs 2B009 and 2B209.

*Related Definitions:* \* \* \*

*Items:*

a. Flow-forming machines having all of the following:

a.1. According to the manufacturer's technical specification, can be equipped

with "numerical control" units or a computer control, even when not equipped with such units at delivery; and

a.2. Have more than two axes which can be coordinated simultaneously for "contouring control."

b. Specially designed components for flow-forming machines controlled in 2B009 or 2B109.a.

*Technical Notes:* 1. Machines combining the function of spin-forming and flow-forming are for the purpose of 2B109 regarded as flow-forming machines.

2. 2B109 does not control machines that are not usable in the "production" of propulsion components and equipment (e.g. motor cases) for systems in 9A005, 9A007.a, or 9A105.a.

■ 32. In Supplement No. 1 to part 774 (the Commerce Control List), Category 2 (Materials Processing), ECCN 2B116 is amended by revising the *Related Definitions* paragraph and the *Items* paragraph in the List of Items Controlled section, to read as follows:

**2B116 Vibration test systems, equipment and components therefor, as follows (see List of Items Controlled).**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* \* \* \*

*Related Definitions:* Vibration test systems incorporating a digital controller are those systems, the functions of which are, partly or entirely, automatically controlled by stored and digitally coded electrical signals.

*Items:*

a. Vibration test systems employing feedback or closed loop techniques and incorporating a digital controller, capable of vibrating a system at 10 g RMS or more over the entire range 20 Hz to 2,000 Hz and imparting forces of 50 kN (11,250 lbs.), measured "bare table", or greater;

b. Digital controllers, combined with specially designed vibration test "software", with a real-time bandwidth greater than 5 kHz and designed for use with vibration test systems described in 2B116.a;

c. Vibration thrusters (shaker units), with or without associated amplifiers, capable of imparting a force of 50 kN (11,250 lbs.), measured 'bare table', or greater, and usable in vibration test systems described in 2B116.a;

d. Test piece support structures and electronic units designed to combine multiple shaker units into a complete shaker system capable of providing an effective combined force of 50 kN,

measured 'bare table', or greater, and usable in vibration test systems described in 2B116.a.

**Technical Note:** 'bare table' means a flat table, or surface, with no fixture or fitting.

■ 33. In Supplement No. 1 to part 774 (the Commerce Control List), Category 2 (Materials Processing) is amended by adding ECCNs 2B119, 2B120, 2B121, and 2B122, following ECCN 2B117, to read as follows:

**2B119 Balancing machines and related equipment, as follows (see List of Items Controlled).**

**License Requirements**

*Reason for Control:* MT, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1
AT applies to entire entry	AT Column 1

**License Exceptions**

LVS: N/A

GBS: N/A

CIV: N/A

**List of Items Controlled**

*Unit:* \$ value

*Related Controls:* See also 2B219, 7B101.

*Related Definitions:* N/A

*Items:*

- a. Balancing machines having all the following characteristics:
  - a.1. Not capable of balancing rotors/assemblies having a mass greater than 3 kg;
  - a.2. Capable of balancing rotors/assemblies at speeds greater than 12,500 rpm;
  - a.3. Capable of correcting unbalance in two planes or more; and
  - a.4. Capable of balancing to a residual specific unbalance of 0.2 g mm per kg of rotor mass.

**Note:** 2B119.a. does not control balancing machines designed or modified for dental or other medical equipment.

- b. Indicator heads designed or modified for use with machines specified in 2B119.a.

**Note:** Indicator heads are sometimes known as balancing instrumentation.

**2B120 Motion simulators or rate tables (equipment capable of simulating motion), having all of the following characteristics (see List of Items Controlled).**

**License Requirements**

*Reason for Control:* MT, AT

Control(s)	Country chart
MT applies to entire entry	MT column 1

Control(s)	Country chart
AT applies to entire entry	AT column 1

**License Exceptions**

LVS: N/A

GBS: N/A

CIV: N/A

**List of Items Controlled**

*Unit:* \$ value

*Related Controls:* (1) Rate tables not controlled by 2B120 and providing the characteristics of a positioning table are to be evaluated according to 2B121. (2) Equipment that has the characteristics specified in 2B121, which also meets the characteristics of 2B120 will be treated as equipment specified in 2B120. (3) See also 2B008, 2B121, 7B101 and 7B994.

*Related Definitions:* N/A

*Items:*

- a. Two axes or more;
- b. Slip rings capable of transmitting electrical power and/or signal information; and
- c. Having any of the following characteristics:
  - c.1. For any single axis having all of the following:
    - c.1.a. Capable of rates of rotation of 400 degrees/s or more, or 30 degrees/s or less, and
    - c.1.b. A rate resolution equal to or less than 6 degrees/s and an accuracy equal to or less than 0.6 degrees/s; or
    - c.2. Having a worst-case rate stability equal to or better (less) than plus or minus 0.05% averaged over 10 degrees or more; or
    - c.3. A positioning accuracy equal to or better than 5 arc-second.

**Note:** 2B120 does not control rotary tables designed or modified for machine tools or for medical equipment. For controls on machine tool rotary tables see 2B008.

