

License Exceptions
CIV: N/A
TSR: N/A
List of Items Controlled
Unit: N/A
Related Controls: N/A

Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

EAR99 Items subject to the EAR that are not elsewhere specified in this CCL Category or in any other category in the CCL are designated by the number EAR99.

CATEGORY 1—MATERIALS, CHEMICALS, “MICROORGANISMS” & “TOXINS”

A. Systems, Equipment and Components

1A001 Components made from fluorinated compounds, as follows (see List of Items Controlled).
License Requirements
Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry AT applies to entire entry	NS Column 2 AT Column 1

License Exceptions
LVS: \$5,000
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: Items specially designed or modified for missiles or for items on the U.S. Munitions List are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls (see 22 CFR part 121.)
Related Definitions: N/A
Items:
a. Seals, gaskets, sealants or fuel bladders specially designed for “aircraft” or aerospace use made from more than 50% by weight of any of the materials controlled by 1C009.b or 1C009.c;
b. Piezoelectric polymers and copolymers made from vinylidene fluoride materials controlled by 1C009.a:
b.1. In sheet or film form; and
b.2. With a thickness exceeding 200 µm;
c. Seals, gaskets, valve seats, bladders or diaphragms made from fluoroelastomers containing at least one vinyl ether monomer, specially designed for “aircraft”, aerospace or missile use.

1A002 “Composite” structures or laminates, having any of the following (see List of Items Controlled).
License Requirements
Reason for Control: NS, NP, AT

Control(s)	Country Chart
NS applies to entire entry except finished or semi-finished items specially designed for purely civilian applications as follows: sporting goods, automotive industry, machine tool industry, and medical applications. NP applies to 1A002.b.1 in the form of tubes with an inside diameter between 75 mm and 400 mm AT applies to entire entry	NS Column 2 NP Column 1 AT Column 1

License Requirement Notes: See §743.1 of the EAR for reporting requirements for exports under License Exceptions.
License Exceptions
LVS: \$1,500; N/A for “composite” structures or laminates controlled by 1A002.a, having an organic “matrix” and made from materials controlled by 1C010.c or 1C010.d
GBS: N/A
CIV: N/A

List of Items Controlled
Unit: Kilograms
Related Controls: (1) See also 1A202, 9A010, and 9A110. (2) This entry does not control “composite” structures or laminates made from epoxy resin impregnated carbon “fibrous or filamentary materials” for the repair of aircraft structures of laminates, provided that the size does not exceed one square meter (1 m²)
Related Definitions: N/A
Items:
a. An organic “matrix” and made from materials controlled by 1C010.c, 1C010.d or 1C010.e; or
b. A metal or carbon “matrix” and made from:
b.1. Carbon “fibrous or filamentary materials” with:
b.1.a. A “specific modulus” exceeding 10.15x10⁶ m; and
b.1.b. A “specific tensile strength” exceeding 17.7x10⁴ m; or
b.2. Materials controlled by 1C010.c.

Technical Notes:

(1) Specific modulus: Young’s modulus in pascals, equivalent to N/m²divided by specific weight in N/m³, measured at a temperature of (296±2) K ((23±2) C) and a relative humidity of (50±5)%.

(2) Specific tensile strength: ultimate tensile strength in pascals, equivalent to N/m²divided by specific weight in N/m³, measured at a temperature of (296±2) K ((23±2) C) and a relative humidity of (50±5)%.

1A003 Manufactures of non-fluorinated polymeric substances controlled by 1C008.a.3 in film, sheet, tape or ribbon form with either of the following characteristics (see List of Items Controlled).
License Requirements
Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry AT applies to entire entry	NS Column 2 AT Column 1

License Exceptions
LVS: \$200
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: This entry does not control manufactures when coated or laminated with copper and designed for the production of electronic printed circuit boards
Related Definitions: N/A
Items:
a. With a thickness exceeding 0.254 mm; or
b. Coated or laminated with carbon, graphite, metals or magnetic substances.

1A004 Protective and detection equipment and components, not specially designed for military use. (These items are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls. See 22 CFR part 121.)

1A005 Body armor, and specially designed components therefor, not manufactured to military standards or specifications, nor to their equivalents in performance.

License Requirements
Reason for Control: NS, AT, UN

Control(s)	Country chart
NS applies to entire entry AT applies to entire entry UN applies to entire entry	NS Column 2 AT Column 1 Rwanda; Federal Republic of Yugoslavia (Serbia and Montenegro)

License Exceptions

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

List of Items Controlled

Unit: \$ value
Related Controls: (1) Bulletproof and bullet resistant vests (body armor) NIJ levels III and IV, are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls. (See 22 CFR part 121.) (2) This entry does not control individual suits of body armor and accessories therefor, when accompanying their users for his/her own personal protection. (3) This entry does not control body armor designed to provide frontal protection only from both fragment and blast from non-military explosive devices
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1A102 Resaturated pyrolyzed carbon-carbon materials designed for “missiles”. (These items are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls. See 22 CFR part 121.)

1A202 Composite structures, other than those controlled by 1A002, in the form of tubes with an inside diameter of between 75 mm and 400 mm made with any of the “fibrous or filamentary materials” specified in 1C210.a or with carbon prepreg materials controlled by 1C210.c.
License Requirements
Reason for Control: NP, AT

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

License Exceptions

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

List of Items Controlled

Unit: Kilograms
Related Controls: See also 9A010 and 9A110
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1A225 Platinized catalysts specially designed or prepared for promoting the hydrogen isotope exchange reaction between hydrogen and water for the recovery of tritium from heavy water or for the production of heavy water.
License Requirements
Reason for Control: NP, AT

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

License Exceptions

LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: N/A

Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1A226 Specialized packings for use in separating heavy water from ordinary water and made of phosphor bronze mesh (chemically treated to improve wettability) and designed for use in vacuum distillation towers.
License Requirements
Reason for Control: NP, AT

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

License Exceptions

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

List of Items Controlled

Unit: \$ value
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1A227 High-density (lead glass or other) radiation shielding windows greater than 0.09 m² on cold area and with a density greater than 3 g/cm³ and a thickness of 100 mm or greater; and specially designed frames therefor.
License Requirements
Reason for Control: NP, AT

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

License Exceptions

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

List of Items Controlled

Unit: \$ value
Related Controls: Nuclear equipment is also subject to the export licensing authority of the Nuclear Regulatory Commission. (See 10 CFR part 110.)
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1A290 Depleted uranium (any uranium containing less than 0.711% of the isotope U-235) in shipments of more than 1,000 kilograms in the form of shielding contained in X-ray units, radiographic exposure or teletherapy devices, radioactive thermoelectric generators, or packaging for the transportation of radioactive materials.
License Requirements
Reason for Control: NP, AT

Control(s)	Country Chart
NP applies to entire entry AT applies to entire entry	NP Column 2 AT Column 1

License Exceptions

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

List of Items Controlled

Unit: Kilograms
Related Controls: (1) This entry does not control depleted uranium in fabricated forms for use in munitions. See 22 CFR part 121 for depleted uranium subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls. (2) Depleted uranium that is not fabricated for use in munitions or fabricated into commodities solely to take advantage of its high density (e.g., aircraft, ship, or other counterweights) or in the forms listed in this entry are subject to the export licensing authority of the Nuclear Regulatory Commission. (See 10 CFR part 110.) (3) See also 0C001

Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1A984 Chemical agents, including tear gas formulation containing 1 percent or less of orthochlorobenzalmalononitrile (CS), or 1 percent or less of chloroacetophenone (CN), except in individual containers with a net weight of 20 grams or less; smoke bombs; non-irritant smoke flares, canisters, grenades and charges; other pyrotechnic articles having dual military and commercial use; and fingerprinting powders, dyes and inks.

License Requirements
Reason for Control: CC

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

B. Test, Inspection and Production Equipment

1B001 Equipment for the production of fibers, prepregs, preforms or “composites” controlled by 1A002 or 1C010, and specially designed components and accessories therefor.

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

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
MT applies to entire entry, except 1B001.d.4 and .f	MT Column 1
NP applies to filament winding machines described in 1B001.a that are capable of winding cylindrical rotors having a diameter between 75 mm (3 in) and 400 mm (16 in) and lengths of 600 mm (24 in) or greater; and coordinating and programming controls and precision mandrels for these filament winding machines	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions
LVS: N/A for MT and for 1B001.a; \$5,000 for all other items
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: See also 1B101 and 1B201; and for accelerators and systems containing accelerators see 3A101
Related Definitions: N/A
Items:

- a. Filament winding machines of which the motions for positioning, wrapping and winding fibers are coordinated and programmed in three or more axes, specially designed for the manufacture of “composite” structures or laminates from “fibrous or filamentary materials”;
- b. Tape-laying or tow-placement machines of which the motions for positioning and laying tape, tows or sheets are coordinated and programmed in two or more axes, specially designed for the manufacture of “composite” airframe or “missile” structures;
- c. Multidirectional, multidimensional weaving machines or interlacing machines, including adapters and modification kits, for weaving, interlacing or braiding fibers to manufacture “composite” structures;

Note: 1B001.c does not control textile machinery not modified for the above end-uses.
d. Equipment specially designed or adapted for the production of reinforcement fibers, as follows:

- d.1. Equipment for converting polymeric fibers (such as polyacrylonitrile, rayon, pitch or polycarbosilane) into carbon fibers or silicon carbide fibers, including special equipment to strain the fiber during heating;
- d.2. Equipment for the chemical vapor deposition of elements or compounds on heated filamentary substrates to manufacture silicon carbide fibers;
- d.3. Equipment for the wet-spinning of refractory ceramics (such as aluminum oxide);
- d.4. Equipment for converting aluminum containing precursor fibers into alumina fibers by heat treatment;
- e. Equipment for producing prepregs controlled by 1C010.e by the hot melt method;
- f. Non-destructive inspection equipment capable of inspecting defects three-dimensionally, using ultrasonic or X-ray tomography and specially designed for “composite” materials.

1B002 Systems and components therefor, specially designed to avoid contamination and specially designed for producing metal alloys, metal alloy powder or alloyed materials controlled by 1C002.a.2, 1C002.b or 1C002.c.

License Requirements
Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions
LVS: \$5,000
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1B003 Tools, dies, molds or fixtures, for “superplastic forming” or “diffusion bonding” titanium or aluminum or their alloys, specially designed for the manufacture of (see List of Items Controlled).

License Requirements
Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions
LVS: \$5,000
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Equipment in number; components in \$ value
Related Controls: For specially designed production equipment of systems, sub-systems and components controlled by 9A005 to 9A009, 9A011, 9A101, 9A105 to 9A109, 9A111, and 9A116 to 9A120 usable in “missiles”, see 9B115.
Related Definitions: N/A
Items:

- a. Airframe or aerospace structures;
- b. “Aircraft” or aerospace engines; or <M.
- c. Specially designed components for those structures or engines.

1B018 Equipment on the International Munitions List.

License Requirements
Reason for Control: NS, MT, RS, AT, UN

Control(s)	Country chart
NS applies to entire entry	NS Column 1
MT applies to equipment for the “production” of rocket propellants	MT Column 1
RS applies to 1B018.a	RS Column 2
AT applies to entire entry	AT Column 1
UN applies to entire entry	Rwanda; Federal Republic of Yugoslavia (Serbia and Montenegro)

License Exceptions
LVS: \$3,000 for 1B018.a for countries WITHOUT an “X” in RS Column 2 on the Country Chart contained in Supplement No. 1 to part 738 of the EAR \$5,000 for 1B018.b N/A for Rwanda and the Federal Republic of Yugoslavia (Serbia and Montenegro)
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Equipment in number; parts and accessories in \$ value
Related Controls: N/A
Related Definitions: N/A
Items:
a. Equipment for the “production” of military explosives and solid propellants.
a.1. Complete installations;
a.2. Specialized components (for example, dehydration presses; extrusion presses for the extrusion of small arms, cannon and rocket propellants; cutting machines for the sizing of extruded propellants; sweetie barrels (tumblers) 6 feet and over in diameter and having over 500 pounds product capacity; and continuous mixers for solid propellants); or
a.3. Nitrators, continuous types; and
a.4. Specially designed parts and accessories therefor.
b. Environmental chambers capable of pressures below (10⁻⁴) Torr, and specially designed components therefor.

