Commission Regulation (EC) No 117/2008 of 28 January 2008 amending Council Regulation (EC) No 329/2007 concerning restrictive measures against the Democratic People's Republic of Korea

COMMISSION REGULATION (EC) No 117/2008

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amending Council Regulation (EC) No 329/2007 concerning restrictive measures against the Democratic People's Republic of Korea

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Council Regulation (EC) No 329/2007[(1)], and in particular Article 13(a) and (b) thereof,

Whereas:

(1) According to Article 2 of Regulation (EC) No 329/2007, Annex I to that Regulation should list the goods and technology, including software, whose sale, supply, transfer or export to the Democratic People's Republic of Korea, or North Korea, is prohibited in accordance with determinations made by the competent Sanctions Committee of the United Nations or by the UN Security Council.

(2) The UN Security Council determined on 14 October 2006, when it adopted Resolution 1718, that the goods and technology set out in UN documents S/2006/814 and S/2006/815 should be subject to the ban. The competent Sanctions Committee determined on 1 November 2006 that the goods and technology set out in UN document S/2006/853 should also be subject to the ban.

(3) However, according to Article 2 of Regulation (EC) No 329/2007, Annex I should not include goods and technology included in the Common Military List of the European Union[(2)].

(4) In order to facilitate application, Annex I to Regulation (EC) No 329/2007 should present the goods and technology subject to the ban by reference to Annex I to Council Regulation (EC) No 1334/2000 setting up a Community regime for the control of exports of dual-use items and technology[(3)].

(5) Bulgaria, Austria and Sweden requested that their websites indicating the competent authorities be inserted in the list set out in Annex II to Regulation (EC) No 329/2007 and Estonia and Hungary asked for corrections as regards their websites,

HAS ADOPTED THIS REGULATION:

Article 1

1 Annex I to Regulation (EC) No 329/2007 is hereby replaced by the text in Annex I to this Regulation.

2 Annex II to Regulation (EC) No 329/2007 is hereby replaced by the text in Annex II to this Regulation.

Article 2

This Regulation shall enter into force on the day following that of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

ANNEX I

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Goods and technology referred to in Articles 2 and 3

INTRODUCTORY NOTES

Where possible, the items in this Annex are defined by reference to the list of dual-use items set out in Annex I to Council Regulation (EC) No 1334/2000, as amended by Council Regulation (EC) No 1183/2007[(4)].

The descriptions of the items in this Annex are often, but not always, identical or similar to descriptions of the items set out in the list of dual-use items. Each description is based as much as possible on that of the first dual-use item referred to. Where there are differences between the two descriptions, the description of the goods or technology found in this Annex shall be decisive. For the sake of clarity, an asterisk indicates that a description is based on the description of the dual-use item referred to, but contains different values for the technical parameters used or omits or adds specific elements.

If only part of the scope of the dual-use item referred to is covered by an entry in this Annex, the reference number taken from the list of dual-use items is preceded by "*ex*".

For the definitions of terms between "double quotation marks" please refer to Regulation (EC) No 1183/2007.

This Annex does not include goods and technology (including software) included in the Common Military List of the European Union[(5)]. In accordance with Article 1(1)(a) of Common Position 2006/795/CFSP[(6)], the Member States of the European Union will prohibit the direct or indirect supply, sale or transfer of such goods and technology to the Democratic People's Republic of Korea.

General Notes

1. For control or prohibition of goods which are designed or modified for military use, see the relevant list(s) of controls or prohibitions on military goods maintained by individual Member States. References in this Annex that state "See also Military Goods Controls" refer to the same lists.

2. The object of the prohibitions contained in this Annex should not be defeated by the export of any non-prohibited goods (including plant) containing one or more prohibited components when the prohibited component or components are the principal element of the goods and can feasibly be removed or used for other purposes.

N.B.: In judging whether the prohibited component or components are to be considered the principal element, it is necessary to weigh the factors of quantity, value and technological know-how involved and other special circumstances which might establish the prohibited component or components as the principal element of the goods being procured.

3. Goods specified in this Annex include both new and used goods.

Nuclear Technology Note (NTN)

(To be read in conjunction with Section I.0.B.)

The sale, supply, transfer or export of "technology" directly associated with any goods whose sale, supply, transfer or export is prohibited in Section I.0.A is prohibited according to the provisions of Category I.0.

"Technology" for the "development", "production" or "use" of goods under prohibition remains under prohibition even when applicable to non-prohibited goods.

The approval of goods for export granted in accordance with Article 5 of Regulation (EC) No 329/2007, also authorizes the export to the same end-user of the minimum "technology" required for the installation, operation, maintenance and repair of the goods.

Prohibitions on "technology" transfer do not apply to information "in the public domain" or to "basic scientific research".

General Technology Note (GTN)

(To be read in conjunction with Sections I.1B, I.2B, I.3B, I.4B, I.5B, I.6B, I.7B and I.9B.)

The sale, supply, transfer or export of "technology" which is "required" for the "development", "production" or "use" of goods whose sale, supply, transfer or export is prohibited in Categories I.1 to I.9, is prohibited according to the provisions of Categories I.1 to I.9.

"Technology""required" for the "development", "production" or "use" of goods under prohibition remains under prohibition even when applicable to non-prohibited goods.

Prohibitions do not apply to that "technology" which is the minimum necessary for the installation, operation, maintenance (checking) and repair of those goods which are not prohibited or whose export has been authorised in accordance with Regulation (EC) No 329/2007.

Prohibitions on "technology" transfer do not apply to information "in the public domain", to "basic scientific research" or to the minimum necessary information for patent applications.

General Software Note (GSN)

(This note overrides any prohibition within sections I.0B, I.1B, I.2B, I.3B, I.4B, I.5B, I.6B, I.7B and I.9B.)

Categories I.0 to I.9 of this list do not prohibit "software" which is either:

a. Generally available to the public by being:

   1. Sold from stock at retail selling points, without restriction, by means of:

      a. Over-the-counter transactions;

      b. Mail order transactions;

      c. Electronic transactions; or

      d. Telephone order transactions; and

   2. Designed for installation by the user without further substantial support by the supplier; or

b. "In the public domain".

I.0 NUCLEAR MATERIAL, FACILITIES AND EQUIPMENT

I.0A

GOODS

No	Relevant item(s) from Annex to Regulation (EC) No 1183/2007	Description
I.0A.001	0A001	"Nuclear reactors" and specially designed or prepared equipment and components therefor, as follows: a. "Nuclear reactors" capable of operation so as to maintain a controlled self-sustaining fission chain reaction; b. Metal vessels, or major shop-fabricated parts therefor, specially designed or prepared to contain the core of a "nuclear reactor", including the reactor vessel head for a reactor pressure vessel; c. Manipulative equipment specially designed or prepared for inserting or removing fuel in a "nuclear reactor"; d. Control rods specially designed or prepared for the control of the fission process in a "nuclear reactor", support or suspension structures therefor, rod drive mechanisms and rod guide tubes; e. Pressure tubes specially designed or prepared to

			contain fuel elements and the primary coolant in a “nuclear reactor” at an operating pressure in excess of 5,1 MPa;
		f.	Zirconium metal and alloys in the form of tubes or assemblies of tubes in which the ratio of hafnium to zirconium is less than 1:500 parts by weight, specially designed or prepared for use in a “nuclear reactor”;
		g.	Coolant pumps specially designed or prepared for circulating the primary coolant of “nuclear reactors”;
		h.	“Nuclear reactor internals” specially designed or prepared for use in a “nuclear reactor”, including support columns for the core, fuel channels, thermal shields, baffles, core grid plates, and diffuser plates; *Note: In I.0A.001.h. “nuclear reactor internals” means any major structure within a reactor vessel which has one or more functions such as supporting the core, maintaining fuel alignment, directing primary coolant flow, providing radiation shields for the reactor vessel,*

		and guiding in-core instrumentation. i. Heat exchangers (steam generators) specially designed or prepared for use in the primary coolant circuit of a "nuclear reactor"; j. Neutron detection and measuring instruments specially designed or prepared for determining neutron flux levels within the core of a "nuclear reactor".
I.0A.002	*ex* 0B001* (0B001.a, 0B001.b.1-13, 0B001.c, 0B001.d 0B001.e 0B001.f 0B001.g 0B001.h 0B001.i and 0B001.j)	Plant for the separation of isotopes of "natural uranium", "depleted uranium" and "special fissile materials", and specially designed or prepared equipment and components therefor, as follows: a. Plant specially designed for separating isotopes of "natural uranium", "depleted uranium", and "special fissile materials", as follows: 1. Gas centrifuge separation plant; 2. Gaseous diffusion separation plant; 3. Aerodynamic separation plant; 4. Chemical exchange separation plant; 5. Ion-exchange

				separation plant;
			6.	Atomic vapour "laser" isotope separation (AVLIS) plant;
			7.	Molecular "laser" isotope separation (MLIS) plant;
			8.	Plasma separation plant;
			9.	Electro magnetic separation plant;
		b.*		Gas centrifuges and assemblies and components, specially designed or prepared for gas centrifuge separation process, as follows: *Note: In I.0A.002.b. "high strength-to-density ratio material" means any of the following*:
			a.	*Maraging steel capable of an ultimate tensile strength of 2 050 MPa or more*;
			b.	*Aluminium alloys capable of an ultimate tensile strength of*