**2B121 Positioning tables (equipment capable of precise rotary position in any axis), other than those controlled in 2B120, having all the following characteristics (See List of Items Controlled).**

**License Requirements**

*Reason for Control:* MT, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1
AT applies to entire entry	AT Column 1

**License Exceptions**

LVS: N/A

GBS: N/A

CIV: N/A

**List of Items Controlled**

*Unit:* \$ value

**Related Controls:** (1) Equipment that has the characteristics specified in 2B121, which also meets the characteristics of 2B120 will be treated as equipment specified in 2B120.

(2) See also 2B008, 2B120, 7B101 and 7B994.

*Related Definitions:* N/A

*Items:*

- a. Two axes or more; and
- b. A positioning accuracy equal to or better than 5 arc-second.

**Note:** 2B121 does not control rotary tables designed or modified for machine tools or for medical equipment. For controls on machine tool rotary tables see 2B008.

**2B122 Centrifuges capable of imparting accelerations above 100 g and having slip rings capable of transmitting electrical power and signal information.**

**License Requirements**

*Reason for Control:* MT, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1
AT applies to entire entry	AT Column 1

**License Exceptions**

LVS: N/A

GBS: N/A

CIV: N/A

**List of Items Controlled**

*Unit:* \$ value

*Related Controls:* See also 7B101.

*Related Definitions:* N/A

*Items:* The list of items controlled is contained in the ECCN heading.

■ 34. In Supplement No. 1 to part 774 (the Commerce Control List), Category 2 (Materials Processing) is amended by revising the Heading of ECCN 2D101, to read as follows:

**2D101 "Software" specially designed or modified for the "use" of equipment controlled by 2B104, 2B105, 2B109, 2B116, 2B117, or 2B119 to 2B122.**

\* \* \* \* \*

■ 35. In Supplement No. 1 to part 774 (the Commerce Control List), Category 2 (Materials Processing), ECCN 2E001 is amended by revising the License Requirements section, to read as follows:

**2E001 "Technology" according to the General Technology Note for the "development" of equipment or "software" controlled by 2A (except 2A991, 2A993, or 2A994), 2B (except 2B991, 2B993, 2B996, 2B997, or 2B998), or 2D (except 2D991, 2D992, or 2D994).**

**License Requirements***Reason for Control:* NS, MT, NP, CB, AT

Control(s)	Country chart
NS applies to "technology" for items controlled by 2A001, 2B001 to 2B009, 2D001, or 2D002.	NS Column 1
MT applies to "technology" for items controlled by 2B004, 2B009, 2B018, 2B104, 2B105, 2B109, 2B116, 2B117, or 2B119 to 2B122 for MT reasons.	MT Column 1
NP applies to "technology" for items controlled by 2A225, 2A226, 2B001, 2B004, 2B006, 2B007, 2B009, 2B104, 2B109, 2B116, 2B201, 2B204, 2B206, 2B207, 2B209, 2B225 to 2B232 for NP reasons.	NP Column 1
NP applies to "technology" for items controlled by 2A225, 2A226, 2B001, 2B004, 2B006, 2B007, 2B009, 2B104, 2B109, 2B116, 2B201, 2B204, 2B206, 2B207, 2B209, 2B225 to 2B232, 2D001, 2D002, 2D101, 2D201 or 2D202 for NP reasons.	NP Column 2
NP applies to "technology" for items controlled by 2A290 to 2A293, 2B290, or 2D290 for NP reasons.	NP Column 3
CB applies to "technology" for equipment controlled by 2B350 to 2B352.	CB Column 3
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.

\* \* \* \* \*

■ 36. In Supplement No. 1 to part 774 (the Commerce Control List), Category 2 (Materials Processing), ECCN 2E002 is amended by revising the License Requirements section, to read as follows:

**2E002 "Technology" according to the General Technology Note for the "production" of equipment controlled by 2A (except 2A991, 2A993, or 2A994) or 2B (except 2B991, 2B993, 2B996, 2B997, or 2B998).**

**License Requirements***Reason for Control:* NS, MT, NP, CB, AT

Control(s)	Country chart
NS applies to "technology" for equipment controlled by 2A001, 2B001 to 2B009.	NS Column 1

Control(s)	Country chart
MT applies to "technology" for equipment controlled by 2B004, 2B009, 2B018, 2B104, 2B105, 2B109, 2B116, 2B117, or 2B119 to 2B122 for MT reasons.	MT Column 1
NP applies to "technology" for equipment controlled by 2A225, 2A226, 2B001, 2B004, 2B006, 2B007, 2B009, 2B104, 2B109, 2B116, 2B201, 2B204, 2B206, 2B207, 2B209, 2B225 to 2B232 for NP reasons.	NP Column 1
NP applies to "technology" for equipment controlled by 2A290 to 2A293, 2B290 for NP reasons.	NP Column 2
CB applies to "technology" for equipment controlled by 2B350 to 2B352.	CB Column 3
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.

\* \* \* \* \*

■ 37. In Supplement No. 1 to part 774 (the Commerce Control List), Category 2 (Materials Processing), ECCN 2E101 is amended by revising the Heading, the License Requirements section, and the Related Controls paragraph of the List of Items Controlled section, to read as follows:

**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.**

**License Requirements***Reason for Control:* MT, NP, AT

Control(s)	Country chart
MT applies to "technology" for items controlled by 2B004, 2B009, 2B104, 2B105, 2B109, 2B116, 2B117, 2B119 to 2B122, 2D001, or 2D101 for MT reasons.	MT Column 1
NP applies to "technology" for items controlled by 2B004, 2B009, 2B104, 2B109, 2B116, 2D001, 2D002 or 2D101 for NP reasons.	NP Column 1
AT applies to entire entry.	AT Column 1

**List of Items Controlled***Unit:* \* \* \*

*Related Controls:* (1) This entry controls only "technology" for 2B009 and 2B109 for spin forming machines combining the functions of spin forming and flow forming, and flow forming machines.