1B101 Equipment, other than that controlled by 1B001, for the “production” of structural composites, and specially designed components and accessories therefor.
License Requirements
Reason for Control: MT, NP, AT

Control(s)	Country Chart
MT applies to entire entry	MT Column 1
NP applies to 1B101.a only	NP 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 1B201
Related Definitions: Components and accessories controlled by this entry include molds, mandrels, dies, fixtures and tooling for the preform processing, curing, casting, sintering or bonding of composite structures, laminates and manufactures thereof
Items:
a. Filament winding machines of which the motions for positioning, wrapping and winding fibers can be coordinated and programmed in three or more axes, designed to fabricate composite structures or laminates from fibrous or filamentary materials, and coordinating and programming controls;
b. Tape-laying machines of which the motions for positioning and laying tape and sheets can be coordinated and programmed in two or more axes, designed for the manufacture of composite airframe and “missile” structures;
c. Equipment designed or modified for the “production” of “fibrous or filamentary materials” as follows:
c.1. Equipment for converting polymeric fibers (such as polyacrylonitrile, rayon or polycarbosilane) including special provision to strain the fiber during heating;
c.2. Equipment for the vapor deposition of elements or compounds on heated filament substrates; and
c.3. Equipment for the wet-spinning of refractory ceramics (such as aluminum oxide);
d. Equipment designed or modified for special fiber surface treatment or for producing prepreps and preforms controlled by 9A110.

Note: Equipment covered in 1B101.d includes but is not limited to, rollers, tension stretchers, coating equipment, cutting equipment and clicker dies.

1B115 Equipment for the “production”, handling and acceptance testing of propellants or propellant constituents controlled by 1C011, 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: (1) The only batch or continuous mixers controlled by this entry are those which have provision for mixing under vacuum in the range of zero to 13.326 kPa and with a temperature control capacity of the mixing chamber: (a) Batch mixers having a total volumetric capacity of 110 liters or more and at least one mixing/kneeding shaft mounted off center; (b) Continuous mixers having two or more mixing/kneeding shafts and capability to open the mixing chamber. (2) For equipment specially designed for the production of military propellants or propellant constituents, see the U.S. Munitions List. (3) This entry does control equipment for the “production”, handling and acceptance testing of boron carbide
Related Definitions: N/A.
Items: The list of items controlled is contained in the ECCN heading.

1B116 Specially designed nozzles for producing pyrolitically 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 to 20 kPa.
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
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1B201 Filament winding machines, other than those controlled by 1B001 or 1B101, in which the motions for positioning, wrapping, and winding fibers are coordinated and programmed in two or more axes, specially designed to fabricate composite structures or laminates from “fibrous or filamentary materials” and capable of winding cylindrical rotors of diameter between 75 mm and 400 mm and lengths of 600 mm or greater and coordinating and programming controls and precision mandrels therefor.
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1B225 Electrolytic cells for fluorine production with a production capacity greater than 250 g of fluorine per hour.
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1B226 Electromagnetic isotope separators, designed for or equipped with, single or multiple ion sources capable of providing a total ion beam current of 50 mA or greater.
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: This entry includes separators capable of enriching stable isotopes and separators with the ion sources and collections both in the magnetic field and those configurations in which they are external to the field
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1B227 Ammonia synthesis converters or ammonia synthesis units in which the synthesis gas (nitrogen and hydrogen) is withdrawn from an ammonia/hydrogen high-pressure exchange column and the synthesized ammonia is returned to that column.
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definition: N/A
Items: The list of items controlled is contained in the ECCN heading.

1B228 Hydrogen-cryogenic distillation columns having all of the characteristics (see List of Items Controlled).
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: Heavy water production equipment is also subject to the export licensing authority of the Nuclear Regulatory Commission. (See 10 CFR part 110.)
Related Definitions: “Fine-grain stainless steels” in this entry are defined to be fine-grain austenitic stainless steels with an ASTM (or equivalent standard) grain size number of 5 or greater
Items:
a. Designed to operate with internal temperatures of 35 K (-238°C) or less;
b. Designed to operate at an internal pressure of 0.5 to 5 MPa (5 to 50 atmospheres);
c. Constructed of “fine-grain stainless steels” of the 300 series with low sulphur content or equivalent cryogenic and H₂-compatible materials; *and*
d. With internal diameters of 1 m or greater and effective lengths of 5 m or greater.

1B229 Water-hydrogen sulphide exchange tray columns constructed from fine carbon steel with a diameter of 1.8 m or greater, which can operate at a nominal pressure of 2 MPa or greater, and internal contactors therefor.
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: (1) See 0B004 for columns which are specially designed or prepared for the production of heavy water. These items are controlled on the NSG Trigger List (INFCIRC/254/part. (2) See 10 CFR part 110 for heavy water production equipment subject to the export licensing authority of the Nuclear Regulatory Commission
Related Definition: (1) This entry includes internal contactors of the columns are segmented trays with an effective assembled diameter of 1.8 m (6 ft.) or greater, are designed to facilitate countercurrent contacting and constructed of materials resistant to corrosion by hydrogen sulfide/water mixtures. These may be sieve trays, valve trays, bubble cap trays or turbogrid trays. (2) Fine carbon steel in this entry is defined to be steel with the austenitic ASTM (or equivalent standard) grain size number of 5 or greater. (3) Materials resistant to corrosion by hydrogen sulfide/water mixtures in this entry are defined to be stainless steels with a carbon content of 0.03% or less
Items: The list of items controlled is contained in the ECCN heading.

1B230 Pumps circulating solutions of diluted or concentrated potassium amide catalyst in liquid ammonia (KNH₂/NH₃), with all of the characteristics (see List of Items Controlled).
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: Heavy water production equipment is also subject to the export licensing authority of the Nuclear Regulatory Commission. (See 10 CFR part 110.)
Related Definitions: N/A

- Items:
- a. Airtight (i.e., hermetically sealed);
 - b. For concentrated potassium amide solutions (1% or greater), operating pressure of 1.5-60 MPa (15-600 atmospheres); for dilute potassium amide solutions (less than 1%), operating pressure of 20-60 MPa (200-600 atmospheres); *and*
 - c. A capacity greater than 8.5 m³/hr.

1B231 Tritium facilities, plant or equipment, as follows (see List of Items Controlled).
License Requirements
Reason for Control: NP, AT

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

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: \$ value

Related Controls: This entry does not control tritium, tritium compounds, and mixtures containing tritium, or products or devices thereof. See 10 CFR part 110 for tritium subject to the export licensing authority of the Nuclear Regulatory Commission

Related Definitions: N/A

Items:

- a. Facilities or plant for the production, recovery, extraction, concentration, or handling of tritium;
- b. Equipment for tritium facilities or plant, as follows:
 - b.1. Hydrogen or helium refrigeration units capable of cooling to 23 K (-250°C) or less, with heat removal capacity greater than 150 watts; *or*
 - b.2. Hydrogen isotope storage and purification systems using metal hydrides as the storage, or purification medium.

1B232 Turboexpanders or turboexpander-compressor sets designed for operation below 35 K (-238 C) and a throughput of hydrogen gas of 1000 kg/hr or greater.

License Requirements

Reason for Control: NP, AT

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

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: \$ value

Related Controls: N/A

Related Definitions: N/A

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

1B233 Lithium isotope separation facilities, plant or equipment, as follows (see List of Items Controlled).

License Requirements

Reason for Control:

Control(s): Items described in 1B233 are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: N/A

Related Controls: N/A

Related Definitions: N/A

Items:

- a. Facilities or plant for the separation of lithium isotopes;
- b. Equipment for the separation of lithium isotopes, as follows:

- b.1. Packed liquid-liquid exchange columns specially designed for lithium amalgams;
- b.2. Mercury and/or lithium amalgam pumps;
- b.3. Lithium amalgam electrolysis cells;
- b.4. Evaporators for concentrated lithium hydroxide solution.

C. Materials

Technical Note: Metals and alloys: Unless provision to the contrary is made, the words “metals” and “alloys” in 1C001 to 1C012 cover crude and semi-fabricated forms, as follows:

Crude forms: Anodes, balls, bars (including notched bars and wire bars), billets, blocks, blooms, brickets, cakes, cathodes, crystals, cubes, dice, grains, granules, ingots, lumps, pellets, pigs, powder, rondelles, shot, slabs, slugs, sponge, sticks;

Semi-fabricated forms (whether or not coated, plated, drilled or punched):

- a. Wrought or worked materials fabricated by rolling, drawing, extruding, forging, impact extruding, pressing, graining, atomizing, and grinding, i.e.: angles, channels, circles, discs, dust, flakes, foils and leaf, forging, plate, powder, pressings and stampings, ribbons, rings, rods (including bare welding rods, wire rods, and rolled wire), sections, shapes, sheets, strip, pipe and tubes (including tube rounds, squares, and hollows), drawn or extruded wire;

- b. Cast material produced by casting in sand, die, metal, plaster or other types of molds, including high pressure castings, sintered forms, and forms made by powder metallurgy. The object of the control should not be defeated by the export of non-listed forms alleged to be finished products but representing in reality crude forms or semi-fabricated forms.

1C001 Materials specially designed for use as absorbers of electromagnetic waves, or intrinsically conductive polymers, as follows (see List of Items Controlled).

License Requirements

Reason for Control: NS, MT, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
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: See also 1C101

Related Definitions: N/A

Items:

- a. Materials for absorbing frequencies exceeding 2x10⁸ Hz but less than 3x10¹² Hz.

Notes: 1. 1C001.a does not control:

- a. Hair type absorbers, constructed of natural or synthetic fibers, with non-magnetic loading to provide absorption;

- b. Absorbers having no magnetic loss and whose incident surface is non-planar in shape, including pyramids, cones, wedges and convoluted surfaces;

- c. Planar absorbers, having all of the following characteristics:

- 1. Made from any of the following:

- a. Plastic foam materials (flexible or non-flexible) with carbon-loading, or organic materials, including binders, providing more than 5% echo compared with metal over a bandwidth exceeding ±15% of the center frequency of the incident energy, and not capable of withstanding temperatures exceeding 450 K (177°C); *or*

- b. Ceramic materials providing more than 20% echo compared with metal over a bandwidth exceeding ±15% of the center frequency of the incident energy, and not capable of withstanding temperatures exceeding 800 K (527°C);

Technical Note: Absorption test samples for 1C001.a. Note 1.c.1 should be a square at least 5 wavelengths of the center frequency on a side and positioned in the far field of the radiating element.

- 2. Tensile strength less than 7x10⁶ N/m² *and*

- 3. Compressive strength less than 14x10⁶ N/m²

- d. Planar absorbers made of sintered ferrite, having:

- 1. A specific gravity exceeding 4.4; *and*

- 2. A maximum operating temperature of 548 K (275°C).

Note 2: Nothing in 1C001.a releases magnetic materials to provide absorption when contained in paint.

b. Materials for absorbing frequencies exceeding 1.5×10^{14} Hz but less than 3.7×10^{14} Hz and not transparent to visible light;

c. Intrinsically conductive polymeric materials with a bulk electrical conductivity exceeding 10,000 S/m (Siemens per meter) or a sheet (surface) resistivity of less than 100 ohms/square, based on any of the following polymers:

- c.1. Polyaniline;
- c.2. Polypyrrole;
- c.3. Polythiophene;
- c.4. Poly phenylene-vinylene; *or*
- c.5. Poly thienylene-vinylene.

Technical Note: Bulk electrical conductivity and sheet (surface) resistivity should be determined using ASTM D-257 or national equivalents.

1C002 Metal alloys, metal alloy powder and alloyed materials, as follows (see List of Items Controlled).