		460 MPa or more; or c. *"Fibrous or filamentary materials" with a "specific modulus" of more than 3,18 × 10^6 m and a "specific tensile strength" greater than 76,2 × 10^3 m*; 1. Gas centrifuges; 2. Complete rotor assemblies; 3. Rotor tube cylinders with a wall thickness of 12 mm or less, a diameter of between 75 mm and 400 mm, made from "high strength-to-density ratio materials"; 4. Rings or bellows with a wall thickness of 3 mm or less and a diameter

			of between 75 mm and 400 mm and designed to give local support to a rotor tube or to join a number together, made from “high strength-to-density ratio materials”;
		5.	Baffles of between 75 mm and 400 mm diameter for mounting inside a rotor tube, made from “high strength-to-density ratio materials”.
		6.	Top or bottom caps of between 75 mm and 400 mm diameter to fit the ends of a rotor tube, made from “high strength-to-density ratio materials”;

		7.	Magnetic suspension bearings consisting of an annular magnet suspended within a housing made of or protected by "materials resistant to corrosion by UF_6" containing a damping medium and having the magnet coupling with a pole piece or second magnet fitted to the top cap of the rotor;
		8.	Specially prepared bearings comprising a pivot-cup assembly mounted on a damper;
		9.	Molecular pumps comprised of cylinders having internally machined or extruded helical

			grooves and internally machined bores;
		10.	Ring-shaped motor stators for multiphase AC hysteresis (or reluctance) motors for synchronous operation within a vacuum in the frequency range of 600 to 2 000 Hz and a power range of 50 to 1 000 Volt-Amps;
		11.	Centrifuge housing/ recipients to contain the rotor tube assembly of a gas centrifuge, consisting of a rigid cylinder of wall thickness up to 30 mm with precision machined ends and made of or protected by "materials

			resistant to corrosion by UF_6”;
		12.	Scoops consisting of tubes of up to 12 mm internal diameter for the extraction of UF_6 gas from within a centrifuge rotor tube by a Pitot tube action, made of or protected by “materials resistant to corrosion by UF_6”;
		13.	Frequency changers (converters or inverters) specially designed or prepared to supply motor stators for gas centrifuge enrichment, having all of the following characteristics, and specially designed components therefor:
			a. Multiphase output

						of 600 to 2 000 Hz;	
					b.	Frequency control better than 0,1 %;	
					c.	Harmonic distortion of less than 2 %; and	
					d.	An efficiency greater than 80 %;	
			c.	Equipment and components, specially designed or prepared for gaseous diffusion separation process, as follows:			
				1.	Gaseous diffusion barriers made of porous metallic, polymer or ceramic “materials resistant to corrosion by UF_6” with a pore size of 10 to 100 nm, a thickness of 5 mm or less, and, for	

		tubular forms, a diameter of 25 mm or less; 2. Gaseous diffuser housings made of or protected by "materials resistant to corrosion by UF_6"; 3. Compressors (positive displacement, centrifugal and axial flow types) or gas blowers with a suction volume capacity of 1 m^3/min or more of UF_6, and discharge pressure up to 666,7 kPa, made of or protected by "materials resistant to corrosion by UF_6"; 4. Rotary shaft seals for compressors or blowers specified in I.0A.002.c.3. and

			designed for a buffer gas in-leakage rate of less than 1 000 cm^3/min.;
		5.	Heat exchangers made of aluminium, copper, nickel, or alloys containing more than 60 per cent nickel, or combinations of these metals as clad tubes, designed to operate at sub-atmospheric pressure with a leak rate that limits the pressure rise to less than 10 Pa per hour under a pressure differential of 100 kPa;
		6.	Bellow valves made of or protected by "materials resistant to corrosion by UF_6", with a diameter of 40 mm

			to 1 500 mm;
		d.	Equipment and components, specially designed or prepared for aerodynamic separation process, as follows:
			1. Separation nozzles consisting of slit-shaped, curved channels having a radius of curvature less than 1 mm, resistant to corrosion by UF_6, and having a knife-edge contained within the nozzle which separates the gas flowing through the nozzle into two streams;
			2. Tangential inlet flow-driven cylindrical or conical tubes, (vortex tubes), made of or protected by "materials resistant to corrosion by UF_6"

			with a diameter of between 0,5 cm and 4 cm and a length to diameter ratio of 20:1 or less and with one or more tangential inlets;
		3.	Compressors (positive displacement, centrifugal and axial flow types) or gas blowers with a suction volume capacity of 2 m^3/min or more, made of or protected by "materials resistant to corrosion by UF_6", and rotary shaft seals therefor;
		4.	Heat exchangers made of or protected by "materials resistant to corrosion by UF_6";

		5. Aerodynamic separation element housings, made of or protected by "materials resistant to corrosion by UF_6" to contain vortex tubes or separation nozzles; 6. Bellows valves made of or protected by "materials resistant to corrosion by UF_6", with a diameter of 40 to 1 500 mm; 7. Process systems for separating UF_6 from carrier gas (hydrogen or helium) to 1 ppm UF_6 content or less, including: a. Cryogenic heat exchangers and cryoseparators capable of temperatures of 153

					K (– 120 °C) or less;
				b.	Cryogenic refrigeration units capable of temperatures of 153 K (– 120 °C) or less;
				c.	Separation nozzle or vortex tube units for the separation of UF_6 from carrier gas;
				d.	UF_6 cold traps capable of temperatures of 253 K (– 20 °C) or less;
			e.	Equipment and components, specially designed or prepared for chemical exchange	

		separation process, as follows: 1. Fast-exchange liquid-liquid pulse columns with stage residence time of 30 seconds or less and resistant to concentrated hydrochloric acid (e.g. made of or protected by suitable plastic materials such as fluorocarbon polymers or glass); 2. Fast-exchange liquid-liquid centrifugal contactors with stage residence time of 30 seconds or less and resistant to concentrated hydrochloric acid (e.g. made of or protected by suitable plastic materials such as fluorocarbon polymers or glass); 3. Electrochemical reduction cells

			resistant to concentrated hydrochloric acid solutions, for reduction of uranium from one valence state to another;
		4.	Electrochemical reduction cells feed equipment to take U^{+4} from the organic stream and, for those parts in contact with the process stream, made of or protected by suitable materials (e.g. glass, fluorocarbon polymers, polyphenyl sulphate, polyether sulfone and resin-impregnated graphite);
		5.	Feed preparation systems for producing high purity uranium chloride solution consisting

				of dissolution, solvent extraction and/or ion exchange equipment for purification and electrolytic cells for reducing the uranium U^{+6} or U^{+4} to U^{+3};
			6.	Uranium oxidation systems for oxidation of U^{+3} to U^{+4};
		f.		Equipment and components, specially designed or prepared for ion-exchange separation process, as follows:
			1.	Fast reacting ion-exchange resins, pellicular or porous macro-reticulated resins in which the active chemical exchange groups are limited to a coating on the surface of an inactive porous support

			structure, and other composite structures in any suitable form, including particles or fibres, with diameters of 0,2 mm or less, resistant to concentrated hydrochloric acid and designed to have an exchange rate half-time of less than 10 seconds and capable of operating at temperatures in the range of 373 K (100 °C) to 473 K (200 °C);
		2.	Ion exchange columns (cylindrical) with a diameter greater than 1 000 mm, made of or protected by materials resistant to concentrated hydrochloric

				acid (e.g. titanium or fluorocarbon plastics) and capable of operating at temperatures in the range of 373 K (100 °C) to 473 K (200 °C) and pressures above 0,7 MPa;
			3.	Ion exchange reflux systems (chemical or electrochemical oxidation or reduction systems) for regeneration of the chemical reducing or oxidizing agents used in ion exchange enrichment cascades;
		g.		Equipment and components, specially designed or prepared for atomic vapour “laser” isotope separation process (AVLIS), as follows:

		1.	High power strip or scanning electron beam guns with a delivered power of more than 2,5 kW/cm for use in uranium vaporization systems;
		2.	Liquid uranium metal handling systems for molten uranium or uranium alloys, consisting of crucibles, made of or protected by suitable corrosion and heat resistant materials (e.g. tantalum, yttria-coated graphite, graphite coated with other rare earth oxides or mixtures thereof), and cooling equipment for the crucibles;