*Related Definitions:* \* \* \*

■ 38. In Supplement No. 1 to part 774 (the Commerce Control List), Category 3 (Electronics), ECCN 3A001 is amended by revising the License Requirement section, to read as follows:

**3A001 Electronic components, as follows (see List of Items Controlled).**

**License Requirements***Reason for Control:* NS, MT, NP, AT

Control(s)	Country chart
NS applies to entire entry	NS Column 2
MT applies to 3A001.a.1.a when usable in "missiles"; and to 3A001.a.5.a when "designed or modified" for military use, hermetically sealed and rated for operation in the temperature range from below -54°C to above +125°C.	MT Column 1
NP applies to pulse discharge capacitors in 3A001.e.2 and superconducting solenoidal electromagnets in 3A001.e.3 that meet or exceed the technical parameters in 3A201.a and 3A201.b, respectively.	NP Column 1
AT applies to entire entry	AT Column 1
* * * * *	
■ 39. In Supplement No. 1 to part 774 (the Commerce Control List), Category 3 (Electronics), ECCN 3A101 is amended by revising the Items paragraph in the List of Items Controlled section to read as follows:	
<b>3A101 Electronic equipment, devices and components, other than those controlled by 3A001, as follows (see List of Items Controlled).</b>	
* * * * *	
<b>List of Items Controlled</b>	
<i>Unit:</i> * * *	
<i>Related Controls:</i> * * *	
<i>Related Definitions:</i> * * *	
<i>Items:</i>	
a. Analog-to-digital converters, usable in "missiles", designed to meet military specifications for ruggedized equipment;	
b. Accelerators capable of delivering electromagnetic radiation produced by	

bremssstrahlung from accelerated electrons of 2 MeV or greater, and systems containing those accelerators, usable for the “missiles” or the subsystems of “missiles”.

**Note:** 3A101.b above does not include equipment specially designed for medical purposes.

■ 40. In Supplement No. 1 to part 774 (the Commerce Control List), Category 3 (Electronics) is amended by removing ECCN 3D102.

■ 41. In Supplement No. 1 to part 774 (the Commerce Control List), Category 3 (Electronics) is amended by revising the heading of ECCN 3D101, to read as follows:

**3D101 “Software” specially designed or modified for the “use” of equipment controlled by 3A101.b.**

\* \* \* \* \*

■ 42. In Supplement No. 1 to part 774 (the Commerce Control List), Category 3 (Electronics), ECCN 3E101 is amended by revising the Heading, to read as follows:

**3E101 “Technology” according to the General Technology Note for the “use” of equipment or “software” controlled by 3A001.a.1 or .2, 3A101, or 3D101.**

\* \* \* \* \*

■ 43. In Supplement No. 1 to part 774 (the Commerce Control List), Category 4 (Computers), ECCN 4D001 is amended by revising the License Requirements and License Exceptions sections, to read as follows:

**4D001 “Software” specially designed or modified for the “development”, “production” or “use” of equipment or “software” controlled by 4A001 to 4A004, or 4D (except 4D980, 4D993 or 4D994).**

**License Requirements**

*Reason for Control:* NS, CC, AT, NP, XP

Control(s)	Country chart
NS applies to “software” for commodities or software controlled by 4A001 to 4A004, 4D001 to 4D003.	NS Column 1
CC applies to “software” for computerized fingerprint equipment controlled by 4A003 for CC reasons.	CC Column 1
AT applies to entire entry	AT Column 1

NP applies, unless a License Exception is available. See § 742.3(b) of the EAR for information on applicable licensing review policies.

XP applies to “software” for computers with a CTP greater than

28,000 MTOPS, unless a License Exception is available. XP controls vary according to destination and end-user and end-use; however, XP does not apply to Canada. See § 742.12 of the EAR for additional information.

**License Requirement Notes:** See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

**License Exceptions**

CIV: N/A

TSR: (a) N/A for:

(1) “Software” for equipment or “software” requiring a license; or  
(2) “Software” described by TSR paragraph (b)(1)(ii) of this License Exception section, when exported or reexported to a destination not included in TSR paragraph (b)(1)(i) of this License Exception section.

(b) Yes for:

(i) Exported or reexported to Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, or the United Kingdom; and  
(ii) Specially designed for the “development” or “production” of any of the following:

(A) “Digital” computers controlled by 4A003.b and having a CTP exceeding than 33,000 MTOPS; or

(B) “Electronic assemblies” controlled by 4A003.c and capable of enhancing performance by aggregation of “computing elements” so that the CTP of the aggregation exceeds 33,000 MTOPS; and

(2) All other “software” not described in TSR paragraphs (a) or (b)(1) of this License Exception section.