License Requirements

Reason for Control: NS, NP, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
NP applies to 1C002.a.2.c or a.2.d if they exceed the parameters stated in 1C202	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions

LVS: \$3,000

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: Kilograms

Related Controls: See also 1C202. This entry does not control metal alloys, metal alloy powder or alloyed materials for coating substrates

Related Definition: N/A

Items:

- a. Metal alloys, as follows:
 - a.1. Nickel or titanium-based alloys in the form of aluminides, as follows, in crude or semi-fabricated forms:
 - a.1.a. Nickel aluminides containing a minimum of 15 weight percent aluminum, a maximum of 38 weight percent aluminum and at least one additional alloying element;
 - a.1.b. Titanium aluminides containing 10 weight percent or more aluminum and at least one additional alloying element;
 - a. 2. Metal alloys, as follows, made from metal alloy powder or particulate material controlled by 1C002.b:
 - a.2.a. Nickel alloys with:
 - a.2.a.1. A stress-rupture life of 10,000 hours or longer at 923 K (650°C) at a stress of 676 MPa; *or*
 - a.2.a.2. A low cycle fatigue life of 10,000 cycles or more at 823 K (550°C) at a maximum stress of 1,095 MPa;
 - a.2.b. Niobium alloys with:
 - a.2.b.1. A stress-rupture life of 10,000 hours or longer at 1,073 K (800°C) at a stress of 400 MPa; *or*
 - a.2.b.2. A low cycle fatigue life of 10,000 cycles or more at 973 K (700°C) at a maximum stress of 700 MPa;
 - a.2.c. Titanium alloys with:
 - a.2.c.1. A stress-rupture life of 10,000 hours or longer at 723 K (450°C) at a stress of 200 MPa; *or*
 - a.2.c.2. A low cycle fatigue life of 10,000 cycles or more at 723 K (450°C) at a maximum stress of 400 MPa;
 - a.2.d. Aluminum alloys with a tensile strength of:
 - a.2.d.1. 240 MPa or more at 473 K (200°C); *or*
 - a.2.d.2. 415 MPa or more at 298 K (25°C);
 - a.2.e. Magnesium alloys with a tensile strength of 345 MPa or more and a corrosion rate of less than 1 mm/year in 3% sodium chloride aqueous solution measured in accordance with ASTM standard G-31 or national equivalents;

Technical Note 1: The metal alloys in 1C002.a are those containing a higher percentage by weight of the stated metal than of any other element.

Technical Note 2: Stress-rupture life should be measured in accordance with ASTM standard E-139 or national equivalents.

Technical Note 3: Low cycle fatigue life should be measured in accordance with ASTM Standard E-606 "Recommended Practice for Constant-Amplitude Low-Cycle Fatigue Testing" or national equivalents. Testing should be axial with an average stress ratio equal to 1 and a stress-concentration factor (Kt)

equal to 1. The average stress is defined as maximum stress minus minimum stress divided by maximum stress.

b. Metal alloy powder or particulate material for materials controlled by 1C002.a, as follows:

b.1. Made from any of the following composition systems:

Technical Note: X in the following equals one or more alloying elements.

b.1.a. Nickel alloys (Ni-Al-X, Ni-X-Al) qualified for turbine engine parts or components, i.e. with less than 3 non-metallic particles (introduced during the manufacturing process) larger than 100 μm in 10^9 alloy particles;

b.1.b. Niobium alloys (Nb-Al-X or Nb-X-Al, Nb-Si-X or Nb-X-Si, Nb-Ti-X or Nb-X-Ti);

b.1.c. Titanium alloys (Ti-Al-X or Ti-X-Al);

b.1.d. Aluminum alloys (Al-Mg-X or Al-X-Mg, Al-Zn-X or Al-X-Zn, Al-Fe-X or Al-X-Fe); *or*

b.1.e. Magnesium alloys (Mg-Al-X or Mg-X-Al); *and*

b.2. Made in a controlled environment by any of the following processes:

b.2.a. "Vacuum atomization";

b.2.b. "Gas atomization";

b.2.c. "Rotary atomization";

b.2.d. "Splat quenching";

b.2.e. "Melt spinning" and "comminution";

b.2.f. "Melt extraction" and "comminution"; *or*

b.2.g. "Mechanical alloying";

c. Alloyed materials, in the form of uncomminuted flakes, ribbons or thin rods produced in a controlled environment by "splat quenching", "melt spinning" or "melt extraction", used in the manufacture of metal alloy powder or particulate material controlled by 1C002.b.

1C003 Magnetic metals, of all types and of whatever form, having any of the characteristics (see List of Items Controlled).

License Requirements

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions

LVS: \$3,000

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: Kilograms

Related Controls: N/A

Related Definitions: N/A

Items:

- a. Initial relative permeability of 120,000 or more and a thickness of 0.05 mm or less;

Technical Note: Measurement of initial permeability must be performed on fully annealed materials.

b. Magnetostrictive alloys, having any of the following characteristics:

b.1. A saturation magnetostriction of more than 5×10^{-4} *or*

b.2. A magnetomechanical coupling factor (k) of more than 0.8; *or*

c. Amorphous or nanocrystalline alloy strips, having all of the following characteristics:

c.1. A composition having a minimum of 75 weight percent of iron, cobalt or nickel;

c.2. A saturation magnetic induction (Bs) of 1.6 T or more; *and*

c.3. Any of the following:

c.3.a. A strip thickness of 0.02 mm or less; *or*

c.3.b. An electrical resistivity of 2×10^{-4} ohm cm or more.

Technical Note: Nanocrystalline materials in 1C003.c are those materials having a crystal grain size of 50 nm or less, as determined by X-ray diffraction.

1C004 Uranium titanium alloys or tungsten alloys with a "matrix" based on iron, nickel or copper, having all of the characteristics (see List of Items Controlled).

License Requirements

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions
LVS: \$3,000
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: N/A
Related Definitions: N/A
Items:
a. A density exceeding 17.5 g/cm³
b. An elastic limit exceeding 1,250 MPa;
c. An ultimate tensile strength exceeding 1,270 Mpa; *and*
d. An elongation exceeding 8%.

1C005 “Superconductive” “composite” conductors in lengths exceeding 100 m or with a mass exceeding 100 g, as follows (see List of Items Controlled).

License Requirements
Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions
LVS: \$1,500
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: N/A
Related Definitions: N/A
Items:
a. Multifilamentary “superconductive” “composite” conductors containing one or more niobium-titanium filaments:
a.1. Embedded in a “matrix” other than a copper or copper-based mixed “matrix”; *or*
a.2. Having a cross-section area less than 0.28x10⁻⁴mm²(6 µm in diameter for circular filaments);
b. “Superconductive” “composite” conductors consisting of one or more “superconductive” filaments other than niobium-titanium, having all of the following:
b.1. A “critical temperature” at zero magnetic induction exceeding 9.85 K (-263.31°C) but less than 24 K (-249.16°C);
b.2. A cross-section area less than 0.28x10⁻⁴ mm² *and*
b.3. Remaining in the “superconductive” state at a temperature of 4.2 K (-268.96°C) when exposed to a magnetic field corresponding to a magnetic induction of 12 T.

1C006 Fluids and lubricating materials, as follows (see List of Items Controlled).

License Requirements
Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions
LVS: \$3,000
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Barrels (55 U.S. gallons/209 liters)
Related Controls: N/A
Related Definitions: N/A
Items:
a. Hydraulic fluids containing, as their principal ingredients, any of the following compounds or materials:
a.1. Synthetic hydrocarbon oils or silahydrocarbon oils, having all of the following:

Note: For the purpose of 1C006.a.1, silahydrocarbon oils contain exclusively silicon, hydrogen and carbon.
a.1.a. A flash point exceeding 477 K (204°C);

a.1.b. A pour point at 239 K (-34°C) or less;
a.1.c. A viscosity index of 75 or more; *and*
a.1.d. A thermal stability at 616 K (343°C); *or*
a.2. Chlorofluorocarbons, having all of the following:

Note: For the purpose of 1C006.a.2, chlorofluorocarbons contain exclusively carbon, fluorine and chlorine.
a.2.a. No flash point;
a.2.b. An autogenous ignition temperature exceeding 977 K (704°C);
a.2.c. A pour point at 219 K (-54°C) or less;
a.2.d. A viscosity index of 80 or more; *and*
a.2.e. A boiling point at 473 K (200°C) or higher;
b. Lubricating materials containing, as their principal ingredients, any of the following compounds or materials:
b.1. Phenylene or alkylphenylene ethers or thio-ethers, or their mixtures, containing more than two ether or thio-ether functions or mixtures thereof; *or*
b.2. Fluorinated silicone fluids with a kinematic viscosity of less than 5,000 mm²/s (5,000 centistokes) measured at 298 K (25°C);
c. Damping or flotation fluids with a purity exceeding 99.8%, containing less than 25 particles of 200 µm or larger in size per 100 ml and made from at least 85% of any of the following compounds or materials:
c.1. Dibromotetrafluoroethane;
c.2. Polychlorotrifluoroethylene (oily and waxy modifications only); *or*
c.3. Polybromotrifluoroethylene;
d. Fluorocarbon electronic cooling fluids, having all of the following characteristics:
d.1. Containing 85% by weight or more of any of the following, or mixtures thereof:
d.1.a. Monomeric forms of perfluoropolyalkylether-triazines or perfluoroaliphatic-ethers;
d.1.b. Perfluoroalkylamines;
d.1.c. Perfluorocycloalkanes; *or*
d.1.d. Perfluoroalkanes;
d.2. Density at 298 K (25°C) of 1.5 g/ml or more;
d.3. In a liquid state at 273 K (0°C); *and*
d.4. Containing 60% or more by weight of fluorine.

Technical Note: For the purpose of 1C006:

a. Flash point is determined using the Cleveland Open Cup Method described in ASTM D-92 or national equivalents;

b. Pour point is determined using the method described in ASTM D-97 or national equivalents;

c. Viscosity index is determined using the method described in ASTM D-2270 or national equivalents;

d. Thermal stability is determined by the following test procedure or national equivalents:

Twenty ml of the fluid under test is placed in a 46 ml type 317 stainless steel chamber containing one each of 12.5 mm (nominal) diameter balls of M-10 tool steel, 52100 steel and naval bronze (60% Cu, 39% Zn, 0.75% Sn);

The chamber is purged with nitrogen, sealed at atmospheric pressure and the temperature raised to and maintained at 644 ± 6 K (371 ± 6°C) for six hours;

The specimen will be considered thermally stable if, on completion of the above procedure, all of the following conditions are met:

1. The loss in weight of each ball is less than 10 mg/mm2 of ball surface;

2. The change in original viscosity as determined at 311 K (38°C) is less than 25%; *and*

3. The total acid or base number is less than 0.40;

e. Autogenous ignition temperature is determined using the method described in ASTM E-659 or national equivalents.

1C007 Ceramic base materials, non-”composite” ceramic materials, ceramic-”matrix” “composite” materials and precursor materials, as follows (see List of Items Controlled).

License Requirements
Reason for Control: NS, MT, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
MT applies to items in 1C007.d and .f when the dielectric constant is less than 6 at frequencies from 100 Hz to 10,000 MHz for use in missile radomes	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.

License Exceptions

LVS: \$5,000, except N/A for MT and for 1C007.e

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: Kilograms

Related Controls: See also 1C107

Related Definitions: N/A

Items:

- a. Base materials of single or complex borides of titanium having total metallic impurities, excluding intentional additions, of less than 5,000 ppm, an average particle size equal to or less than 5 µm and no more than 10% of the particles larger than 10 µm;
- b. Non-“composite” ceramic materials in crude or semi-fabricated form, composed of borides of titanium with a density of 98% or more of the theoretical density;

Note: 1C007.b does not control abrasives.

c. Ceramic-ceramic “composite” materials with a glass or oxide-”matrix” and reinforced with fibers made from any of the following systems:

- c.1. Si-N;
- c.2. Si-C;
- c.3. Si-Al-O-N; or
- c.4. Si-O-N; having a “specific tensile strength” exceeding 12.7x10³m;
- d. Ceramic-ceramic “composite” materials, with or without a continuous metallic phase, incorporating particles, whiskers or fibers, where carbides or nitrides of silicon, zirconium or boron form the “matrix”;
- e. Precursor materials (i.e., special purpose polymeric or metallo-organic materials) for producing any phase or phases of the materials controlled by 1C007.c, as follows:
 - e.1. Polydiorganosilanes (for producing silicon carbide);
 - e.2. Polysilazanes (for producing silicon nitride);
 - e.3. Polycarbosilazanes (for producing ceramics with silicon, carbon and nitrogen components);
- f. Ceramic-ceramic “composite” materials with an oxide or glass “matrix” reinforced with continuous fibers from any of the following systems:
 - f.1. Al₂O₃ or
 - f.2. Si-C-N.