			N.B.: See also I.2A.002.
		3.	Product and tails collector systems made of or lined with materials resistant to the heat and corrosion of uranium metal vapour or liquid, such as yttria-coated graphite or tantalum;
		4.	Separator module housings (cylindrical or rectangular vessels) for containing the uranium metal vapour source, the electron beam gun and the product and tails collectors;
		5.	“Lasers” or “laser” systems for the separation of uranium isotopes with a

			spectrum frequency stabiliser for operation over extended periods of time; N.B.: See also I.6A.001 and I.6A.008.
		h.	Equipment and components, specially designed or prepared for molecular "laser" isotope separation process (MLIS) or chemical reaction by isotope selective laser activation (CRISLA), as follows:
			1. Supersonic expansion nozzles for cooling mixtures of UF_6 and carrier gas to 150 K (– 123 °C) or less and made from "materials resistant to corrosion by UF_6";
			2. Uranium pentafluoride (UF_5) product collectors consisting of filter, impact, or cyclone-type

		collectors or combinations thereof, and made of "materials resistant to corrosion by UF_5/UF_6";
		3. Compressors made of or protected by "materials resistant to corrosion by UF_6", and rotary shaft seals therefor;
		4. Equipment for fluorinating UF_5 (solid) to UF_6 (gas);
		5. Process systems for separating UF_6 from carrier gas (e.g. nitrogen or argon) including:
		a. Cryogenic heat exchangers and cryoseparators capable of temperatures of 153 K (– 120 °C)

						or less;
					b.	Cryogenic refrigeration units capable of temperatures of 153 K (– 120 °C) or less;
					c.	UF_6 cold traps capable of temperatures of 253 K (– 20 °C) or less;
				6.		“Lasers” or “laser” systems for the separation of uranium isotopes with a spectrum frequency stabiliser for operation over extended periods of time;
				N.B.: See also I.6A.001 and I.6A.008.		
			i.	Equipment and components,		

		specially designed or prepared for plasma separation process, as follows: 1. Microwave power sources and antennae for producing or accelerating ions, with an output frequency greater than 30 GHz and mean power output greater than 50 kW; 2. Radio frequency ion excitation coils for frequencies of more than 100 kHz and capable of handling more than 40 kW mean power; 3. Uranium plasma generation systems; 4. Liquid metal handling systems for molten uranium or uranium alloys,

			consisting of crucibles, made of or protected by suitable corrosion and heat resistant materials (e.g. tantalum, yttria-coated graphite, graphite coated with other rare earth oxides or mixtures thereof), and cooling equipment for the crucibles; N.B.: See also I.2A.002.
		5.	Product and tails collectors made of or protected by materials resistant to the heat and corrosion of uranium vapour such as yttria-coated graphite or tantalum;
		6.	Separator module housings (cylindrical)

					for containing the uranium plasma source, radio-frequency drive coil and the product and tails collectors and made of a suitable non-magnetic material (e.g. stainless steel);
			j.		Equipment and components, specially designed or prepared for electromagnetic separation process, as follows:
				1.	Ion sources, single or multiple, consisting of a vapour source, ioniser, and beam accelerator made of suitable non-magnetic materials (e.g. graphite, stainless steel, or copper) and capable of providing

		a total ion beam current of 50 mA or greater; 2. Ion collector plates for collection of enriched or depleted uranium ion beams, consisting of two or more slits and pockets and made of suitable non-magnetic materials (e.g. graphite or stainless steel); 3. Vacuum housings for uranium electromagnetic separators made of non-magnetic materials (e.g. stainless steel) and designed to operate at pressures of 0,1 Pa or lower; 4. Magnet pole pieces with a diameter

		greater than 2 m; 5. High voltage power supplies for ion sources, having all of the following characteristics: a. Capable of continuous operation; b. Output voltage of 20 000 V or greater; c. Output current of 1 A or greater; and d. Voltage regulation of better than 0,01 % over a period of 8 hours; N.B.: See also I.3A.006. 6. Magnet power supplies (high power,

		direct current) having all of the following characteristics: a. Capable of continuous operation with a current output of 500 A or greater at a voltage of 100 V or greater; and b. Current or voltage regulation better than 0,01 % over a period of 8 hours. N.B.: See also I.3A.005.
I.0A.003	0B002	Specially designed or prepared auxiliary systems, equipment and components, as follows, for isotope separation plant specified in I.0A.002, made of or protected by “materials

		resistant to corrosion by UF_6": a. Feed autoclaves, ovens or systems used for passing UF_6 to the enrichment process; b. Desublimers or cold traps, used to remove UF_6 from the enrichment process for subsequent transfer upon heating; c. Product and tails stations for transferring UF_6 into containers; d. Liquefaction or solidification stations used to remove UF_6 from the enrichment process by compressing, cooling and converting UF_6 to a liquid or solid form; e. Piping systems and header systems specially designed for handling UF_6 within gaseous diffusion, centrifuge or aerodynamic cascades; f. 1. Vacuum manifolds or vacuum headers having a suction capacity of 5 m^3/minute or more; or 2. Vacuum pumps specially designed for use

		in UF_6 bearing atmospheres; g. UF_6 mass spectrometers/ion sources specially designed or prepared for taking on-line samples of feed, product or tails from UF_6 gas streams and having all of the following characteristics: 1. Unit resolution for mass of more than 320 amu; 2. Ion sources constructed of or lined with nichrome or monel, or nickel plated; 3. Electron bombardment ionisation sources; and 4. Collector system suitable for isotopic analysis.
I.0A.004	0B003	Plant for the conversion of uranium and equipment specially designed or prepared therefor, as follows: a. Systems for the conversion of uranium ore concentrates to UO_3; b. Systems for the conversion of UO_3 to UF_6;

		c. Systems for the conversion of UO_3 to UO_2; d. Systems for the conversion of UO_2 to UF_4; e. Systems for the conversion of UF_4 to UF_6; f. Systems for the conversion of UF_4 to uranium metal; g. Systems for the conversion of UF_6 to UO_2; h. Systems for the conversion of UF_6 to UF_4; i. Systems for the conversion of UO_2 to UCl_4.
I.0A.005	0B004	Plant for the production or concentration of heavy water, deuterium and deuterium compounds and specially designed or prepared equipment and components therefor, as follows: a. Plant for the production of heavy water, deuterium or deuterium compounds, as follows: 1. Water-hydrogen sulphide exchange plants; 2. Ammonia-hydrogen exchange plants; b. Equipment and components, as follows: 1. Water-hydrogen sulphide exchange towers

			fabricated from fine carbon steel (e.g. ASTM A516) with diameters of 6 m to 9 m, capable of operating at pressures greater than or equal to 2 MPa and with a corrosion allowance of 6 mm or greater;
		2.	Single stage, low head (i.e. 0,2 MPa) centrifugal blowers or compressors for hydrogen sulphide gas circulation (i.e. gas containing more than 70 % H_2S) with a throughput capacity greater than or equal to 56 m^3/ second when operating at pressures greater than or

			equal to 1,8 MPa suction and having seals designed for wet H_2S service;
		3.	Ammonia-hydrogen exchange towers greater than or equal to 35 m in height with diameters of 1,5 m to 2,5 m capable of operating at pressures greater than 15 MPa;
		4.	Tower internals, including stage contactors, and stage pumps, including those which are submersible, for heavy water production utilizing the ammonia-hydrogen exchange process;
		5.	Ammonia crackers with

			operating pressures greater than or equal to 3 MPa for heavy water production utilizing the ammonia-hydrogen exchange process;
		6.	Infrared absorption analysers capable of on-line hydrogen/ deuterium ratio analysis where deuterium concentrations are equal to or greater than 90 %;
		7.	Catalytic burners for the conversion of enriched deuterium gas into heavy water utilizing the ammonia-hydrogen exchange process;
		8.	Complete heavy water upgrade systems, or

		columns therefor, for the upgrade of heavy water to reactor-grade deuterium concentration.
I.0A.006	0B005	Plant specially designed for the fabrication of "nuclear reactor" fuel elements and specially designed or prepared equipment therefor. *Note: A plant for the fabrication of "nuclear reactor" fuel elements includes equipment which*: a. *Normally comes into direct contact with or directly processes or controls the production flow of nuclear materials*; b. *Seals the nuclear materials within the cladding*; c. *Checks the integrity of the cladding or the seal; or* d. *Checks the finish treatment of the sealed fuel*.
I.0A.007	0B006	Plant for the reprocessing of irradiated "nuclear reactor" fuel elements, and specially designed or prepared equipment and components therefor. *Note: I.0A.007 includes*: a. *Plant for the reprocessing of irradiated "nuclear reactor" fuel elements including equipment and components which normally come into direct contact with and directly control*