\* \* \* \* \*

■ 44. In Supplement No. 1 to part 774 (the Commerce Control List), Category 4 (Computers), ECCN 4D002 is amended by revising the License Requirements and the License Exceptions sections, to read as follows:

**4D002 “Software” specially designed or modified to support “technology” controlled by 4E (except 4E980, 4E992, and 4E993).**

**License Requirements**

*Reason for Control:* NS, AT, NP, XP

Control(s)	Country chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1

NP applies, unless a License Exception is available. See § 742.3(b) of the EAR for information on applicable licensing review policies.

XP applies to “software” for computers with a CTP greater than 28,000 MTOPS, unless a License Exception is available. XP controls vary according to destination and end-user and end-use; however, XP does not apply to Canada. See § 742.12 of the EAR for additional information.

**License Exceptions**

CIV: N/A

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

\* \* \* \* \*

■ 45. In Supplement No. 1 to part 774 (the Commerce Control List), Category 4 (Computers) is amended by removing ECCN 4D102.

■ 46. In Supplement No. 1 to part 774 (the Commerce Control List), Category 4 (Computers), ECCN 4D994 is amended by revising the Heading, to read as follows:

**4D994 “Software” specially designed or modified for the “development”, “production”, or “use” of equipment controlled by 4A101, 4A994, 4B994, and materials controlled by 4C994.**

\* \* \* \* \*

■ 47. In Supplement No. 1 to part 774 (the Commerce Control List), Category 4 (Computers), ECCN 4E001 is amended by revising the License Requirements section, to read as follows:

**4E001 “Technology” according to the General Technology Note, for the “development”, “production” or “use” of equipment or “software” controlled by 4A (except 4A980, 4A993 or 4A994) or 4D (except 4D980, 4D993, 4D994).**

**License Requirements**

*Reason for Control:* NS, MT, CC, AT, NP, XP

Control(s)	Country chart
NS applies to “technology” for commodities or software controlled by 4A001 to 4A004, 4D001 to 4D003.	NS Column 1
MT applies to “technology” for items controlled by 4A001.a and 4A101 for MT reasons.	MT Column 1
CC applies to “technology” for computerized fingerprint equipment controlled by 4A003 for CC reasons.	CC Column 1
AT applies to entire entry	AT Column 1

NP applies, unless a License Exception is available. See § 742.3(b) of

the EAR for information on applicable licensing review policies.

XP applies to "technology" for computers with a CTP greater than 28,000 MTOPS, unless a License Exception is available. XP controls vary according to destination and end-user and end-use, however, XP does not apply to Canada. See § 742.12 of the EAR for additional information.

**License Requirement Notes:** See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

\* \* \* \* \*

■ 48. In Supplement No. 1 to part 774 (the Commerce Control List), Category 5 (Telecommunications and "Information Security"), Part I. (Telecommunications), ECCN 5A101 is amended by revising the Heading and the Items paragraph in the List of Items Controlled section, to read as follows:

**5A101 Telemetering and telecontrol equipment as follows (see List of Items Controlled).**

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* \* \* \*

*Related Definitions:* \* \* \*

*Items:*

- a. Usable for unmanned air vehicles or rocket systems; *and*
- b. Usable for "missiles."

**Note:** 5A101 does not control telecontrol equipment specially designed to be used for remote control of recreational model planes, boats or vehicles and having an electric field strength of not more than 200 microvolts per meter at a distance of 500 meters.

■ 49. In Supplement No. 1 to part 774 (the Commerce Control List), Category 5 (Telecommunications and "Information Security"), Part I. (Telecommunications), ECCN 5D101 is amended by revising the Heading, to read as follows:

**5D101 "Software" specially designed or modified for the "use" of items controlled by 5A101.**

\* \* \* \* \*

■ 50. In Supplement No. 1 to part 774 (the Commerce Control List), Category 5 (Telecommunications and "Information Security"), Part I. (Telecommunications) is amended by removing 5E111.

■ 51. In Supplement No. 1 to part 774 (the Commerce Control List), Category 5 (Telecommunications and "Information Security"), Part I. (Telecommunications), ECCN 5E101 is amended by revising the Heading, to read as follows:

**E101 "Technology" according to the General Technology Note for the "development," "production" or**

**"use" of equipment or software controlled by 5A101 or 5D101.**

\* \* \* \* \*

■ 52. In Supplement No. 1 to part 774 (the Commerce Control List), Category 6 (Sensors and Lasers), ECCN 6A002 is amended by revising the License Requirements section, to read as follows:

**6A002 Optical sensors.**

**License Requirements**

*Reason for Control:* NS, MT, CC, RS, AT, UN

Control(s)	Country chart
NS applies to entire entry	NS Column 2
MT applies to optical detectors in 6A002.a.1, a.3, or .e that are specially designed or modified to protect "missiles" against nuclear effects (e.g., Electromagnetic Pulse (EMP), X-rays, combined blast and thermal effects), and usable for "missiles".	MT Column 1
RS applies to 6A002.a.1, a.2, a.3, .c, and .e.	RS Column 1
CC applies to police-model infrared viewers in 6A002.c.	CC Column 1
AT applies to entire entry	AT Column 1
UN applies to 6A002.a.1, a.2 a.3 and c.	Rwanda.