Note: 1C007.f does not control “composites” containing fibers from these systems with a fiber tensile strength of less than 700 MPa at 1,273 K (1,000°C) or fiber tensile creep resistance of more than 1% creep strain at 100 MPa load and 1,273 K (1,000°C) for 100 hours.

1C008 Non-fluorinated polymeric substances, as follows (see List of Items Controlled).

License Requirements

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions

LVS: \$200

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: Kilograms

Related Controls: N/A

Related Definitions: N/A

Items:

- a. Non-fluorinated polymeric substances, as follows:
 - a.1. Bismaleimides;
 - a.2. Aromatic polyamide-imides;
 - a.3. Aromatic polyimides;
 - a.4. Aromatic polyetherimides having a glass transition temperature (T_g) exceeding 513 K (240°C) determined using the dry method described in ASTM D 3418;

Note: 1C008.a does not control non-fusible compression molding powders or molded forms.

b. Thermoplastic liquid crystal copolymers having a heat distortion temperature exceeding 523 K (250°C) measured according to ASTM D-648, method A, or national equivalents, with a load of 1.82 N/mm² and composed of:

- b.1. Any of the following:

- b.1.a. Phenylene, biphenylene or naphthalene; or
- b.1.b. Methyl, tertiary-butyl or phenyl substituted phenylene, biphenylene or naphthalene; and
- b.2. Any of the following acids:
 - b.2.a. Terephthalic acid;
 - b.2.b. 6-hydroxy-2 naphthoic acid; or
 - b.2.c. 4-hydroxybenzoic acid;
- c. Polyarylene ether ketones, as follows:
 - c.1. Polyether ether ketone (PEEK)
 - c.2. Polyether ketone ketone (PEKK);
 - c.3. Polyether ketone (PEK);
 - c.4. Polyether ketone ether ketone ketone (PEKEKK);
- d. Polyarylene ketones;
- e. Polyarylene sulphides, where the arylene group is biphenylene, triphenylene or combinations thereof;
- f. Polybiphenylenethersulphone.

Technical Note: The glass transition temperature (T_g) for 1C008 materials is determined using the method described in ASTM D 3418 using the dry method.

1C009 Unprocessed fluorinated compounds, as follows (see List of Items Controlled).

License Requirements

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions

LVS: \$5,000

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: Kilograms

Related Controls: N/A

Related Definitions: N/A

Items:

- a. Copolymers of vinylidene fluoride having 75% or more beta crystalline structure without stretching;
- b. Fluorinated polyimides containing 10% by weight or more of combined fluorine;
- c. Fluorinated phosphazene elastomers containing 30% by weight or more of combined fluorine.

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).

License Requirements

Reason for Control: NS, NP, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
NP applies to 1C010.a (aramid “fibrous or filamentary materials”, .b (carbon “fibrous and filamentary materials”), and e.1 for “fibrous and filamentary materials” that meet or exceed the control criteria of ECCN 1C210	NP 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.

License Exceptions

LVS: \$1,500, N/A for NP

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: Kilograms

Related Controls: See also 1C210, 1C990, and 9A110 for material not controlled by 1C010.e, as defined by technical notes 1 or 2. Note that some items in 1C010.e are also controlled under 9A110

Related Definitions: (1) Specific modulus: Young’s modulus in pascals, equivalent to N/m²divided by specific weight in N/m³, measured at a temperature of (296±2) K ((23+2) C) and a relative humidity of (50±5)%. (2) Specific tensile

strength: ultimate tensile strength in pascals, equivalent to N/m²divided by specific weight in N/m³, measured at a temperature of (296±2) K ((23±2) C) and a relative humidity of (50±5)%

Items:

- a. Organic “fibrous or filamentary materials”, having all of the following:
 - a.1. A specific modulus exceeding 12.7x10⁶ m; and
 - a.2. A specific tensile strength exceeding 23.5x10⁴ m;
- Note:** 1C010.a does not control polyethylene.
- b. Carbon “fibrous or filamentary materials”, having all of the following:
 - b.1. A specific modulus exceeding 12.7x10⁶ m; and
 - b.2. A specific tensile strength exceeding 23.5x10⁴ m;

- Technical Note:** Properties for materials described in 1C010.b should be determined using SACMA recommended methods SRM 12 to 17, or national equivalent tow tests, such as Japanese Industrial Standard JIS-R-7601, Paragraph 6.6.2, and based on lot average.
- Note:** 1C010.b does not control fabric made from “fibrous or filamentary materials” for the repair of aircraft structures or laminates, in which the size of individual sheets does not exceed 50 cm x 90 cm.
- c. Inorganic “fibrous or filamentary materials”, having all of the following:
 - c.1. A specific modulus exceeding 2.54x10⁶m; and
 - c.2. A melting, softening, decomposition or sublimation point exceeding 1,922 K (1,649°C) in an inert environment;

- Note:** 1C010.c does not control:
- 1. Discontinuous, multiphase, polycrystalline alumina fibers in chopped fiber or random mat form, containing 3 weight percent or more silica, with a specific modulus of less than 10x10⁶ m;
 - 2. Molybdenum and molybdenum alloy fibers;
 - 3. Boron fibers;
 - 4. Discontinuous ceramic fibers with a melting, softening, decomposition or sublimation point lower than 2,043 K (1,770°C) in an inert environment.
- d. “Fibrous or filamentary materials”:
 - d.1. Composed of any of the following:
 - d.1.a. Polyetherimides controlled by 1C008.a; or
 - d.1.b. Materials controlled by 1C008.b to 1C008.f; or
 - d.2. Composed of materials controlled by 1C010.d.1.a or 1C010.d.1.b and “commingled” with other fibers controlled by 1C010.a, 1C010.b or 1C010.c;
 - e. Resin-impregnated or pitch-impregnated fibers (prepregs), metal or carbon-coated fibers (preforms) or “carbon fiber preforms”, as follows:
 - e.1. Made from “fibrous or filamentary materials” controlled by 1C010.a, 1C010.b or 1C010.c;
 - e.2. Made from organic or carbon “fibrous or filamentary materials”:
 - e.2.a. With a “specific tensile strength” exceeding 17.7x10⁴ m;
 - e.2.b. With a “specific modulus” exceeding 10.15x10⁶ m;
 - e.2.c. Not controlled by 1C010.a or 1C010.b; and
 - e.2.d. When impregnated with materials controlled by 1C008 or 1C009.b, having a glass transition temperature (T_g) exceeding 383 K (110°C) or with phenolic or epoxy resins, having a glass transition temperature (T_g) equal to or exceeding 418 K (145°C).

- Notes:** 1C010.e does not control:
- 1. Epoxy resin “matrix” impregnated carbon “fibrous or filamentary materials” (prepregs) for the repair of aircraft structures or laminates, in which the size of individual sheets of prepreg does not exceed 50 cm x 90 cm;
 - 2. Prepregs when impregnated with phenolic or epoxy resins having a glass transition temperature (T_g) less than 433 K (160°C) and a cure temperature lower than the glass transition temperature.
- Technical Note:** The glass transition temperature (T_g) for 1C010.e materials is determined using the method described in ASTM D 3418 using the dry method. The glass transition temperature for phenolic and epoxy resins is determined using the method described in ASTM D 4065 at a frequency of 1 Hz and a heating rate of 2 K per minute using the dry method.

1C011 Metals and compounds, as follows (see List of Items Controlled).

License Requirements

Reason for Control: NS, MT, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
MT applies to 1C011.a and .b	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: N/A

Related Controls: (1) See also 1C111. (2) Items controlled by 1C011.a, and metal fuels in particle form, whether spherical, atomized, spheroidal, flaked or ground, manufactured from material consisting of 99 percent or more of items controlled by 1C011.b. are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls (see 22 CFR part 121)

Related Definitions: N/A

Items:

- a. Metals in particle sizes of less than 60 μm whether spherical, atomized, spheroidal, flaked or ground, manufactured from material consisting of 99% or more of zirconium, magnesium and alloys of these;
 - N.B.:** The metals or alloys listed in 1C011.a are controlled whether or not the metals or alloys are encapsulated in aluminum, magnesium, zirconium or beryllium.
- b. Boron or boron carbide of 85% purity or higher and a particle size of 60 μm or less;
 - N.B.:** The metals or alloys listed in 1C011.b are controlled whether or not the metals or alloys are encapsulated in aluminum, magnesium, zirconium or beryllium.
- c. Guanidine nitrate.

1C012 Materials for nuclear heat sources, as follows (see List of Items Controlled).

License Requirements

Reason for Control:

Control(s): Items described in 1C012 are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: N/A

Related Controls: N/A

Related Definitions: N/A

Items:

- a. Plutonium in any form with a plutonium isotopic assay of plutonium-238 of more than 50% by weight;
 - Note:** 1C012.a does not control:
 - 1. Shipments with a plutonium content of 1 g or less;
 - 2. Shipments of 3 effective grams or less when contained in a sensing component in instruments.
- b. Previously separated neptunium-237 in any form.

Note: 1C012.b does not control shipments with a neptunium-237 content of 1 g or less.

1C018 Materials on the International Munitions List.

License Requirements

Reason for Control: NS, AT, UN

Control(s)	Country chart
NS applies to entire entry	NS Column 1 AT Column 1 Rwanda; Federal Republic of Yugoslavia (Serbia and Montenegro)
AT applies to entire entry	
UN applies to entire entry	

License Exceptions

LVS: \$3,000, except N/A for Rwanda and the Federal Republic of Yugoslavia (Serbia and Montenegro)

GBS: Yes for items listed in Advisory Note to 1C018, except N/A for Rwanda and the Federal Republic of Yugoslavia (Serbia and Montenegro)

CIV: N/A

List of Items Controlled

Unit: Kilograms

Related Controls: N/A

Related Definitions: N/A

Items:

- a. Ethyl and Methyl centralites.

- b. NN-Diphenylurea (unsymmetrical diphenylurea).
- c. Methyl-NN-diphenylurea (methyl unsymmetrical diphenylurea).
- d. Ethyl-NN-diphenylurea (ethyl unsymmetrical diphenylurea).
- e. Ethyl phenyl urethane.
- f. Diphenyl urethane.
- g. Diortho tolyl-urethane.
- h. 2-Nitrodiphenylamine.
- i. p-Nitromethylaniline.
- j. 2,2' Dinitropropanol.
- k. Bis(2,2' dinitropropyl) formal and acetal.
- l. 3-Nitrazo-1,5 pentane diisocyanate.
- m. Guanidine nitrate.
- n. Hydrogen peroxide in concentrations of 85%.
- o. Charges specially designed for civilian applications, containing military explosives, except those items described in 1C992.

Technical Note: Military high explosives are solid, liquid or gaseous substances or mixtures of substances that, in their application as primary, booster, or main charges in warheads, demolition and other military applications, are required to detonate.

Advisory Note: Licenses are likely to be approved for export and reexport to satisfactory end-users in Country Group D:1 of certain explosive substances and mixtures in reasonable quantities for civilian or industrial purposes when made into cartridges or charges of an exclusively civilian or industrial nature, such as propellants for sporting purposes or shooting gallery practice; cartridges for riveting guns; and explosive charges for agricultural purposes, public works, mines, quarries or oil-well drilling. The following are the substances or mixtures to which this procedure applies:

- a. Nitrate-based (40 percent or more) and provided they do not contain more than 40 percent nitroglycol/nitroglycerin or no more than 16 percent TNT;
- b. Nitrocellulose with a nitrogen content of over 12.2 percent;
- c. Nitroglycerin;
- d. Single base nitrocellulose;
- e. Sodium azide and other inorganic azides.