			the irradiated fuel and the major nuclear material and fission product processing streams;
		b.	*Fuel element chopping or shredding machines, i.e. remotely operated equipment to cut, chop, shred or shear irradiated "nuclear reactor" fuel assemblies, bundles or rods*;
		c.	*Dissolvers, critically safe tanks (e.g. small diameter, annular or slab tanks) specially designed or prepared for the dissolution of irradiated "nuclear reactor" fuel, which are capable of withstanding hot, highly corrosive liquids, and which can be remotely loaded and maintained*;
		d.	*Counter-current solvent extractors and ion-exchange processing equipment specially designed or prepared for use in a plant for the reprocessing of irradiated "natural uranium", "depleted uranium" or "special fissile materials"*;
		e.	*Holding or storage vessels specially designed to be critically safe and resistant to the*

		corrosive effects of nitric acid; *Note: Holding or storage vessels may have the following features*: 1. *Walls or internal structures with a boron equivalent (calculated for all constituent elements as defined in the note to I.0A.012) of at least two per cent*; 2. *A maximum diameter of 175 mm for cylindrical vessels; or* 3. *A maximum width of 75 mm for either a slab or annular vessel*. f. *Process control instrumentation specially designed or prepared for monitoring or controlling the reprocessing of irradiated "natural uranium", "depleted uranium" or "special fissile materials"*.
I.0A.008	0B007	Plant for the conversion of plutonium and equipment

		specially designed or prepared therefor, as follows: a. Systems for the conversion of plutonium nitrate to oxide; b. Systems for plutonium metal production.
I.0A.009	0C001	"Natural uranium" or "depleted uranium" or thorium in the form of metal, alloy, chemical compound or concentrate and any other material containing one or more of the foregoing. *Note: I.0A.009 does not prohibit the following*: a. *Four grammes or less of "natural uranium" or "depleted uranium" when contained in a sensing component in instruments*; b. *"Depleted uranium" specially fabricated for the following civil non-nuclear applications*: 1. *Shielding*; 2. *Packaging*; 3. *Ballasts having a mass not greater than 100 kg*; 4. *Counter-weights having a mass not greater than 100 kg*; c. *Alloys containing less than 5 % thorium*; d. *Ceramic products containing thorium, which have been*

		manufactured for non-nuclear use.
I.0A.010	0C002	"Special fissile materials". *Note: I.0A.010 does not prohibit four "effective grammes" or less when contained in a sensing component in instruments*.
I.0A.011	0C003	Deuterium, heavy water (deuterium oxide) and other compounds of deuterium, and mixtures and solutions containing deuterium, in which the isotopic ratio of deuterium to hydrogen exceeds 1:5 000.
I.0A.012	0C004	Graphite, nuclear grade, having a purity level of less than 5 parts per million "boron equivalent" and with a density greater than 1,5 g/cm^3. N.B.: See also I.1A.028. *Note 1: I.0A.012 does not prohibit the following*: a. *Manufactures of graphite having a mass less than 1 kg, other than those specially designed or prepared for use in a nuclear reactor*; b. *Graphite powder*. *Note 2: In I.0A.012, "boron equivalent" (BE) is defined as the sum of BE_z for impurities (excluding BE_{carbon} since carbon is not considered an impurity) including boron, where*: *BE_z (ppm) = CF × concentration of element Z in ppm*; *where CF is the conversion factor =* $\frac{\sigma_Z A_B}{\sigma_B A_Z}$ *and σ_B and σ_Z are the thermal neutron capture cross sections (in barns) for*

		naturally occurring boron and element Z respectively; and A_B and A_Z are the atomic masses of naturally occurring boron and element Z respectively.
I.0A.013	0C005	Specially prepared compounds or powders for the manufacture of gaseous diffusion barriers, resistant to corrosion by UF_6 (e.g. nickel or alloy containing 60 weight per cent or more nickel, aluminium oxide and fully fluorinated hydrocarbon polymers), having a purity of 99,9 weight per cent or more and a mean particle size of less than 10 micrometres measured by American Society for Testing and Materials (ASTM) B330 standard and a high degree of particle size uniformity.

I.0B

TECHNOLOGY, INCLUDING SOFTWARE

No	**Relevant item(s) from Annex to Regulation (EC) No 1183/2007**	**Description**
I.0B.001	0D001	"Software" specially designed or modified for the "development", "production" or "use" of goods specified in Section I.0A.
I.0B.002	0E001	"Technology" according to the Nuclear Technology Note for the "development", "production" or "use" of goods specified in Section I.0A.

I.1 MATERIALS, CHEMICALS, "MICROORGANISMS" AND "TOXINS"

I.1A

GOODS

No	Relevant item(s) from Annex to Regulation (EC) No 1183/2007	Description
I.1A.001	1A102	Resaturated pyrolized carbon-carbon components designed for space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005. N.B.: See also Military Goods Controls for components for rockets and missiles.
I.1A.002	1A202	Composite structures in the form of tubes and having both of the following characteristics: N.B.: See also I.9A.011. a. An inside diameter of between 75 mm and 400 mm; and b. Made with any of the "fibrous or filamentary materials" specified in I.1A.024 or I.1A.034.a. or with carbon prepreg materials specified in I.1A.034.c.
I.1A.003	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.
I.1A.004	1A226	Specialized packings which may be used in separating heavy water from ordinary water, having both of the following characteristics: a. Made of phosphor bronze mesh chemically

		treated to improve wettability; and b. Designed to be used in vacuum distillation towers.
I.1A.005	1A227	High-density (lead glass or other) radiation shielding windows, having all of the following characteristics, and specially designed frames therefor: a. A “cold area” greater than 0,09 m^2; b. A density greater than 3 g/cm^3; and c. A thickness of 100 mm or greater. Technical Note: *In I.1A.005 the term “cold area” means the viewing area of the window exposed to the lowest level of radiation in the design application*.
I.1A.006	*ex* 1B001* (1B001.a, *ex* 1B001.b and 1B001.c)	Equipment for the production of fibres, prepregs, preforms or “composites” specified in I.1A.024, as follows, and specially designed components and accessories therefor: N.B.: See also I.1A.007 and I.1A.014. a. Filament winding machines of which the motions for positioning, wrapping and winding fibres 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 machines of which the motions for positioning and laying tape or sheets are coordinated and programmed in two or more axes, specially designed for the manufacture of "composite" airframe or "missile" structures; *Note: In I.1A.006.b., "missile" means complete rocket systems and unmanned aerial vehicle systems*.
		c.	Multidirectional, multidimensional weaving machines or interlacing machines, including adapters and modification kits, for weaving, interlacing or braiding fibres to manufacture "composite" structures; Technical Note: *For the purposes of I.1A.006.c. the technique of interlacing includes knitting*. *Note: I.1A.006.c. does not prohibit textile machinery not modified for the above end-uses*.
I.1A.007	1B101 and *ex* 1B001.d		Equipment, other than that specified in I.1A.006, for the "production" of structural composites as follows; and specially designed components and accessories therefor:

		Note: Components and accessories specified in I.1A.007 include moulds, mandrels, dies, fixtures and tooling for the preform pressing, curing, casting, sintering or bonding of composite structures, laminates and manufactures thereof. a. Filament winding machines of which the motions for positioning, wrapping and winding fibres 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: 1. Equipment for converting

		polymeric fibres (such as polyacrylonitrile, rayon or polycarbosilane) including special provision to strain the fibre during heating; 2. Equipment for the vapour deposition of elements or compounds on heated filament substrates; 3. Equipment for the wet-spinning of refractory ceramics (such as aluminium oxide); d. Equipment designed or modified for special fibre surface treatment or for producing prepregs and preforms specified in entry I.9A.026. *Note: I.1A.007.d. includes rollers, tension stretchers, coating equipment, cutting equipment and clicker dies*.
I.1A.008	1B102	Metal powder "production equipment" and components as follows: N.B.: See also I.1A.009.b.

		a. Metal powder "production equipment" usable for the "production", in a controlled environment, of spherical or atomised materials specified in I.1A.025.a., I.1A.025.b., I.1A.029.a.1., I.1A.029.a.2. or in the Military Goods Controls. b. Specially designed components for "production equipment" specified in I.1A.008.a. *Note: I.1A.008 includes*: a. *Plasma generators (high frequency arc-jet) usable for obtaining sputtered or spherical metallic powders with organization of the process in an argon-water environment*; b. *Electroburst equipment usable for obtaining sputtered or spherical metallic powders with organization of the process in an argon-water environment*; c. *Equipment usable for the "production" of spherical aluminium powders by powdering a melt in an inert medium (e.g. nitrogen)*.