**License Requirement Notes:** See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

\* \* \* \* \*

■ 53. In Supplement No. 1 to part 774 (the Commerce Control List), Category 6 (Sensors and Lasers), ECCN 6A102 is amended by revising the Heading, to read as follows:

**6A102 Radiation hardened detectors, other than those controlled by 6A002, specially designed or modified for protecting against nuclear effects (e.g., Electromagnetic Pulse (EMP), X-rays, combined blast and thermal effects) and usable for "missiles," designed or rated to withstand radiation levels which meet or exceed a total irradiation dose of 5**

**$\times 10^5$  rads (silicon).**

\* \* \* \* \*

■ 54. In Supplement No. 1 to part 774 (the Commerce Control List), Category 6 (Sensors and Lasers) is amended by adding ECCN 6A103, to read as follows:

**6A103 Radomes designed to withstand a combined thermal shock greater than 100 cal/sq cm accompanied by a peak over pressure of greater than 50 kPa, usable in protecting "missiles" against nuclear effects (e.g.,**

**Electromagnetic Pulse (EMP), X-rays, combined blast and thermal effects), and usable for "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.)

■ 55. In Supplement No. 1 to part 774 (the Commerce Control List), Category 6 (Sensors and Lasers), ECCN 6A107 is amended by revising the Heading and the Items paragraph in the List of Items Controlled section, to read as follows:

**6A107 Gravity meters (gravimeters) and specially designed components for gravity meters and gravity gradiometers, as follows (see List of Items Controlled).**

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* \* \* \*

*Related Definitions:* \* \* \*

*Items:*

- a. Gravity meters (gravimeters), other than those controlled by 6A007.b, designed or modified for airborne or marine use, and having a static or operational accuracy of  $7 \times 10^{-6}$  m/s<sup>2</sup> (0.7 milligal) or better, and having a time to steady-state registration of two minutes or less, usable for "missiles";

- b. Specially designed components for gravity meters controlled in 6A007.b or 6A107.a and gravity gradiometers controlled in 6A007.c.

■ 56. In Supplement No. 1 to part 774 (the Commerce Control List), Category 6 (Sensors and Lasers), ECCN 6A108 is amended by revising the Items paragraph in the List of Items Controlled section, to read as follows:

**6A108 Radar systems and tracking systems, other than those controlled by 6A008, as follows (see List of Items Controlled).**

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* \* \* \*

*Related Definitions:* \* \* \*

*Items:*

- a. Radar and laser radar systems designed or modified for use in "missiles";

- Note:** 6A108.a includes the following:
  - a. Terrain contour mapping equipment;
  - b. Imaging sensor equipment;
  - c. Scene mapping and correlation (both digital and analog) equipment;
  - d. Doppler navigation radar equipment.

- b. Precision tracking systems, usable for "missiles", as follows:

- b.1.** Tracking systems which use a code translator installed on the rocket or

unmanned air vehicle in conjunction with either surface or airborne references or navigation satellite systems to provide real-time measurements of in-flight position and velocity;

b.2. Range instrumentation radars including associated optical/infrared trackers with all of the following capabilities:

b.2.a. Angular resolution better than 3 milliradians (0.5 mils);

b.2.b. Range of 30 km or greater with a range resolution better than 10 m rms;

b.2.c. Velocity resolution better than 3 m/s.

■ 57. In Supplement No. 1 to part 774 (the Commerce Control List), Category 6 (Sensors and Lasers), ECCN 6B108 is amended by revising the Heading, to read as follows:

**6B108 Systems, other than those controlled by 6B008, specially designed for radar cross section measurement usable for "missiles" and their subsystems.**

\* \* \* \* \*

■ 58. In Supplement No. 1 to part 774 (the Commerce Control List), Category 6 (Sensors and Lasers), ECCN 6D102 is amended by revising the Heading, to read as follows:

**6D102 "Software" specially designed or modified for the "use" of goods controlled by 6A108.**

\* \* \* \* \*

■ 59. In Supplement No. 1 to part 774 (the Commerce Control List), Category 6 (Sensors and Lasers), ECCN 6D103 is amended by revising the Heading, to read as follows:

**6D103 "Software" that processes post-flight, recorded data, enabling determination of vehicle position throughout its flight path, specially designed or modified for "missiles".**

\* \* \* \* \*

■ 60. In Supplement No. 1 to part 774 (the Commerce Control List), Category 6 (Sensors and Lasers) is amended by removing ECCN 6D104.

■ 61. In Supplement No. 1 to part 774 (the Commerce Control List), Category 6 (Sensors and Lasers) is amended by removing ECCN 6E102.

■ 62. In Supplement No. 1 to part 774 (the Commerce Control List), Category 6 (Sensors and Lasers), ECCN 6E101 is amended by revising the Related Definitions paragraph of the List of Items Controlled section, to read as follows:

**6E101 "Technology" according to the General Technology Note for the "use" of equipment or "software" controlled by 6A002, 6A007.b and**

.c, 6A008, 6A102, 6A107, 6A108, 6B108, 6D102 or 6D103.

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* \* \* \*

*Related Definitions:* (1) This entry only controls "technology" for equipment controlled by 6A008 when it is designed for airborne applications and is usable in "missiles". (2) This entry only controls "technology" for items in 6A002.a.1, a.3, and .e that are specially designed or modified to protect "missiles" against nuclear effects (e.g., Electromagnetic Pulse (EMP), X-rays, combined blast and thermal effects), and usable for "missiles." (3) This entry only controls "technology" for items in 6A007.b and .c when the accuracies in 6A007.b.1 and b.2 are met or exceeded.