1C101 Materials and devices for reduced observables such as radar reflectivity, ultraviolet/infrared signatures and acoustic signatures, other than those controlled by 1C001, 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: Kilograms
Related Controls: Materials controlled by this entry include: (a) structural materials and coatings specially designed for reduced radar reflectivity; (b) coatings, including paints, specially designed for reduced or tailored reflectivity or emissivity in the microwave, infrared or ultraviolet spectra. This entry does not control coatings when specially used for the thermal control of satellites.
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C107 Graphite and ceramic materials, other than those controlled by 1C007, 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: Kilograms
Related Controls: N/A
Related Definitions: N/A
Items:

- a. Fine grain recrystallized bulk graphites having a bulk density of 1.72 g/cm³ or greater, measured at 288 K (15°C), and having a particle size of 100 micrometers or less, pyrolytic or fibrous reinforced graphites, usable for rocket nozzles and reentry vehicle nose tips;
- b. Ceramic composite materials (dielectric constant less than 6 at frequencies from 100 Hz to 10,000 MHz), also usable for “missile” radomes, and bulk machinable silicon-carbide reinforced unfired ceramic, usable for nose tips.

1C111 Propellants and constituent chemicals for propellants, other than those controlled by 1C011, 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: Kilograms
Related Controls: The following materials, whether or not encapsulated in aluminum, beryllium, magnesium, or zirconium are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls: (See 22 CFR part 121): (a) Spherical aluminum powder with particles of uniform diameter 60x10⁻⁶ m (60 micrometers) or less and an aluminum content of 97 percent or greater; (b) Metals in particle sizes less than 60x10⁻⁶ m (60 microns), whether spherical, atomized, spheroidal, flaked or ground, manufactured from material consisting of 99 percent or more of: boron; magnesium; zirconium; alloys of boron, magnesium or zirconium; beryllium; or iron powder with average particle size of 3x10⁻⁶ m (3 microns) or less produced by hydrogen reduction of iron oxide.
Related Definitions: N/A
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 500 micrometer and an aluminum content of 97% by weight or greater;
 - a.2. Metals, other than that controlled by the U.S. Munitions List, in particle sizes of less than 500 micrometers, whether spherical, atomized, spheroidal, flaked or ground, consisting 97% or more by weight of any of the following:
 - a.2.a. Zirconium;
 - a.2.b. Beryllium;
 - a.2.c. Boron;
 - a.2.d. Magnesium; *or*
 - a.2.e. Alloys of the metals specified by a.2.a to a.2.d above;
 - a.3. Liquid oxidizers, the following:
 - 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).

Note: For propellants and constituent chemicals for propellants not controlled by 1C111, see the U.S. Munitions List.

1C116 Maraging steels (steels generally characterized by high nickel, very low carbon content and the use of substitutional elements or precipitates to produce age-hardening) having an ultimate tensile strength of 1,500 MPa or greater, measured at 293 K (20 C), in the form of sheet, plate or tubing with a wall or plate thickness equal to or less than 5 mm.

License Requirements
Reason for Control: MT, NP, AT

Control(s)	Country Chart
MT applies to entire entry	MT Column 1
NP applies to items that meet or exceed the parameters of 1C216	NP 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 1C216
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C117 Tungsten, molybdenum and alloys of these metals in the form of uniform, spherical or atomized particles of 500 micrometer diameter or less with a purity of 97% or greater for fabrication of rocket motor components, i.e., heat shields, nozzle substrates, nozzle throats and thrust vector control surfaces.

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: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C202 Alloys, other than those controlled by 1C002.a.2.c or .d, as follows (see List of Items Controlled).

License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definition: The phrase “alloys capable of” encompasses before and after heat treatment.
Items:

- a. Aluminum “alloys capable of” an ultimate tensile strength of 460 Mpa or more at 293 K (20°C), in the form of tubes or cylindrical solid forms (including forgings) with an outside diameter of more than 75 mm;

- b. Titanium “alloys capable of” an ultimate tensile strength of 900 MPa or more at 293 K (20°C) in the form of tubes or cylindrical solid forms (including forgings) with an outside diameter of more than 75 mm.

1C210 “Fibrous or filamentary materials” or prepregs, other than those controlled by 1C010.a, .b or .e, as follows (see List of Items Controlled).

License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: See 9A110 for fiber prepreps.
Related Definitions: For the purpose of this entry, the term “fibrous or filamentary materials” is restricted to continuous “monofilaments”, “yarns”, “rovings”, “tows” or “tapes”.

Definitions for other terms used in this entry:
Filament or Monofilament is the smallest increment of fiber, usually several µm in diameter.
Strand is a bundle of filaments (typically over 200) arranged approximately parallel.
Roving is a bundle (typically 12-120) of approximately parallel strands.
Yarn is a bundle of twisted strands. Tow is a bundle of filaments, usually approximately parallel.
Tape is a material constructed of interlaced or unidirectional filaments, strands, rovings, tows or yarns, etc., usually preimpregnated with resin.
Specific modulus is the Young’s modulus in N/m²divided by the specific weight in N/m³, measured at a temperature of 23 ± 2°C and a relative humidity of 50 ± 5 percent.
Specific tensile strength is the ultimate tensile strength in N/m²divided by specific weight in N/m³, measured at a temperature of 23 ± 2°C and a relative humidity of 50 ± 5 percent.

- Items:*
- a. Carbon or aramid “fibrous or filamentary materials” having a “specific modulus” of 12.7x10⁶ m or greater or a “specific tensile strength” of 235x10³m or greater *except* Aramid “fibrous or filamentary materials” having 0.25 percent or more by weight of an ester based fibre surface modifier;
 - b. Glass “fibrous or filamentary materials” having a “specific modulus” of 3.18x10⁶ m or greater and a “specific tensile strength” of 76.2x10³m or greater; *or*
 - c. Thermoset resin impregnated continuous “yarns”, “rovings”, “tows” or “tapes” with a width no greater than 15 mm (prepreps), made from carbon or glass “fibrous or filamentary materials” controlled by 1C210.a or .b.

Technical Note: The resin forms the matrix of the composite.

1C216 Maraging steel, other than that controlled by 1C116, capable of an ultimate tensile strength of 2,050 MPa or more, at 293 K (20 C), except forms in which no linear dimension exceeds 75 mm.

License Requirements
Reason for Control: NP, MT, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: N/A

Related Definition: The phrase “maraging steel capable of” encompasses maraging steel before or after heat treatment.
Items: The list of items controlled is contained in the ECCN heading.

1C225 Boron and boron compounds, mixtures and loaded materials in which the boron-10 isotope is more than 20% by weight of the total boron content.

License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C226 Parts made of tungsten, tungsten carbide, or tungsten alloys (greater than 90% tungsten) having a mass greater than 20 kg and a hollow cylindrical symmetry (including cylinder segments) with an inside diameter greater than 100 mm but less than 300 mm, except parts specially designed for use as weights or gamma-ray collimators.

License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C227 Calcium (high purity) containing both less than 1,000 parts per million by weight of metallic impurities other than magnesium and less than 10 parts per million of boron.

License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C228 Magnesium (high purity) containing both less than 200 parts per million by weight of metallic impurities other than calcium and less than 10 parts per million of boron.

License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C229 High purity (99.99% or greater) bismuth with very low silver content (less than 10 parts per million).

License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C230 Beryllium metal, alloys containing more than 50% of beryllium by weight, beryllium compounds, or manufactures thereof, including waste and scrap containing beryllium metal, alloys, or compounds.

License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: (1) This entry includes waste and scrap containing beryllium metal, alloys, or compounds. (2) This entry does not control: (a) Metal windows for X-ray machines, or for bore-hole logging devices; (b) Oxide shapes in fabricated or semi-fabricated forms specially designed for electronic component parts or as substrates for electronic circuits; and, (c) Beryl (silicate of beryllium and aluminum) in the form of emeralds or aquamarines.
Related Definitions: N/A.
Items: The list of items controlled is contained in the ECCN heading.

1C231 Hafnium metal, alloys and compounds of hafnium containing more than 60% hafnium by weight and manufactures thereof.

License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C232 Helium-3 or helium isotopically enriched in the helium-3 isotope, mixtures containing helium-3, or products or devices containing any of the foregoing, except a product or device containing less than 1 g of helium-3.
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Liters
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C233 Lithium enriched in the 6 isotope (⁶Li) to greater than 7.5 atom percent, alloys, compounds or mixtures containing lithium enriched in the 6 isotope, or products or devices containing any of the foregoing except thermoluminescent dosimeters.
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: N/A
Related Definitions: The natural occurrence of the 6 isotope in lithium is 7.5 atom percent.
Items: The list of items controlled is contained in the ECCN heading.

1C234 Zirconium with a hafnium content of less than 1 part hafnium to 500 parts zirconium by weight, in the form of metal, alloys containing more than 50% zirconium by weight, or compounds, or manufactures wholly thereof; except zirconium in the form of foil having a thickness not exceeding 0.10 mm.
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Kilograms
Related Controls: Zirconium metal and alloys in the form of tubes or assemblies of tubes, specially designed or prepared for use in a reactor are subject to the

export licensing authority of the Nuclear Regulatory Commission. (See 10 CFR part 110.) This entry includes waste and scrap containing zirconium. This entry does not control zirconium in the form of foil or strip having a thickness not exceeding 0.10 mm (0.004 in.).
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C235 Tritium, tritium compounds, mixtures containing tritium in which the ratio of tritium to hydrogen by atoms exceeds 1 part in 1000, or products or devices containing any of the foregoing; except, a product or device containing not more than 1.48x10³GBq (40 Ci) of tritium in any form.
License Requirements
Reason for Control:
Control(s): Items described in 1C235 are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).
License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C236 Alpha-emitting radionuclides having an alpha half-life of 10 days or greater but less than 200 years, compounds or mixtures containing any of these radionuclides with a total alpha activity of 37 GBq/kg (1 Ci/kg) or greater, or products or devices containing any of the foregoing, except a product or device containing less than 3.7 GBq (100 millicuries) of alpha activity.
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: Millicuries
Related Controls: Certain alpha emitting radionuclides are subject to the export licensing authority of the Nuclear Regulatory Commission. (See also 10 CFR part 110.)
Related Definition: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C237 Radium-226, radium-226 compounds, mixtures containing radium-226, or products or devices containing any of the foregoing, except medical applicators, or products or devices containing not more than 0.37 GBq (10 millicuries) of radium-226 in any form.
License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A

List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definition: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C238 Chlorine trifluoride (ClF₃).

License Requirements
Reason for Control: NP, AT

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A

List of Items Controlled
Unit: Kilograms
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C239 High explosives, other than those controlled by the U.S. Munitions List, or substances or mixtures containing more than 2% thereof, with a crystal density greater than 1.8 gm per cm³ and having a detonation velocity greater than 8,000 m/s.

License Requirements
Reason for Control:

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A

List of Items Controlled
Unit: Kilograms
Related Controls: See also 22 CFR part 12
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C240 Nickel powder or porous nickel metal, other than those controlled by 0C006, as follows (see List of Items Controlled).

License Requirements
Reason for Control:

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

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A

List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definitions: N/A
Items:
a. Powder with a nickel purity content of 99.0% by weight or greater and a mean particle size of less than 10 micrometers measured by American Society for Testing and Materials (ASTM) B330 standard, except filamentary nickel powders;
b. Porous nickel powder produced from materials controlled by 1C240.a, except single porous nickel sheets not exceeding 1,000 cm² per sheet.
Note: 1C240.b refers to porous metal formed by compacting and sintering the materials in 1C240.a to form a metal material with fine pores interconnected throughout the structure.

1C350 Chemicals that may be used as precursors for toxic chemical agents, as follows (see List of Items Controlled).