I.1A.009	1B115	Equipment, other than that specified in I.1A.008, for the production of propellant and propellant constituents, as follows, and specially designed components therefor: a. "Production equipment" for the "production", handling or acceptance testing of liquid propellants or propellant constituents specified in I.1A.025.a., I.1A.025.b., I.1A.029 or in the Military Goods Controls; b. "Production equipment" for the "production", handling, mixing, curing, casting, pressing, machining, extruding or acceptance testing of solid propellants or propellant constituents specified in I.1A.025.a., I.1A.025.b., I.1A.029 or in the Military Goods Controls. *Note: I.1A.009.b. does not prohibit batch mixers, continuous mixers or fluid energy mills. For the prohibition of batch mixers, continuous mixers and fluid energy mills see I.1A.011, I.1A.012 and I.1A.013.* *Note 1: For equipment specially designed for the*

		production of military goods, see the Military Goods Controls. *Note 2: I.1A.009 does not prohibit equipment for the "production", handling and acceptance testing of boron carbide*
I.1A.010	1B116	Specially designed nozzles for producing pyrolitically derived materials formed on a mould, 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.
I.1A.011	1B117	Batch mixers with provision for mixing under vacuum in the range of zero to 13,326 kPa and with temperature control capability of the mixing chamber and having all of the following, and specially designed components therefor: a. A total volumetric capacity of 110 litres or more; and b. At least one mixing/kneading shaft mounted off centre.
I.1A.012	1B118	Continuous mixers with provision for mixing under vacuum in the range of zero to 13,326 kPa and with a temperature control capability of the mixing chamber having any of the following, and specially designed components therefor: a. Two or more mixing/kneading shafts; or b. A single rotating shaft which oscillates and having kneading teeth/pins on the

		shaft as well as inside the casing of the mixing chamber.
I.1A.013	1B119	Fluid energy mills usable for grinding or milling substances specified in I.1A.025.a., I.1A.025.b., I.1A.029 or in the Military Goods Controls, and specially designed components therefore.
I.1A.014	1B201	Filament winding machines, other than those specified in I.1A.006 or I.1A.007, and related equipment, as follows: a. Filament winding machines having all of the following characteristics: 1. Having motions for positioning, wrapping, and winding fibres coordinated and programmed in two or more axes; 2. Specially designed to fabricate composite structures or laminates from “fibrous or filamentary materials”; and 3. Capable of winding cylindrical rotors of diameter between

		75 and 400 mm and lengths of 600 mm or greater; b. Coordinating and programming controls for the filament winding machines specified in I.1A.014.a.; c. Precision mandrels for the filament winding machines specified in I.1A.014.a.
I.1A.015	1B225	Electrolytic cells for fluorine production with an output capacity greater than 250 g of fluorine per hour.
I.1A.016	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. *Note: I.1A.016 includes separators*: a. *Capable of enriching stable isotopes*; b. *With the ion sources and collectors both in the magnetic field and those configurations in which they are external to the field*.
I.1A.017	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 said column
I.1A.018	1B228	Hydrogen-cryogenic distillation columns

		having all of the following characteristics: a. Designed for operation with internal temperatures of 35 K (– 238 °C) or less; b. Designed for operation at an internal pressure of 0,5 to 5 MPa; c. Constructed of either: 1. Stainless steel of the 300 series with low sulphur content and with an austenitic ASTM (or equivalent standard) grain size number of 5 or greater; or 2. Equivalent materials which are both cryogenic and H_2-compatible; and d. With internal diameters of 1 m or greater and effective lengths of 5 m or greater.
I.1A.019	1B229	Water-hydrogen sulphide exchange tray columns and “internal contactors”, as follows: *N.B.: For columns which are specially designed or prepared for the production of heavy water see I.0A.005*.

		a.	Water-hydrogen sulphide exchange tray columns, having all of the following characteristics: 1. Can operate at pressures of 2 MPa or greater; 2. Constructed of carbon steel having an austenitic ASTM (or equivalent standard) grain size number of 5 or greater; and 3. With a diameter of 1,8 m or greater;
		b.	"Internal contactors" for the water-hydrogen sulphide exchange tray columns specified in I.1A.019.a. Technical Note: *"Internal contactors" of the columns are segmented trays which have an effective assembled diameter of 1,8 m or greater, are designed to facilitate countercurrent contacting and are constructed of stainless steels with a carbon content of 0,03 % or less. These may be sieve*

		trays, valve trays, bubble cap trays, or turbogrid trays
I.1A.020	1B230	Pumps capable of circulating solutions of concentrated or dilute potassium amide catalyst in liquid ammonia (KNH_2/NH_3), having all of the following characteristics: a. Airtight (i.e., hermetically sealed); b. A capacity greater than 8,5 m^3/h; and c. Either of the following characteristics: 1. For concentrated potassium amide solutions (1 % or greater), an operating pressure of 1,5 to 60 MPa; or 2. For dilute potassium amide solutions (less than 1 %), an operating pressure of 20 to 60 MPa.
I.1A.021	1B231	Tritium facilities or plants, and equipment therefor, as follows: a. Facilities or plants for the production, recovery, extraction, concentration, or handling of tritium; b. Equipment for tritium facilities or plants, as follows:

		1. Hydrogen or helium refrigeration units capable of cooling to 23 K (– 250 °C) or less, with heat removal capacity greater than 150 W; 2. Hydrogen isotope storage or purification systems using metal hydrides as the storage or purification medium.
I.1A.022	1B232	Turboexpanders or turboexpander-compressor sets having both of the following characteristics: a. Designed for operation with an outlet temperature of 35 K (– 238 °C) or less; and b. Designed for a throughput of hydrogen gas of 1 000 kg/h or greater.
I.1A.023	1B233	Lithium isotope separation facilities or plants, and equipment therefor, as follows: a. Facilities or plants for the separation of lithium isotopes; b. Equipment for the separation of lithium isotopes, as follows:

		1. Packed liquid-liquid exchange columns specially designed for lithium amalgams; 2. Mercury or lithium amalgam pumps; 3. Lithium amalgam electrolysis cells; 4. Evaporators for concentrated lithium hydroxide solution.
I.1A.024	1C010.b	"Fibrous or filamentary materials" which may be used in organic "matrix", metallic "matrix" or carbon "matrix""composite" structures or laminates, as follows: N.B.: See also I.1A.034 and I.9A.026. b. Carbon "fibrous or filamentary materials", having all of the following: 1. A "specific modulus" exceeding $12,7 \times 10^6$ m; and 2. A "specific tensile strength" exceeding $23,5 \times 10^4$ m; *Note: I.1A.024.b. does not prohibit fabric made*

		from "fibrous or filamentary materials" for the repair of "civil aircraft" structures or laminates, in which the size of individual sheets does not exceed 100 cm × 100 cm. Technical Note: *Properties for materials described in I.1A.024.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*.
I.1A.025	1C011.a and 1C011.b	Metals and compounds, as follows: N.B.: See also Military Goods Controls and I.1A.029. a. Metals in particle sizes of less than 60 μm whether spherical, atomised, spheroidal, flaked or ground, manufactured from material consisting of 99 % or more of zirconium, magnesium and alloys of these; Technical Note: *The natural content of hafnium in the zirconium (typically 2 % to 7 %) is counted with the zirconium*.

		Note: The metals or alloys listed in I.1A.025.a. are prohibited whether or not the metals or alloys are encapsulated in aluminium, magnesium, zirconium or beryllium. b. Boron or boron carbide of 85 % purity or higher and a particle size of 60 µm or less; *Note: The metals or alloys listed in I.1A.025.b. are prohibited whether or not the metals or alloys are encapsulated in aluminium, magnesium, zirconium or beryllium*.
I.1A.026	1C101	Materials and devices for reduced observables such as radar reflectivity, ultraviolet/ infrared signatures and acoustic signatures, usable in “missiles”, “missile” subsystems or unmanned aerial vehicles specified in I.9A.003. *Note 1: I.1A.026 includes*: 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 ultra violet regions of the*

		electromagnetic spectrum. *Note 2: I.1A.026 does not include coatings when specially used for the thermal control of satellites*. Technical Note: *In I.1A.026 "missile" means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km*
I.1A.027	1C102	Resaturated pyrolized carbon-carbon materials designed for space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005. N.B.: See also Military Goods Controls for materials for rockets and missiles.
I.1A.028	*ex* 1C107* (1C107.a, *ex* 1C107.b, *ex* 1C107.c and *ex* 1C107.d)	Graphite and ceramic materials as follows: a. Fine grain graphites with a bulk density of 1,72 g/cm^3 or greater, measured at 288 K (15 °C), and having a grain size of 100 μm or less, usable for rocket nozzles and re-entry vehicle nose tips, which can be machined to any of the following products: 1. Cylinders having a diameter of 120 mm or greater and a length of 50 mm or greater; 2. Tubes having an inner diameter of 65 mm