*Items:* \* \* \*

■ 63. In Supplement No. 1 to part 774 (the Commerce Control List), Category 7 (Navigation and Avionics), ECCN 7B001 is amended by revising the Related Controls paragraph in the List of Items Controlled section, to read as follows:

**7B001 Test, calibration or alignment equipment specially designed for equipment controlled by 7A (except 7A994).**

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* (1) See also 7B101, 7B102 and 7B994. (2) This entry does not control test, calibration or alignment equipment for Maintenance level I.

*Related Definition:* \* \* \*

*Items:* \* \* \*

■ 64. In Supplement No. 1 to part 774 (the Commerce Control List), Category 7 (Navigation and Avionics), ECCN 7B003 is amended by revising the Related Controls paragraph of the List of Items Controlled section, to read as follows:

**7B003 Equipment specially designed for the "production" of equipment controlled by 7A (except 7A994).**

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*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)) and 7B994. (2) This entry includes:

Inertial Measurement Unit (IMU module) tester; IMU platform tester; IMU stable element handling fixture;

IMU platform balance fixture; gyro tuning test station; gyro dynamic balance station; gyro run-in/motor test station; gyro evacuation and fill station; centrifuge fixtures for gyro bearings; accelerometer axis align station; and accelerometer test station.

*Related Definitions:* \* \* \*

*Items:* \* \* \*

■ 65. In Supplement No. 1 to part 774 (the Commerce Control List), Category 7 (Navigation and Avionics), ECCN 7B101 is amended by revising the Heading and the Related Controls paragraph in the List of Items Controlled section, to read as follows:

**7B101 "Production equipment", and other test, calibration, and alignment equipment, other than that described in 2B119 to 2B122, 7B003, and 7B102, designed or modified to be used with equipment controlled by 7A001 to 7A004 or 7A101 to 7A104.**

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* (1) See also 2B119 to 2B122, 7B003, 7B102, and 7B994. (2) This entry includes: inertial measurement unit (IMU module) tester; IMU platform tester; IMU stable element handling fixture; IMU platform balance fixture; gyro tuning test station; gyro dynamic balance stations; gyro run-in/motor test stations; gyro evacuation and filling stations; centrifuge fixtures for gyro bearings; accelerometer axis align stations; and accelerometer test stations.

*Related Definitions:* \* \* \*

*Items:* \* \* \*

■ 66. In Supplement No. 1 to part 774 (the Commerce Control List), Category 7 (Navigation and Avionics), ECCN 7B102 is amended by revising the Items paragraph of the List of Items Controlled section, to read as follows:

**7B102 Equipment, other than those controlled by 7B002, designed or modified to characterize mirrors, for laser gyro equipment, as follows (see List of Items Controlled).**

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* \* \* \*

*Related Definitions:* \* \* \*

*Items:*

a. Scatterometers having a threshold accuracy of 10 ppm or less (better).

b. Reflectometers having a threshold accuracy of 50 ppm or less (better).

c. Prolifometers having a threshold accuracy of 0.5nm (5 angstrom) or less (better).

■ 67. In Supplement No. 1 to part 774 (the Commerce Control List), Category 7 (Navigation and Avionics) is amended by removing ECCN 7B104.

■ 68. In Supplement No. 1 to part 774 (the Commerce Control List), Category 7 (Navigation and Avionics), ECCN 7D101 is amended by revising the Heading, to read as follows:

**7D101 "Software" specially designed or modified for the "use" of equipment controlled by 7A001 to 7A006, 7A101 to 7A106, 7A115, 7A116, 7B001, 7B002, 7B003, 7B101, 7B102, or 7B103.**

\* \* \* \* \*

■ 69. In Supplement No. 1 to part 774 (the Commerce Control List), Category 7 (Navigation and Avionics), ECCN 7D102 is amended by revising the Heading and the Items paragraph of the List of Items Controlled section, to read as follows:

**7D102 Integration "software", as follows (See List of Items Controlled).**

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* \* \* \*

*Related Definitions:* \* \* \*

*Items:*

a. Integration "software" for the equipment controlled by 7A103.b.

b. Integration "software" specially designed for the equipment controlled by 7A003 or 7A103.a.

■ 70. In Supplement No. 1 to part 774 (the Commerce Control List), Category 7 (Navigation and Avionics) is amended by revising the *Reason for Control* paragraph in the License Requirements section, the Related Controls paragraph in the List of Items Controlled section, and removing the second Related Controls paragraph that reads "Related Controls: N/A" of ECCN 7E001, to read as follows:

**7E001 "Technology" according to the General Technology Note for the "development" of equipment or "software" controlled by 7A (except 7A994), 7B (except 7B994) or 7D (except 7D994).**

**License Requirements**

*Reason for Control:* NS, MT, RS, AT

Control(s) Country chart

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* (1) See also 7E101 and 7E994. (2) The "technology" related to 7A003.b, 7A005, 7A007, 7A103.b,

7A105, 7A106, 7A115, 7A116, 7A117, 7B103, software in 7D101 specified in the Related Controls paragraph of ECCN 7D101, 7D102.a, or 7D103 are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Control (see 22 CFR part 121).