License Requirements
Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to entire entry AT applies to entire entry	CB Column 2. AT Column 1.

License Requirement Notes:
1. **SAMPLE SHIPMENTS:** Certain sample shipments of chemicals controlled under ECCN 1C350 may be made without a license, as provided by the following:
a. **Chemicals Not Eligible:** The following chemicals are not eligible for sample shipments: 0-Ethyl-2-diisopropylaminoethyl methylphosphonite (QL) (C.A.S. #57856-11-8), Ethylphosphonyl difluoride (C.A.S. #753-98-0), and Methylphosphonyl difluoride (C.A.S. #676-99-3).
b. **Countries Not Eligible:** The following countries are not eligible to receive sample shipments: Cuba, Iran, Iraq, Libya, North Korea, Sudan, Syria.
c. **Sample Shipments:** A license is not required for sample shipments when the cumulative total of these shipments does not exceed a 55-gallon container or 200 kg of each chemical to any one consignee per calendar year. Multiple sample shipments, in any quantity, not exceeding the cumulative totals indicated in this paragraph may be exported without a license, in accordance with the provisions of this Note 1. A consignee that receives a sample shipment under this exclusion may not resell, transfer or reexport the sample shipment, but may use the sample shipment for any other legal purpose unrelated to chemical weapons. However, a sample shipment received under this exclusion remains subject to all General Prohibitions including the end-use restriction described in §744.4 of the EAR.
d. The exporter is required to submit a quarterly written report for shipments of samples made under this Note 1. The report must be on company letterhead stationery (titled “Report of Sample Shipments of Chemical Precursors” at the top of the first page) and identify the chemical(s), Chemical Abstract Service Registry (C.A.S.) number(s), quantity(ies), the ultimate consignee’s name and address, and the date exported. The report must be sent to the U.S. Department of Commerce, Bureau of Export Administration, P.O. Box 273, Washington, DC 20044, Attn: “Report of Sample Shipments of Chemical Precursors”.
2. **MIXTURES:** Mixtures controlled by this entry that contain certain concentrations of precursor and intermediate chemicals are subject to the following licensing requirements:
a. A license is required, regardless of the concentrations in the mixture, for the following chemicals: 0-Ethyl-2-diisopropylaminoethyl methylphosphonite (QL) (C.A.S. #57856-11-8), Ethylphosphonyl difluoride (C.A.S. #753-98-0) and Methylphosphonyl difluoride (C.A.S. #676-99-3);
b. A license is required when at least one of the following chemicals constitutes more than 10 percent of the weight of the mixture: Arsenic trichloride (C.A.S. #7784-34-1), Benzoic acid (C.A.S. #76-93-7), Diethyl ethylphosphonate (C.A.S. #78-38-6), Diethyl methylphosphonite (C.A.S. #15715-41-0), Diethyl-N,N-dimethylphosphoramidate (C.A.S. #2404-03-7), N,N-Diisopropyl-beta-aminoethane thiol (C.A.S. #5842-07-9), N,N-Diisopropyl-2-aminoethyl chloride hydrochloride (C.A.S. #4261-68-1), N,N-Diisopropyl-beta-aminoethanol (C.A.S. #96-80-0), N,N-Diisopropyl-beta-aminoethyl chloride (C.A.S. #96-79-7), Dimethyl ethylphosphonate (C.A.S. #6163-75-3), Dimethyl methylphosphonate (C.A.S. #756-79-6), Ethylphosphonous dichloride [Ethylphosphinyl dichloride] (C.A.S. #1498-40-4), Ethylphosphonous difluoride [Ethylphosphinyl difluoride] (C.A.S. #430-78-4), Ethylphosphonyl dichloride (C.A.S. #1066-50-8), Methylphosphonous dichloride [Methylphosphinyl dichloride] (C.A.S. #676-83-5), Methylphosphonous difluoride [Methylphosphinyl difluoride] (C.A.S. #753-59-3), Methylphosphonyl dichloride (C.A.S. #676-97-1), Pinacolyl alcohol (C.A.S. #464-07-3), 3-Quinuclidinol (C.A.S. #1619-34-7), and Thiodiglycol (C.A.S. #111-48-8) (Related ECCN: 1C995);
c. A license is required when at least one of all other chemicals in the List of Items Controlled constitutes more than 25 percent of the weight of the mixture (related ECCN: 1C995); and
d. A license is not required under this entry for mixtures when the controlled chemical is a normal ingredient in consumer goods packaged for retail sale for personal use. Such consumer goods are controlled by ECCN EAR99.

Note to Mixtures: Calculation of concentrations of AG-controlled chemicals:
a. **Exclusion.** No chemical may be added to the mixture (solution) for the sole purpose of circumventing the Export Administration Regulations;
b. **Absolute Weight Calculation.** When calculating the percentage, by weight, of components in a chemical mixture, include all components of the mixture, including those that act as solvents;
c. **Example.**
11% chemical listed in paragraph b. of Note 2
39% chemical not listed in Note 2
50% Solvent
100% Mixture

11/100 = 11% chemical listed in paragraph b. of Note 2.
In this example, a license is required because a chemical listed in paragraph b. of Note 2 constitutes more than 10 percent of the weight of the mixture.
3. COMPOUNDS: A license is not required under this entry for chemical compounds created with any chemicals identified in this ECCN 1C350, unless those compounds are also identified in this entry.

Technical Notes:
1. For purposes of this entry, a “mixture” is defined as a solid, liquid or gaseous product made up of two or more components that do not react together under normal storage conditions.
2. The scope of this control applicable to Hydrogen Fluoride (Item 25 in List of Items Controlled) includes its liquid, gaseous, and aqueous phases, and hydrates.

License Exceptions

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

List of Items Controlled

Unit: Liters or kilograms, as appropriate
Related Controls: See also 1C995
Related Definition: See §770.2(k) of the EAR for synonyms for the chemicals listed in this entry.

- Items:
- a. Precursor Chemicals, as follows:
 - a.1. (C.A.S. #1341-49-7) Ammonium hydrogen fluoride;
 - a.2. (C.A.S. #7784-34-1) Arsenic trichloride;
 - a.3. (C.A.S. #76-93-7) Benzoic acid;
 - a.4. (C.A.S. #107-07-3) 2-Chloroethanol;
 - a.5. (C.A.S. #78-38-6) Diethyl ethylphosphonate;
 - a.6. (C.A.S. #15715-41-0) Diethyl methylphosphonite;
 - a.7. (C.A.S. S.#2404-03-7) Diethyl-N,N-dimethylphosphoramidate;
 - a.8. (C.A.S. #762-04-9) Diethyl phosphite;
 - a.9. (C.A.S. #100-37-8) N,N-Diethylaminoethanol;
 - a.10. (C.A.S. #5842-07-9) N,N-Diisopropyl-beta-aminoethane thiol;
 - a.11. (C.A.S. #4261-68-1) N,N-Diisopropyl-beta-aminoethyl chloride hydrochloride;
 - a.12. (C.A.S. #96-80-0) N,N-Diisopropyl-beta-aminoethanol;
 - a.13. (C.A.S. #96-79-7), N,N-Diisopropyl-beta-aminoethyl chloride;
 - a.14. (C.A.S. #108-18-9) Di-isopropylamine;
 - a.15. (C.A.S. #6163-75-3) Dimethyl ethylphosphonate;
 - a.16. (C.A.S. #756-79-6) Dimethyl methylphosphonate;
 - a.17. (C.A.S. #868-85-9) Dimethyl phosphite (dimethyl hydrogen phosphite);
 - a.18. (C.A.S. #124-40-3) Dimethylamine;
 - a.19. (C.A.S. #506-59-2) Dimethylamine hydrochloride;
 - a.20. (C.A.S. #57856-11-8) O-Ethyl-2-diisopropylaminoethyl methyl phosphonite (QL);
 - a.21. (C.A.S. #1498-40-4) Ethyl phosphonous dichloride [Ethyl phosphinyl dichloride];
 - a.22. (C.A.S. #430-78-4) Ethyl phosphonous difluoride [Ethyl phosphinyl difluoride];
 - a.23. (C.A.S. #1066-50-8) Ethyl phosphonyl dichloride;
 - a.24. (C.A.S. #753-98-0) Ethyl phosphonyl difluoride;
 - a.25. (C.A.S. #7664-39-3) Hydrogen fluoride;
 - a.26. (C.A.S. #3554-74-3) 3-Hydroxyl-1-methylpiperidine;
 - a.27. (C.A.S. #76-89-1) Methyl benzoate;
 - a.28. (C.A.S. #676-83-5) Methyl phosphonous dichloride [Methyl phosphinyl dichloride];
 - a.29. (C.A.S. #753-59-3) Methyl phosphonous difluoride [Methyl phosphinyl difluoride];
 - a.30. (C.A.S. #676-97-1) Methyl phosphonyl dichloride;
 - a.31. (C.A.S. #676-99-3) Methyl phosphonyl difluoride;
 - a.32. (C.A.S. #10025-87-3) Phosphorus oxychloride;
 - a.33. (C.A.S. #10026-13-8) Phosphorus pentachloride;
 - a.34. (C.A.S. #1314-80-3) Phosphorus pentasulfide;
 - a.35. (C.A.S. #7719-12-2) Phosphorus trichloride;
 - a.36. (C.A.S. #75-97-8) Pinacolone;
 - a.37. (C.A.S. #464-07-3) Pinacolyl alcohol;
 - a.38. (C.A.S. #151-50-8) Potassium cyanide;
 - a.39. (C.A.S. #7789-23-3) Potassium fluoride;
 - a.40. (C.A.S. #7789-29-9) Potassium bifluoride;
 - a.41. (C.A.S. #1619-34-7) 3-Quinuclidinol;
 - a.42. (C.A.S. #3731-38-2) 3-Quinuclidone;
 - a.43. (C.A.S. #1333-83-1) Sodium bifluoride;
 - a.44. (C.A.S. #143-33-9) Sodium cyanide;
 - a.45. (C.A.S. #7681-49-4) Sodium fluoride;
 - a.46. (C.A.S. #1313-82-2) Sodium sulfide;
 - a.47. (C.A.S. #10025-67-9) Sulfur monochloride;

- a.48. (C.A.S. #10545-99-0) Sulfur dichloride;
- a.49. (C.A.S. #111-48-8) Thiodiglycol;
- a.50. (C.A.S. #7719-09-7) Thionyl chloride;
- a.51. (C.A.S. #102-71-6) Triethanolamine;
- a.52. (C.A.S. #637-39-8) Triethanolamine hydrochloride;
- a.53. (C.A.S. #122-52-1) Triethyl phosphite; *and*
- a.54. (C.A.S. #121-45-9) Trimethyl phosphite.
- b. Reserved.

1C351 Human pathogens, zoonoses, and “toxins”, as follows (see List of Items Controlled).

License Requirements

Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to entire entry	CB Column 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: All vaccines and “immunotoxins” are excluded from the scope of this entry. See also 1C991.
Related Definition: (1) For the purposes of this entry “immunotoxin” is defined as an antibody-toxin conjugate intended to destroy specific target cells (e.g., tumor cells) that bear antigens homologous to the antibody. (2) For the purposes of this entry “subunit” is defined as a portion of the “toxin”.