		or greater and a wall thickness of 25 mm or greater and a length of 50 mm or greater; or 3. Blocks having a size of 120 mm × 120 mm × 50 mm or greater; *N.B.: See also I.0A.012*. b.* Pyrolytic or fibrous reinforced graphites, usable for rocket nozzles and re-entry vehicle nose tips usable in "missiles"; *N.B.: See also I.0A.012*. c.* Ceramic composite materials (dielectric constant less than 6 at any frequency from 100 MHz to 100 GHz) for use in radomes usable in "missiles"; d.* Bulk machinable silicon-carbide reinforced unfired ceramic, usable for nose tips usable for "missiles".
I.1A.029	*ex* 1C111* (1C111.a.1-3, 1C111.a.4, 1C111.b.1-4 and 1C111.c)	Propellants and constituent chemicals for propellants, other than those specified in I.1A.025, as follows: a. Propulsive substances: 1. Spherical aluminium powder, other than that

			specified in the Military Goods Controls, with particles of uniform diameter of less than 200 μm and an aluminium content of 97 % by weight or more, if at least 10 % of the total weight is made up of particles of less than 63 μm, according to ISO 2591:1988 or national equivalents; Technical Note: *A particle size of 63 μm (ISO R-565) corresponds to 250 mesh (Tyler) or 230 mesh (ASTM standard E-11).*
		2.	Metal fuels, other than that specified in the Military Goods

		Controls, in particle sizes of less than 60 μm, whether spherical, atomized, spheroidal, flaked or ground, consisting 97 % by weight or more of any of the following: a. Zirconium; b. Beryllium; c. Magnesium; or d. Alloys of the metals specified by (a) to (c) above; Technical Note: *The natural content of hafnium in the zirconium (typically 2 % to 7 %) is counted with the zirconium*.
		3. Oxidiser substances usable in liquid propellant rocket engines as follows: a. Dinitrogen trioxide; b. Nitrogen dioxide/ dinitrogen tetroxide;

c. Dinitrogen pentoxide;
d. Mixed Oxides of Nitrogen (MON);

Technical Note:
Mixed Oxides of Nitrogen (MON) are solutions of Nitric Oxide (NO) in Dinitrogen Tetroxide/Nitrogen Dioxide (N_2O_4/NO_2) that can be used in missile systems. There are a range of compositions that can be denoted as MONi or MONij, where i and j are integers representing the percentage of Nitric Oxide in the mixture (e.g., MON3 contains 3 % Nitric Oxide, MON25 25 % Nitric Oxide. An upper limit is MON40, 40 % by weight).
N.B.: See Military Goods Controls for Inhibited Red Fuming Nitric Acid (IRFNA);
N.B.: See Military Goods Controls and I.1A.049 for Compounds composed of fluorine and one or more of other halogens, oxygen or nitrogen;

4. Hydrazine derivatives as follows:
a. trimethylhydrazine;
b. tetramethylhydrazine;

				c.	N, N diallylhydrazine;
				d.	allylhydrazine;
				e.	ethylene dihydrazine;
				f.	monomethylhydrazine dinitrate;
				g.	unsymmetrical dimethylhydrazine nitrate;
				h.	hydrazinium azide;
				i.	dimethylhydrazinium azide;
					N.B.: See Military Goods Controls for Hydrazinium nitrate;
				k.	diimido oxalic acid dihydrazine;
				l.	2-hydroxyethylhydrazine nitrate (HEHN);
					N.B.: See Military Goods Controls for Hydrazinium perchlorate;
				n.	hydrazinium diperchlorate;
				o.	methylhydrazine nitrate (MHN);
				p.	diethylhydrazine nitrate (DEHN);
				q.	1,4-dihydrazine nitrate (DHTN);
			b.*	Polymeric substances:	

				1.	Carboxy-terminated polybutadiene (CTPB);
				2.	Hydroxy-terminated polybutadiene (HTPB), other than that specified in the Military Goods Controls;
				3.	Polybutadiene-acrylic acid (PBAA);
				4.	Polybutadiene-acrylic acid-acrylonitrile (PBAN);
			c.		Other propellant additives and agents: N.B.: See Military Goods Controls for carboranes, decaboranes, pentaboranes and derivatives thereof;
				2.	Triethylene glycol dinitrate (TEGDN);
				3.	2-Nitrodiphenylamine (CAS 119-75-5);
				4.	Trimethylolethane trinitrate (TMETN) (CAS 3032-55-1);
				5.	Diethylene glycol dinitrate (DEGDN);
				6.	Ferrocene derivatives as follows:

		N.B.: See Military Goods Controls for catocene; b. Ethyl ferrocene; c. Propyl ferrocene (CAS 1273-89-8); N.B.: See Military Goods Controls for n-butyl ferrocene; e. Pentyl ferrocene (CAS 1274-00-6); f. Dicyclopentyl ferrocene; g. Dicyclohexyl ferrocene; h. Diethyl ferrocene; i. Dipropyl ferrocene; j. Dibutyl ferrocene; k. Dihexyl ferrocene; l. Acetyl ferrocenes; N.B.: See Military Goods Controls for ferrocene Carboxylic acids; N.B.: See Military Goods Controls

		o. for butacene; Other ferrocene derivatives usable as rocket propellant burning rate modifiers, other than those specified in the Military Goods Controls. *Note: For propellants and constituent chemicals for propellants not specified in I.1A.029, see the Military Goods Controls*.
I.1A.030	1C116	Maraging steels (steels generally characterised 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. N.B.: See also I.1A.035.
I.1A.031	*ex* 1C117*	Tungsten, molybdenum and alloys of these metals in the form of uniform spherical or atomized particles of 500 micrometre diameter or less with a purity of 97 % or greater for fabrication of motor components, usable in “missiles” (i.e., heat shields, nozzle substrates, nozzle

		throats and thrust vector control surfaces).
I.1A.032	1C118	Titanium-stabilised duplex stainless steel (Ti-DSS) having all of the following: a. Having all of the following characteristics: 1. Containing 17,0-23,0 weight percent chromium and 4,5-7,0 weight percent nickel; 2. Having a titanium content of greater than 0,10 weight percent; and 3. A ferritic-austenitic microstructure (also referred to as a two-phase microstructure) of which at least 10 percent is austenite by volume (according to ASTM E-1181-87 or national equivalents); and b. Having any of the following forms: 1. Ingots or bars having a size of 100 mm

		or more in each dimension; 2. Sheets having a width of 600 mm or more and a thickness of 3 mm or less; or 3. Tubes having an outer diameter of 600 mm or more and a wall thickness of 3 mm or less.
I.1A.033	1C202	Alloys as follows: a. Aluminium alloys having both of the following characteristics: 1. “Capable of” an ultimate tensile strength of 460 MPa or more at 293 K (20 °C); and 2. In the form of tubes or cylindrical solid forms (including forgings) with an outside diameter of more than 75 mm;

		b. Titanium alloys having both of the following characteristics: 1. "Capable of" an ultimate tensile strength of 900 MPa or more at 293 K (20 °C); and 2. In the form of tubes or cylindrical solid forms (including forgings) with an outside diameter of more than 75 mm. Technical Note: *The phrase alloys "capable of" encompasses alloys before or after heat treatment*.
I.1A.034	1C210 and *ex* 1C010.a	"Fibrous or filamentary materials" or prepregs, other than those specified in I.1A.024, as follows: a. Carbon or aramid fibrous "or filamentary materials" having either of the following characteristics: 1. A "specific modulus" of 12,7 × 10^6 m or greater; or 2. A "specific

			tensile strength" of 235 × 10^3 m or greater; *Note: I.1A.034.a. does not prohibit 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 both of the following characteristics: 1. A "specific modulus" of 3,18 × 10^6 m or greater; and 2. A "specific tensile strength" of 76,2 × 10^3 m or greater;
		c.	Thermoset resin impregnated continuous "yarns", "rovings", "tows" or "tapes" with a width of 15 mm or less (prepregs), made from carbon or glass "fibrous or filamentary materials" specified in I.1A.024 or I.1A.034.a or .b. Technical Note: *The resin forms the matrix of the composite*.