*Related Definitions:* \* \* \*

*Items:* \* \* \*

■ 71. In Supplement No. 1 to part 774 (the Commerce Control List), Category 7 (Navigation and Avionics), ECCN 7E101 is amended by revising the Heading and the Related Controls paragraph of the List of Items Controlled section, to read as follows:

**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.**

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* (1) The "technology" related to 7A003.b, 7A005, 7A103.b, 7A105, 7A106, 7A115, 7A116, 7A117, 7B103, software specified in the Related Controls paragraph of ECCN 7D101, 7D102.a, or 7D103 are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls. (See 22 CFR part 121.) (2) "Technology" for inertial navigation systems and inertial equipment, and specially designed components therefor, not for use on civil aircraft are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls. (See 22 CFR part 121.)

*Related Definitions:* \* \* \*

*Items:* \* \* \*

■ 72. In Supplement No. 1 to part 774 (the Commerce Control List), Category 7 (Navigation and Avionics), revise ECCN 7E104, to read as follows:

**7E104 Design "Technology" for the integration of the flight control, guidance, and propulsion data into a flight management system, designed or modified for "missiles", for optimization of rocket system trajectory. (This entry is subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls. See 22 CFR part 121.)**

■ 73. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment), ECCN 9A106 is

amended by revising the Heading, to read as follows:

**9A106 Systems or components, other than those controlled by 9A006, usable in "missiles", as follows (see List of Items Controlled), and specially designed for liquid rocket propulsion systems.**

\* \* \* \* \*

■ 74. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment), ECCN 9A110 is amended by revising the Heading and the Related Controls paragraph of the List of Items Controlled section, to read as follows:

**9A110 Composite structures, laminates and manufactures thereof, other than those controlled by entry 9A010, specially designed for use in "missiles" or the subsystems controlled by entries 9A005, 9A007, 9A105.a, 9A106 to 9A108, 9A116, or 9A119.**

\* \* \* \* \*

**List of Items Controlled**

*Unit:* \* \* \*

*Related Controls:* (1) See also 1A002. (2) "Composite structures, laminates, and manufactures thereof, specially designed for use in missile systems are under the licensing authority of the Directorate of Defense Trade Controls, U.S. Department of State, except those specially designed for non-military unmanned air vehicles controlled in 9A012.

*Related Definitions:* \* \* \*

*Items:* \* \* \*

■ 75. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment), revise ECCNs 9A115 and 9A117, to read as follows:

**9A115 Apparatus, devices and vehicles, designed or modified for the transport, handling, control, activation and launching of "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.)**

\* \* \* \* \*

**9A117 Staging mechanisms, separation mechanisms, and interstages thereof, 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.)**

■ 76. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment), ECCN 9B005 is

amended by revising the License Requirements section, to read as follows:

**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 (see List of Items Controlled).**

#### License Requirements

*Reason for Control:* NS, AT

Control(s)	Country chart
NS applies to entire entry	NS Column 1
AT applies to entire entry	AT Column 1

\* \* \* \* \*

■ 77. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment), ECCN 9B106 is amended by revising the Items paragraph of the List of Items Controlled section, to read as follows:

**9B106 Environmental chambers and anechoic chambers, as follows (see List of Items Controlled).**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* \* \* \*

*Related Definitions:* \* \* \*

*Items:*

a. Environmental chambers capable of simulating all of the following flight conditions:

a.1. Vibration environments of 10 g RMS or greater between 20 Hz and 2,000 Hz imparting forces of 5 kN or greater; and

a.2. Any of the following:

a.2.a. Altitude of 15,000 m or greater; or

a.2.b. Temperature range of at least 223 K ( $-50^{\circ}\text{C}$ ) to 398 K ( $+125^{\circ}\text{C}$ );

b. Anechoic chambers capable of simulating all of the following flight conditions:

b.1. Acoustic environments at an overall sound pressure level of 140 dB or greater (referenced to  $2 \times 10^{-5} \text{ N/m}^2$ ) or with a rated power output of 4 kW or greater; and

b.2. any of the following:

b.2.a. Altitude of 15,000 m or greater; or

b.2.b. Temperature range of at least 223K ( $-50^{\circ}\text{C}$ ) to 398 K ( $+125^{\circ}\text{C}$ ).

■ 78. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment), ECCN 9B116 is amended by revising the Heading, to read as follows:

**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.**

\* \* \* \* \*

■ 79. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment) is amended by adding ECCN 9C110 in Product Group C, Materials, to read as follows:

**9C110 Resin impregnated fiber preprints and metal coated fiber preforms therefor, for composite structures, laminates and manufactures specified in 9A110, made either with organic matrix or metal matrix utilizing fibrous or filamentary reinforcements having a specific tensile strength greater than  $7.62 \times 10^4 \text{ m}$  and a specific modulus greater than  $3.18 \times 10^6 \text{ m}$ .**

#### License Requirements

*Reason for Control:* MT, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1
AT applies to entire entry	AT Column 1

#### License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

#### List of Items Controlled

*Unit:* Kilograms

*Related Controls:* (1) See also 1C010 and 1C210.c. (2) The only resin impregnated fiber preprints controlled by entry 9C110 are those using resins with a glass transition temperature ( $T_g$ ), after cure, exceeding 418 K (145 °C) as determined by ASTM D4065 or national equivalents.

*Related Definitions:* N/A

*Items:* The list of items controlled is contained in the ECCN heading.