- Items:
- a. Viruses, as follows:
 - a.1. Chikungunya virus;
 - a.2. Congo-Crimean haemorrhagic fever virus;
 - a.3. Dengue fever virus;
 - a.4. Eastern equine encephalitis virus;
 - a.5. Ebola virus;
 - a.6. Hantaan virus;
 - a.7. Japanese encephalitis virus;
 - a.8. Junin virus;
 - a.9. Lassa fever virus;
 - a.10. Lymphocytic choriomeningitis virus;
 - a.11. Machupo virus;
 - a.12. Marburg virus;
 - a.13. Monkey pox virus;
 - a.14. Rift Valley fever virus;
 - a.15. Tick-borne encephalitis virus (Russian Spring-Summer encephalitis virus);
 - a.16. Variola virus;
 - a.17. Venezuelan equine encephalitis virus;
 - a.18. Western equine encephalitis virus;
 - a.19. White pox; *or*
 - a.20. Yellow fever virus.
 - b. Rickettsiae, as follows:
 - b.1. Bartonella quintana (Rochalimea quintana, Rickettsia quintana);
 - b.2. Coxiella burnetii;
 - b.3. Rickettsia prowasecki; *or*
 - b.4. Rickettsia rickettsii.
 - c. Bacteria, as follows:
 - c.1. Bacillus anthracis;
 - c.2. Brucella abortus;
 - c.3. Brucella melitensis;
 - c.4. Brucella suis;
 - c.5. Burkholderia mallei (Pseudomonas mallei);
 - c.6. Burkholderia pseudomallei (Pseudomonas pseudomallei);
 - c.7. Chlamydia psittaci;
 - c.8. Clostridium botulinum;
 - c.9. Francisella tularensis;
 - c.10. Salmonella typhi;
 - c.11. Shigella dysenteriae;
 - c.12. Vibrio cholerae;
 - c.13. Yersinia pestis.
 - d. “Toxins”, as follows: and subunits thereof:
 - d.1. Botulinum toxins;
 - d.2. Clostridium perfringens toxins;
 - d.3. Conotoxin;

- d.4. Microcystin (cyanoginisin);
- d.5. Ricin;
- d.6. Saxitoxin;
- d.7. Shiga toxin;
- d.8. Staphylococcus aureus toxins;
- d.9. Tetrodotoxin;
- d.10. Verotoxin; *or*
- d.11. Aflatoxins.

1C352 Animal pathogens, as follows (see List of Items Controlled).

License Requirements

Reason for Control: CB, AT

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

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: \$ value

Related Controls: All vaccines are excluded from the scope of this entry. See also 1C991.

Related Definition: N/A

Items:

- a. Viruses, as follows:
 - a.1. African swine fever virus;
 - a.2. Avian influenza virus that are:
 - a.2.a. Defined in EC Directive 92/40/EC (O.J. L.16 23.1.92 p.19) as having high pathogenicity, as follows:
 - a.2.a.1. Type A viruses with an IVPI (intravenous pathogenicity index) in 6 week old chickens of greater than 1.2; *or*
 - a.2.a.2. Type A viruses H5 or H7 subtype for which nucleotide sequencing has demonstrated multiple basic amino acids at the cleavage site of haemagglutinin;
 - a.3. Bluetongue virus;
 - a.4. Foot and mouth disease virus;
 - a.5. Goat pox virus;
 - a.6. Porcine herpes virus (Aujeszky’s disease);
 - a.7. Swine fever virus (Hog cholera virus);
 - a.8. Lyssa virus;
 - a.9. Newcastle disease virus;
 - a.10. Peste des petits ruminants virus;
 - a.11. Porcine enterovirus type 9 (swine vesicular disease virus);
 - a.12. Rinderpest virus;
 - a.13. Sheep pox virus;
 - a.14. Teschen disease virus;
 - a.15. Vesicular stomatitis virus;
 - b. Bacteria, as follows:
 - b.1. Mycoplasma mycoides.
 - b.2. Reserved.

1C353 Genetically-modified “microorganisms”, as follows (see List of Items Controlled).

License Requirements

Reason for Control: CB, AT

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

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: \$ value

Related Controls: All vaccines are excluded from the scope of this entry. See also 1C991

Related Definition: N/A

Items:

a. Genetically modified “microorganisms” or genetic elements that contain nucleic acid sequences associated with pathogenicity of organisms controlled by 1C351.a to .c or 1C352 or 1C354;

b. Genetically modified “microorganisms” or genetic elements that contain nucleic acid sequences coding for any of the “toxins” controlled by 1C351.d or “sub-units of toxins” thereof.

1C354 Plant pathogens, as follows (see List of Items Controlled).

License Requirements

Reason for Control: CB, AT

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

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: \$ value

Related Controls: All vaccines are excluded from the scope of this entry. See also 1C991

Related Definitions: N/A

Items:

- a. Bacteria, as follows:
 - a.1. Xanthomonas albilineans;
 - a.2. Xanthomonas campestris pv. citri including strains referred to as Xanthomonas campestris pv. citri types A,B,C,D,E or otherwise classified as Xanthomonas citri, Xanthomonas campestris pv. aurantifolia or Xanthomonas campestris pv. citrumelo;
- b. Fungi, as follows:
 - b.1. Colletotrichum coffeanum var. virulans (Colletotrichum kahawae);
 - b.2. Cochliobolus miyabeanus (Helminthosporium oryzae);
 - b.3. Microcyclus ulei (syn. Dothidella ulei);
 - b.4. Puccinia graminis (syn. Puccinia graminis f. sp. tritici);
 - b.5. Puccinia striiformis (syn. Puccinia glumarum);
 - b.6. Magnaporthe grisea (pyricularia grisea/pyricularia oryzae).

1C980 Inorganic chemicals listed in Supplement No. 1 to part 754 of the EAR that were produced or derived from the Naval Petroleum Reserves (NPR) or became available for export as a result of an exchange of any NPR produced or derived commodities.

License Requirements

Reason for Control: SS

Control(s): SS applies to entire entry. For licensing requirements (and possible License Exceptions) proceed directly to part 754 of the EAR. The Commerce Country Chart is not designed to determine licensing requirements for items controlled for SS reasons.

List of Items Controlled

Unit: Barrels/Liters

Related Controls: N/A

Related Definitions: N/A

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

1C981 Crude petroleum including reconstituted crude petroleum, tar sands & crude shale oil listed in Supplement No. 1 to part 754 of the EAR.

License Requirements

Reason for Control: SS

Control(s): SS applies to entire entry. For licensing requirements (and possible License Exceptions) proceed directly to part 754 of the EAR. The Commerce Country Chart is not designed to determine licensing requirements for items controlled for SS reasons.

List of Items Controlled

Unit: Barrels/Liters

Related Controls: N/A

Related Definitions: N/A

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

1C982 Other petroleum products listed in Supplement No. 1 to part 754 of the EAR that were produced or derived from the Naval Petroleum Reserves (NPR) or became available for export

as a result of an exchange of any NPR produced or derived commodities.

License Requirements

Reason for Control: SS
Control(s): SS applies to entire entry. For licensing requirements (and possible License Exceptions) proceed directly to part 754 of the EAR. The Commerce Country Chart is not designed to determine licensing requirements for items controlled for SS reasons.

List of Items Controlled

Unit: \$ value
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C983 Natural gas liquids and other natural gas derivatives listed in Supplement No. 1 to part 754 of the EAR that were produced or derived from the Naval Petroleum Reserves (NPR) or became available for export as a result of an exchange of any NPR produced or derived commodities.

License Requirements

Reason for Control: SS
Control(s): SS applies to entire entry. For licensing requirements (and possible License Exceptions) proceed directly to part 754 of the EAR. The Commerce Country Chart is not designed to determine licensing requirements for items controlled for SS reasons.

List of Items Controlled

Unit: Barrels/Liters
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C984 Manufactured gas and synthetic natural gas (except when commingled with natural gas and thus subject to export authorization from the Department of Energy) listed in Supplement No. 1 to part 754 of the EAR that were produced or derived from the Naval Petroleum Reserves (NPR) or became available for export as a result of an exchange of any NPR produced or derived commodities.

License Requirements

Reason for Control: SS
Control(s): SS applies to entire entry. For licensing requirements (and possible License Exceptions) proceed directly to part 754 of the EAR. The Commerce Country Chart is not designed to determine licensing requirements for items controlled for SS reasons.

List of Items Controlled

Unit: Millions of cubic feet
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C988 Western red cedar (Thuja plicata), logs and timber, and rough, dressed and worked lumber containing wane listed in Supplement No. 2 to part 754 of the EAR.

License Requirements

Reason for Control: SS
Control(s): SS applies to entire entry. For licensing requirements (and possible License Exceptions) proceed directly to part 754 of the EAR. The Commerce Country Chart is not designed to determine licensing requirements for items controlled for SS reasons.

List of Items Controlled

Unit: Million board feet scribner
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C990 Fibrous and filamentary materials, not controlled by 1C010 or 1C210, for use in “composite” structures and with a specific modulus of 3.18x10⁶ m or greater and a specific tensile strength of 7.62x10⁴ m or greater.

License Requirements

Reason for Control: AT

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: Kilograms
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1C991 Vaccines containing items controlled by ECCNs 1C351, 1C352, 1C353, and 1C354; and immunotoxins.

License Requirements

Reason for Control: AT
Control(s): AT applies to entire entry. A license is required for items controlled by this entry to Cuba, Iran, Libya and North Korea. The Commerce Country Chart is not designed to determine licensing requirements for this entry. See part 746 of the EAR for additional information.

License Exceptions

LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled

Unit: \$ value
Related Controls: N/A
Related Definitions: For the purpose of this entry “immunotoxin” is defined as an antibody-toxin conjugate intended to destroy specific target cells (e.g., tumor cells) that bear antigens homologous to the antibody
Items: The list of items controlled is contained in the ECCN heading.

1C992 Oil well perforators.

License Requirements

Reason for Control: AT

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: Materials in number
Related Controls: N/A
Related Definitions: N/A
Items:

- a. Shaped charges specially designed for oil well operations, utilizing one charge functioning along a single axis, that upon detonation produce a hole, and:
 - a.1. Contain any formulation of RDX, PYX, PETN, HNS, or HMX; and
 - a.2. Have only a uniformly shaped conical liner with an included angle of 90 degrees or less; and
 - a.3. Have a total explosive mass of no more than 90 grams; and
 - a.4. Have a diameter not exceeding three inches.
- b. Reserved.

1C995 Mixtures containing precursor and intermediate chemicals used in the “production” of chemical warfare agents that are not controlled by ECCN 1C350.

License Requirements

Reason for Control: AT
Control(s): AT applies to entire entry. A license is required for items controlled by this entry to Cuba, Iran, Libya and North Korea. The Commerce Country Chart is not designed to determine licensing requirements for this entry. See part 746 of the EAR for additional information.

License Exceptions

LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled

Unit: Kilograms
Related Controls: N/A
Related Definition: For calculation of de minimis quantities of controlled chemicals in mixtures, see the License Requirements Notes 2 and 3 under ECCN 1C350 and §770.4 of the EAR
Items: The list of items controlled is contained in the ECCN heading.

1C998 Detonation cords and equipment and explosive material (n.e.s).
License Requirements
Reason for Control: UN

Control(s)	Country chart
UN applies to entire entry	Federal Republic of Yugoslavia (Serbia and Montenegro)

License Exceptions
LVS: N/A
GBS: N/A
CIV: N/A
List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definitions: Items contained in this entry are those materials other than materials subject to the licensing authority of the U.S. Department of State, Office of Defense Trade Controls (see 22 CFR part 121) and ECCN 1C018.
Items: The list of items controlled is contained in the ECCN heading.

D. Software

1D001 “Software” specially designed or modified for the “development”, “production” or “use” of equipment controlled by 1B001 to 1B003.
License Requirements
Reason for Control: NS, MT, NP, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
MT applies to “software” for the “development”, “production”, or “use” of items controlled by 1B001 for MT reasons.	MT Column 1
NP applies to “software” for the “development”, “production” or “use” of items controlled by 1B001 for NP reasons.	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions
CIV: Yes, except N/A for MT
TSR: Yes, except N/A for MT
List of Items Controlled
Unit: \$ value
Related Controls: See also 1D101 and 1D102
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1D002 “Software” for the “development” of organic “matrix”, metal “matrix” or carbon “matrix” laminates or “composites”.
License Requirements
Reason for Control: NS, MT, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 1
MT applies to “software” specially designed or modified for the “development” of “composites” controlled by 1A, 1B or 1C entries 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 Exceptions.
License Exceptions
CIV: Yes, except N/A for MT
TSR: Yes, except N/A for MT
List of Items Controlled
Unit: \$ value
Related Controls: “Software” for items controlled by 1A102 are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls (see 22 CFR part 121).

Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1D018 “Software” specially designed or modified for the “development”, “production”, or “use” of items controlled by 1B018.
License Requirements
Reason for Control: NS, MT, AT, UN

Control(s)	Country chart
NS applies to entire entry	NS Column 1
MT applies to “software” for the “development”, “production”, or “use” of items controlled by 1B018 for MT reasons	MT Column 1
AT applies to entire entry	AT Column 1
UN applies to entire entry	Rwanda; Federal Republic of Yugoslavia (Serbia and Montenegro)

License Exceptions
CIV: N/A
TSR: N/A
List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1D101 “Software” specially designed for the “use” of goods controlled by 1B101.
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
CIV: N/A
TSR: N/A
List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1D102 Other “software” not controlled by 1D001, 1D002, and 1D103, specially designed for the “development”, “production” or “use” of items controlled by 1A, 1B, and 1C for MT reasons.
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
CIV: N/A
TSR: N/A
List of Items Controlled
Unit: \$ value
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1D103 “Software” specially designed for analysis of reduced observables such as radar reflectivity, ultraviolet/infrared signatures and acoustic signatures.

License Requirements
Reason for Control: MT, AT

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

License Exceptions

CIV: N/A

TSR: N/A

List of Items Controlled

Unit: \$ value

Related Controls: N/A

Related Definitions: N/A

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

1D201 “Software” specially designed for the “use” of goods controlled by 1B201.

License Requirements
Reason for Control: NP, AT

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

License Exceptions

CIV: N/A

TSR: N/A

List of Items Controlled

Unit: \$ value

Related Controls: N/A

Related Definitions: N/A

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

1D390 “Software” for process control that is specifically configured to control or initiate “production” of chemicals controlled by 1C350.

License Requirements
Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to entire entry AT applies to entire entry	NP Column 2 AT Column 1

License Exceptions

CIV: N/A

TSR: N/A

List of Items Controlled

Unit: \$ value

Related Controls: N/A

Related Definitions: N/A

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

1D993 “Software” specially designed for the “development”, “production”, or “use” of equipment or materials controlled by 1C210.b, 1C990, or 1C994.

License Requirements
Reason for Control: AT

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

License Exceptions

CIV: N/A

TSR: N/A

List of Items Controlled

Unit: \$ value

Related Controls: N/A

Related Definitions: N/A

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

E. Technology

1E001 “Technology” according to the General Technology Note for the “development” or “production” of items controlled by 1A001.b, 1A001.c, 1A002, 1A003, 1A004, 1A005, 1A102, 1B or 1C (except 1C980 to 1C984, 1C988, 1C990, 1C991, 1C992, 1C994 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, 1B001 to 1B003, 1B018, 1B225, 1C001 to 1C010, 1C018, 1C230, 1C231, 1C233, or 1C234	NS Column 1
MT applies to “technology” 1 for items controlled by 1B001, 1B101, 1B115, 1B116, 1C001, 1C007, 1C101, 1C107, 1C011, 1C111, 1C116, or 1C117 for MT reasons	MT Column 1
NP applies to “technology” for items controlled by 1A002, 1B001, 1B101, 1B201, 1B225 to 1B232, 1C001, 1C010, 1C202, 1C210, 1C216, 1C225 to 1C234, 1C236 to 1C238 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 Requirement Notes: See §743.1 of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions

CIV: N/A

TSR: Yes, except for MT and for exports and reexports to destinations outside of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, or the United Kingdom of “technology” for items controlled by 1C001 or 1C012; or 1A002.a, having an organic “matrix” and made from materials listed under 1C010.c or 1C010.d.

List of Items Controlled

Unit: N/A

Related Controls: (1) See also 1E101 and 1E210. (2) “Technology” for items controlled by 1C235 are subject to the export licensing authority of the Department of Energy (see 10 CFR part 810). (3) “Technology” for items described in 1C012 are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110). (4) “Technology” for items controlled by 1A102 are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls (see 22 CFR part 121).

Related Definitions: N/A

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

1E002 Other “technology”, as follows (see List of Items Controlled).

License Requirements
Reason for Control: NS, MT, AT

Control(s)	Country Chart
NS applies to entire entry MT applies to 1E002.e AT applies to entire entry	NS Column 1 MT Column 1 AT Column 1

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

License Exceptions

CIV: N/A

TSR: Yes, except for 1E002.e

List of Items Controlled

Unit: N/A

Related Controls: See also 1E102, 1E202, and 1E101 for “technology” related to 1E002.e

Related Definitions: N/A

Items:

a. “Technology” for the “development” or “production” of polybenzothiazoles or polybenzoxazoles;

- b. “Technology” for the “development” or “production” of fluoroelastomer compounds containing at least one vinyl ether monomer;
- c. “Technology” for the design or “production” of the following base materials or non-“composite” ceramic materials:
 - c.1. Base materials having all of the following characteristics:
 - c.1.a. Any of the following compositions:
 - c.1.a.1. Single or complex oxides of zirconium and complex oxides of silicon or aluminum;
 - c.1.a.2. Single nitrides of boron (cubic crystalline forms);
 - c.1.a.3. Single or complex carbides of silicon or boron; *or*
 - c.1.a.4. Single or complex nitrides of silicon;
 - c.1.b. Total metallic impurities, excluding intentional additions, of less than:
 - c.1.b.1. 1,000 ppm for single oxides or carbides; *or*
 - c.1.b.2. 5,000 ppm for complex compounds or single nitrides; *and*
 - c.1.c. Having any of the following:
 - c.1.c.1. Average particle size equal to or less than 5 µm and no more than 10% of the particles larger than 10 µm; *or*
 - c.1.c.2. Continuous or chopped fibers less than 10 µm in diameter;
- c.2. Non-“composite” ceramic materials composed of the materials described in 1E002.c.1;

Note: 1E002.c.2 does not control technology for the design or production of abrasives.

- d. “Technology” for the “production” of aromatic polyamide fibers;
- e. “Technology” for the installation, maintenance or repair of materials controlled by 1C001;
- f. “Technology” for the repair of “composite” structures, laminates or materials controlled by 1A002, 1C007.c or 1C007.d.

Note: 1E002.f does not control “technology” for the repair of “civil aircraft” structures using carbon “fibrous or filamentary materials” and epoxy resins, contained in aircraft manufacturers’ manuals.

1E101 “Technology” according to the General Technology Note for the “use” of goods controlled by 1A102, 1B001, 1B101, 1B115, 1B116, 1C001, 1C007, 1C011, 1C101, 1C107, 1C111, 1C116, 1C117, 1D101 or 1D103.

License Requirements
Reason for Control: MT, NP, AT

Control(s)	Country Chart
MT applies to entire entry	MT Column 1
NP applies to 1B001.a and 1B101	NP Column 1
AT applies to entire entry	AT Column 1

License Exceptions
CIV: N/A
TSR: N/A
List of Items Controlled
Unit: N/A
Related Controls: “Technology” for items controlled by 1A102 are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls (see 22 CFR part 121).
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

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

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
CIV: N/A
TSR: N/A
List of Items Controlled
Unit: N/A
Related Controls: N/A

Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1E103 “Technical data” (including processing conditions) for the regulation of temperature, pressure or atmosphere in autoclaves or hydroclaves, when used for the “production” of “composites” or partially processed “composites”.

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
CIV: N/A
TSR: N/A
List of Items Controlled
Unit: N/A
Related Controls: See also 1E203
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1E104 “Technology” relating to 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 to 20 kPa.

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
CIV: N/A
TSR: N/A
List of Items Controlled
Unit: N/A
Related Controls: This entry includes “technology” for the composition of precursor gases, flow-rates and process control schedules and parameters.
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1E201 “Technology” according to the General Technology Note for the “use” of goods controlled by 1A002, 1A202, 1A225 to 1A227, 1B201, 1B225 to 1B233, 1C002.a.2.c or .d, 1C010.b, 1C202, 1C210, 1C216, 1C225 to 1C240 or 1D201.

License Requirements
Reason for Control: NP, AT

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

License Exceptions
CIV: N/A
TSR: N/A
List of Items Controlled
Unit: N/A
Related Controls: N/A
Related Definitions: N/A
Items: The list of items controlled is contained in the ECCN heading.

1E202 “Technology” according to the General Technology Note for the “development” or “production” of goods controlled by 1A202 or 1A225 to 1A227.

License Requirements
Reason for Control: NP, AT

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

License Exceptions

CIV: N/A

TSR: N/A

List of Items Controlled

Unit: N/A

Related Controls: N/A

Related Definitions: N/A

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

1E203 “Technology” according to the General Technology Note for the “development” of “software” controlled by 1D201.

License Requirements

Reason for Control: NP, AT

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

License Exceptions

CIV: N/A

TSR: N/A

List of Items Controlled

Unit: N/A

Related Controls: N/A

Related Definitions: N/A

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

1E350 “Technology” according to the “General Technology Note” for facilities designed or intended to produce chemicals controlled by 1C350.

License Requirements

Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to entire entry	CB Column 2
AT applies to entire entry	AT Column 1

License Exceptions

CIV: N/A

TSR: N/A

List of Items Controlled

Unit: N/A

Related Controls: N/A

Related Definitions: N/A

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

1E351 “Technology” according to the “General Technology Note” for the disposal of chemicals or microbiological materials controlled by 1C350, 1C351, 1C352, 1C353, or 1C354.

License Requirements

Reason for Control: CB, AT

Control(s)	Country Chart
CB applies to “technology” for the disposal of items controlled by 1C351, 1C352, 1C353, or 1C354	CB Column 1
CB applies to “technology” for the disposal of items controlled by 1C350	CB Column 2
AT applies to entire entry	AT Column 1

License Exceptions

CIV: N/A

TSR: N/A

List of Items Controlled

Unit: N/A

Related Controls: N/A

Related Definitions: N/A

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

1E994 “Technology” for the “development”, “production”, or “use” of fibrous and filamentary materials controlled by 1C990 or fluorocarbon electronic cooling fluids controlled by 1C994.

License Requirements

Reason for Control: AT

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

License Exceptions

CIV: N/A

TSR: N/A

List of Items Controlled

Unit: N/A

Related Controls: N/A

Related Definitions: N/A

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

EAR99 Items subject to the EAR that are not elsewhere controlled by this CCL Category or in any other category in the CCL are designated by the number EAR99.

CATEGORY 2—MATERIALS PROCESSING

Note: For quiet running bearings, see the U.S. Munitions List.

A. Equipment, Assemblies and Components

2A001 Anti-friction bearings and bearing systems, as follows, (see List of Items Controlled) and components therefor.

License Requirements

Reason for Control: NS, AT

Control(s)	Country Chart
NS applies to entire entry	NS Column 2
AT applies to entire entry	AT Column 1

License Exceptions

LVS: \$3,000

GBS: Yes, for 2A001.a and 2A001.b

CIV: Yes, for 2A001.a and 2A001.b

List of Items Controlled

Unit: \$ value

Related Controls: (1) See also 2A991. (2) This entry does not control balls with tolerance specified by the manufacturer in accordance with ISO 3290 as grade 5 or worse. (3) Quiet running bearings are subject to the export licensing authority of the Department of State, Office of Defense Trade Controls. (See 22 CFR part 121.)

Related Definitions: Annular Bearing Engineers Committee (ABEC).

Items:

a. Ball bearings and solid roller bearings having tolerances specified by the manufacturer in accordance with ABEC 7, ABEC 7P, ABEC 7T or ISO Standard Class 4 or better (or national equivalents), and having rings, balls or rollers made from monel or beryllium;

Note: 2A001.a does not control tapered roller bearings.

b. Other ball bearings and solid roller bearings having tolerances specified by the manufacturer in accordance with ABEC 9, ABEC 9P or ISO Standard Class 2 or better (or national equivalents);

Note: 2A001.b does not control tapered roller bearings.

c. Active magnetic bearing systems using any of the following:

c.1. Materials with flux densities of 2.0 T or greater and yield strengths greater than 414 MPa;