		Note: In I.1A.034, "fibrous or filamentary materials" is restricted to continuous "monofilaments", "yarns", "rovings", "tows" or "tapes".
I.1A.035	1C216	Maraging steel, other than that specified in I.1A.030, "capable of" an ultimate tensile strength of 2 050 MPa or more, at 293 K (20 °C). *Note: I.1A.035 does not prohibit forms in which all linear dimensions are 75 mm or less.* Technical Note: *The phrase maraging steel "capable of" encompasses maraging steel before or after heat treatment.*
I.1A.036	1C225	Boron enriched in the boron-10 (^{10}B) isotope to greater than its natural isotopic abundance, as follows: elemental boron, compounds, mixtures containing boron, manufactures thereof, waste or scrap of any of the foregoing. *Note: In I.1A.036 mixtures containing boron include boron loaded materials.* Technical Note: *The natural isotopic abundance of boron-10 is approximately 18,5 weight per cent (20 atom per cent).*
I.1A.037	1C226	Tungsten, tungsten carbide, and alloys containing more than 90 % tungsten by weight, having both of the following characteristics: a. In forms with a hollow cylindrical symmetry (including cylinder segments) with an inside diameter between 100 mm and 300 mm; and

		b. A mass greater than 20 kg. *Note: I.1A.037 does not prohibit manufactures specially designed as weights or gamma ray collimators*
I.1A.038	1C227	Calcium having both of the following characteristics: a. Containing less than 1 000 parts per million by weight of metallic impurities other than magnesium; and b. Containing less than 10 parts per million by weight of boron.
I.1A.039	1C228	Magnesium having both of the following characteristics: a. Containing less than 200 parts per million by weight of metallic impurities other than calcium; and b. Containing less than 10 parts per million by weight of boron.
I.1A.040	1C229	Bismuth having both of the following characteristics: a. A purity of 99,99 % or greater by weight; and b. Containing less than 10 parts per million by weight of silver.
I.1A.041	1C230	Beryllium metal, alloys containing more than 50 % beryllium by weight, beryllium compounds, manufactures thereof, and waste or scrap of any of the foregoing. *Note: I.1A.041 does not prohibit the following*: 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*; c. *Beryl (silicate of beryllium and aluminium) in the form of emeralds or aquamarines*.
I.1A.042	1C231	Hafnium metal, alloys containing more than 60 % hafnium by weight, hafnium compounds containing more than 60 % hafnium by weight, manufactures thereof, and waste or scrap of any of the foregoing.
I.1A.043	1C232	Helium-3 (^{3}He), mixtures containing helium-3, and products or devices containing any of the foregoing. *Note: I.1A.043 does not prohibit a product or device containing less than 1 g of helium-3*.
I.1A.044	1C233	Lithium enriched in the lithium-6 (^{6}Li) isotope to greater than its natural isotopic abundance, and products or devices containing enriched lithium, as follows: elemental lithium, alloys, compounds, mixtures containing lithium, manufactures thereof, waste or scrap of any of the foregoing. *Note: I.1A.044 does not prohibit thermoluminescent dosimeters*. Technical Note: *The natural isotopic abundance of lithium-6 is approximately 6,5 weight per cent (7,5 atom per cent)*.

I.1A.045	1C234	Zirconium with a hafnium content of less than 1 part hafnium to 500 parts zirconium by weight, as follows: metal, alloys containing more than 50 % zirconium by weight, compounds, manufactures thereof, waste or scrap of any of the foregoing. *Note: I.1A.045 does not prohibit zirconium in the form of foil having a thickness of 0,10 mm or less*.
I.1A.046	1C235	Tritium, tritium compounds, mixtures containing tritium in which the ratio of tritium to hydrogen atoms exceeds 1 part in 1 000, and products or devices containing any of the foregoing. *Note: I.1A.046 does not prohibit a product or device containing less than 1,48 × 10^3 GBq (40 Ci) of tritium*.
I.1A.047	1C236	Alpha-emitting radionuclides having an alpha half-life of 10 days or greater but less than 200 years, in the following forms: a. Elemental; b. Compounds having a total alpha activity of 37 GBq/kg (1 Ci/kg) or greater; c. Mixtures having a total alpha activity of 37 GBq/kg (1 Ci/kg) or greater; d. Products or devices containing any of the foregoing. *Note: I.1A.047 does not prohibit a product or device containing less than 3,7 GBq (100 millicuries) of alpha activity*.
I.1A.048	1C237	Radium-226 (^{226}Ra), radium-226 alloys, radium-226 compounds,

		mixtures containing radium-226, manufactures therof, and products or devices containing any of the foregoing. *Note: I.1A.048 does not prohibit the following:* a. *Medical applicators*; b. *A product or device containing less than 0,37 GBq (10 millicuries) of radium-226*.
I.1A.049	1C238	Chlorine trifluoride (ClF_3).
I.1A.050	1C239	High explosives, other than those specified in the Military Goods Controls, or substances or mixtures containing more than 2 % by weight thereof, with a crystal density greater than 1,8 g/cm^3 and having a detonation velocity greater than 8 000 m/s.
I.1A.051	1C240	Nickel powder and porous nickel metal, other than those specified in I.0A.013, as follows: a. Nickel powder having both of the following characteristics: 1. A nickel purity content of 99,0 % or greater by weight; and 2. A mean particle size of less than 10 micrometres measured by American Society for Testing

		and Materials (ASTM) B330 standard; b. Porous nickel metal produced from materials specified in I.1A.051.a. *Note: I.1A.051 does not prohibit the following*: a. *Filamentary nickel powders*; b. *Single porous nickel sheets with an area of 1 000 cm^2 per sheet or less*. Technical Note: *I.1A.051.b. refers to porous metal formed by compacting and sintering the materials in I.1A.051.a. to form a metal material with fine pores interconnected throughout the structure*.
I.1A.052	*ex* 1C350* (1C350.1-57 and 1C350.59)	Chemicals, which may be used as precursors for toxic chemical agents, as follows, and "chemical mixtures" containing one or more thereof: N.B.: See also Military Goods Controls and I.1A.057. 1. Thiodiglycol (111-48-8); 2. Phosphorus oxychloride (10025-87-3); 3. Dimethyl methylphosphonate (756-79-6); N.B.: See Military Goods Controls for methyl phosphonyl difluoride (676-99-3); 5. Methyl phosphonyl dichloride (676-97-1); 6. Dimethyl phosphite (DMP) (868-85-9);

		7. Phosphorus trichloride (7719-12-2); 8. Trimethyl phosphite (TMP) (121-45-9); 9. Thionyl chloride (7719-09-7); 10. 3-Hydroxy-1-methylpiperidine (3554-74-3); 11. N,N-Diisopropyl-(beta)-aminoethyl chloride (96-79-7); 12. N,N-Diisopropyl-(beta)-aminoethane thiol (5842-07-9); 13. 3-Quinuclidinol (1619-34-7); 14. Potassium fluoride (7789-23-3); 15. 2-Chloroethanol (107-07-3); 16. Dimethylamine (124-40-3); 17. Diethyl ethylphosphonate (78-38-6); 18. Diethyl-N,N-dimethylphosphoramidate (2404-03-7); 19. Diethyl phosphite (762-04-9); 20. Dimethylamine hydrochloride (506-59-2); 21. Ethyl phosphinyl dichloride (1498-40-4); 22. Ethyl phosphonyl dichloride (1066-50-8); N.B.: See Military Goods Controls for ethyl phosphonyl difluoride (753-98-0); 24. Hydrogen fluoride (7664-39-3); 25. Methyl benzilate (76-89-1); 26. Methyl phosphinyl dichloride (676-83-5);

		27. N,N-Diisopropyl-(beta)-amino ethanol (96-80-0); 28. Pinacolyl alcohol (464-07-3); N.B.: See Military Goods Controls for O-Ethyl-2-diisopropylaminoethyl methyl phosphonite (QL) (57856-11-8); 30. Triethyl phosphite (122-52-1); 31. Arsenic trichloride (7784-34-1); 32. Benzilic acid (76-93-7); 33. Diethyl methylphosphonite (15715-41-0); 34. Dimethyl ethylphosphonate (6163-75-3); 35. Ethyl phosphinyl difluoride (430-78-4); 36. Methyl phosphinyl difluoride (753-59-3); 37. 3-Quinuclidone (3731-38-2); 38. Phosphorus pentachloride (10026-13-8); 39. Pinacolone (75-97-8); 40. Potassium cyanide (151-50-8); 41. Potassium bifluoride (7789-29-9); 42. Ammonium hydrogen fluoride or ammonium bifluoride (1341-49-7); 43. Sodium fluoride (7681-49-4); 44. Sodium bifluoride (1333-83-1); 45. Sodium cyanide (143-33-9); 46. Triethanolamine (102-71-6);