■ 80. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment), ECCN 9D001 is amended by revising the License Requirements section, and the Related Controls paragraph of the List of Items Controlled section, to read as follows:

**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.**

#### License Requirements

*Reason for Control:* NS, MT, AT

Control(s)	Country chart
NS applies to “software” for items controlled by 9A001 to 9A003, 9A012, 9B001 to 9B009, and 9E003.	NS Column 1
MT applies to “software” for equipment controlled by 9A106.a and .b, or 9B116 for MT reasons.	MT Column 1
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.

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* (1) “Software” required for the “development” of items controlled by 9A004 is subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls. (See 22 CFR part 121.) (2) “Software” required for the “development” of equipment or “technology” subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls is also subject to the same licensing jurisdiction. (See 22 CFR part 121.)

*Related Definitions:* \* \* \*

*Items:* \* \* \*

■ 81. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment), ECCN 9D002 is amended by revising the Heading and the License Requirements section, to read as follows:

**9D002 “Software” specially designed or modified for the “production” of equipment controlled by 9A (except 9A018, 9A990, or 9A991) or 9B (except 9B990 or 9B991).**

#### License Requirements

*Reason for Control:* NS, MT, AT

Control(s)	Country chart
NS applies to “software” for equipment controlled by 9A001 to 9A003, 9A012, 9B001 to 9B009, or 9E003.	NS Column 1
MT applies to “software” for equipment controlled by 9B116 for MT reasons.	MT Column 1
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.

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■ 82. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment), ECCN 9D101 is amended by revising the Heading, to read as follows:

**9D101 "Software" specially designed or modified for the "use" of commodities controlled by 9B105, 9B106, 9B116, or 9B117.**

\* \* \* \* \*

■ 83. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment) is amended by removing ECCN 9D102.

■ 84. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment) is amended by adding ECCN 9D104 to follow 9D103, to read as follows:

**9D104 "Software" specially designed and modified for the "use" of equipment controlled by 9A001, 9A005, 9A006.d, 9A006.g, 9A007.a, 9A008.d, 9A009.a, 9A010.d, 9A011, 9A012 (for MT controlled items only), 9A101, 9A105, 9A106.c and .d, 9A107, 9A108.c, 9A109, 9A111, 9A115.a, 9A116.d, 9A117, or 9A118.**

#### License Requirements

*Reason for Control:* MT, AT

Control(s)	Country chart
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MT applies to entire entry	MT Column 1
AT applies to entire entry	AT Column 1

#### License Exceptions

CIV: N/A  
TSR: N/A

#### List of Items Controlled

*Unit:* \$ value

*Related Controls:* "Software" for commodities controlled by 9A005 to

9A011, 9A105, 9A106.c, 9A107 to 9A109, 9A111, 9A115, 9A116, 9A117, and 9A118 are subject to the export licensing authority of the U.S.

Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121).

*Related Definitions:* N/A

*Items:* The list of items controlled is contained in the ECCN heading.

■ 85. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment) is amended by adding ECCN 9D105 to follow the new ECCN 9D104, to read as follows:

**9D105 "Software" that coordinates the function of more than one subsystem, specially designed or modified for "use" 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.)**

■ 86. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment), ECCN 9E101 is amended by revising the Heading, and the Related Controls paragraph of the List of Items Controlled section, to read as follows:

**9E101 "Technology" according to the General Technology Note for the "development" or "production" of commodities or software controlled by 9A012, 9A101, 9A104 to 9A111, 9A115 to 9A119, 9D101, 9D103, 9D104 or 9D105.**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* "Technology"

controlled by 9E101 for items in 9A012, 9A101.b, 9A104, 9A105, to 9A109, 9A110 that are specially designed for use in missile systems and subsystems, 9A111, 9A115, 9A116 to 9A119, 9D103, and 9D105 are subject to the export licensing authority of the U.S. Department of

State, Directorate of Defense Trade Controls (see 22 CFR part 121).

*Related Definitions:* \* \* \*

*Items:* \* \* \*

■ 87. In Supplement No. 1 to part 774 (the Commerce Control List), Category 9 (Propulsion Systems, Space Vehicles and Related Equipment), ECCN 9E102 is amended by revising the Heading, and the Related Controls paragraph of the List of Items Controlled section, to read as follows:

**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, 9B116, 9B117, 9D101, 9D103, 9D104 or 9D105.**

\* \* \* \* \*

#### List of Items Controlled

*Unit:* \* \* \*

*Related Controls:* (1) For the purpose of this entry, "use" "technology" is limited to items controlled for MT and their subsystems. (2) "Technology" controlled by 9E102 for commodities or software subject to the export licensing jurisdiction of the Department of State in 9A004 to 9A012, 9A101.b, 9A104, 9A105, 9A106.a to .c, 9A107 to 9A109, 9A110 that are specially designed for use in missile systems and subsystems, 9A111, 9A115 to 9A119, 9B115, 9B116, 9D103, specified software in 9D104, and 9D105 are subject to the export licensing authority of the U.S. Department of State, Directorate of Defense Trade Controls (see 22 CFR part 121).

*Related Definitions:* \* \* \*

*Items:* \* \* \*

Dated: March 25, 2003.

**James J. Jochum,**

*Assistant Secretary for Export Administration.*

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