		47. Phosphorus pentasulphide (1314-80-3); 48. Di-isopropylamine (108-18-9); 49. Diethylaminoethanol (100-37-8); 50. Sodium sulphide (1313-82-2); 51. Sulphur monochloride (10025-67-9); 52. Sulphur dichloride (10545-99-0); 53. Triethanolamine hydrochloride (637-39-8); 54. N,N-Diisopropyl-(Beta)-aminoethyl chloride hydrochloride (4261-68-1); 55. Methylphosphonic acid (993-13-5); 56. Diethyl methylphosphonate (683-08-9); 57. N,N-Dimethylaminophosphoryl dichloride (677-43-0); 59. Ethyldiethanolamine (139-87-7); 63. Methylphosphonothioic dichloride (676-98-2). *Note 1: I.1A.052 does not prohibit "chemical mixtures" containing one or more of the chemicals specified in entries I.1A.052.1, .3, .5, .11, .12, .13, .17, .18, .21, .22, .26 and .63 in which no individually specified chemical constitutes more than 10 % by the weight of the mixture.* *Note 2: I.1A.052 does not prohibit "chemical mixtures" containing one or more of the chemicals specified in entries I.1A.052 .2, .6, .7, .8, .9, .10, .14, .15, .16, .19, .20, and .59 in which no individually specified*

		chemical constitutes more than 30 % by the weight of the mixture. *Note 3: I.1A.052 does not prohibit products identified as consumer goods packaged for retail sale for personal use or packaged for individual use.*
I.1A.053	*ex* 1C351* (1C351.a.1-28, 1C351.b, 1C351.c, 1C351.d.1-8, *ex* 1C351.d.9, 1C351.d.10-13 and 1C351.d.15-16)	Human pathogens, zoonoses and "toxins", as follows: a.* Viruses, whether natural, enhanced or modified, either in the form of "isolated live cultures" or as material including living material which has been deliberately inoculated or contaminated with such cultures, as follows: 1. Chikungunya virus; 2. Congo-Crimean haemorrhagic fever virus; 3. Dengue fever virus; 4. Eastern equine encephalitis virus; 5. Ebola virus; 6. Hantaan virus; 7. Junin virus; 8. Lassa fever virus; 9. Lymphocytic choriomeningitis virus;

		10. Machupo virus; 11. Marburg virus; 12. Monkey pox virus; 13. Rift Valley fever virus; 14. Tick-borne encephalitis virus (Russian Spring Summer encephalitis virus); 15. Variola virus; 16. Venezuelan equine encephalitis virus; 17. Western equine encephalitis virus; 18. White pox; 19. Yellow fever virus; 20. Japanese encephalitis virus; 21. Kyasanur Forest virus; 22. Louping ill virus; 23. Murray Valley encephalitis virus; 24. Omsk haemorrhagic fever virus; 25. Oropouche virus; 26. Powassan virus;

			27. Rocio virus; 28. St Louis encephalitis virus;
		b.	Rickettsiae, whether natural, enhanced or modified, either in the form of "isolated live cultures" or as material including living material which has been deliberately inoculated or contaminated with such cultures, as follows: 1. Coxiella burnetii; 2. Bartonella quintana (Rochalimaea quintana, Rickettsia quintana); 3. Rickettsia prowasecki; 4. Rickettsia rickettsii;
		c.	Bacteria, whether natural, enhanced or modified, either in the form of "isolated live cultures" or as material including living material which has been deliberately inoculated or contaminated with such cultures, as follows: 1. Bacillus anthracis; 2. Brucella abortus; 3. Brucella melitensis; 4. Brucella suis;

			5.	Chlamydia psittaci;
			6.	Clostridium botulinum;
			7.	Francisella tularensis;
			8.	Burkholderia mallei (Pseudomonas mallei);
			9.	Burkholderia pseudomallei (Pseudomonas pseudomallei);
			10.	Salmonella typhi;
			11.	Shigella dysenteriae;
			12.	Vibrio cholerae;
			13.	Yersinia pestis;
			14.	Clostridium perfringens epsilon toxin producing types;
			15.	Enterohaemorrhagic Escherichia coli, serotype O157 and other verotoxin producing serotypes.
		d.*	“Toxins”, as follows, and “sub-unit of toxins” thereof:	
			1.	Botulinum toxins;
			2.	Clostridium perfringens toxins;
			3.	Conotoxin;
			4.	Ricin;
			5.	Saxitoxin;
			6.	Shiga toxin;

		7. Staphylococcus aureus toxins; 8. Tetrodotoxin; 9.* Verotoxin; 10. Microcystin (Cyanginosin); 12. Abrin; 13. Cholera toxin; 15. T-2 toxin; 16. HT-2 toxin; *Note: I.1A.053.d. does not prohibit botulinum toxins or conotoxins in product form meeting all of the following criteria*: 1. *Are pharmaceutical formulations designed for human administration in the treatment of medical conditions*; 2. *Are pre-packaged for distribution as medical products*; 3. *Are authorised by a state authority to be marketed as medical products*. *Note: I.1A.053 does not prohibit "vaccines" or "immunotoxins".*
I.1A.054	*ex* 1C352* (1C352.a.1-15 and 1C352.b.1)	Animal pathogens, as follows: a.* Viruses, whether natural, enhanced or modified, either

		in the form of "isolated live cultures" or as material including living material which has been deliberately inoculated or contaminated with such cultures, as follows: 1. African swine fever virus; 2. Avian influenza virus, which are: a. Uncharacterised; or b. Defined in Directive 92/40/EC (OJ L 16, 23.1.1992, p. 19) as having high pathogenicity, as follows: 1. Type A viruses with an IVPI (intravenous pathogenicity index) in 6 week old chickens of

				2.	Type A viruses H5 or H7 subtype for which nucleotide sequencing has demonstrated multiple basic amino acids at the cleavage site of haemagglutin
			3.	Bluetongue virus;	
			4.	Foot and mouth disease virus;	
			5.	Goat pox virus;	
			6.	Porcine herpes virus (Aujeszky's disease);	
			7.	Swine fever virus (Hog cholera virus);	
			8.	Lyssa virus;	
			9.	Newcastle disease virus;	
			10.	Peste des petits	

		ruminants virus; 11. Porcine enterovirus type 9 (swine vesicular disease virus); 12. Rinderpest virus; 13. Sheep pox virus; 14. Teschen disease virus; 15. Vesicular stomatitis virus; b.* Mycoplasmas, whether natural, enhanced or modified, either in the form of "isolated live cultures" or as material including living material which has been deliberately inoculated or contaminated with such cultures, as follows: 1. Mycoplasma mycoides, subspecies mycoides SC (small colony). *Note: I.1A.054 does not prohibit "vaccines".*
I.1A.055	*ex* 1C353* (*ex* 1C353.a, 1C353.b)	Genetic elements and genetically modified organisms, as follows: a.* Genetically modified organisms or genetic elements that contain nucleic acid sequences associated with pathogenicity of

		organisms specified in I.1A.053.a. to c. or I.1A.054 or I.1A.056; b. Genetically modified organisms or genetic elements that contain nucleic acid sequences coding for any of the "toxins" specified in I.1A.053.d. or "sub-units of toxins" thereof. Technical Notes: *1.* *Genetic elements include, inter alia, chromosomes, genomes, plasmids, transposons and vectors whether genetically modified or unmodified.* *2.* *Nucleic acid sequences associated with the pathogenicity of any of the micro-organisms specified in I.1A.053.a. to c. or I.1A.054 or I.1A.056 means any sequence specific to the specified micro-organism that*: a. *In itself or through its transcribed or translated products represents a significant hazard to human, animal or plant health; or* b. *Is known to enhance the ability of a specified micro-organism, or any other organism into which it may be inserted or otherwise*

		integrated, to cause serious harm to humans, animals or plant health. *Note: I.1A.055 does not apply to nucleic acid sequences associated with the pathogenicity of enterohaemorrhagic Escherichia coli, serotype O157 and other verotoxin producing strains, other than those coding for the verotoxin, or for its sub-units.*
I.1A.056	*ex* 1C354* (1C354.b.1-3 and 1C354.c)	Plant pathogens, as follows: (a. reserved) b.* Bacteria, whether natural, enhanced or modified, either in the form of "isolated live cultures" or as material which has been deliberately inoculated or contaminated with such cultures, as follows: 1. Xanthomonas albilineans; 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;
				3.	Xanthomonas oryzae pv. Oryzae (Pseudomonas campestris pv. Oryzae);
			c.		Fungi, whether natural, enhanced or modified, either in the form of "isolated live cultures" or as material which has been deliberately inoculated or contaminated with such cultures, as follows:
				1.	Colletotrichum coffeanum var. virulans (Colletotrichum kahawae);
				2.	Cochliobolus miyabeanus (Helminthosporium oryzae);
				3.	Microcyclus ulei (syn. Dothidella ulei);
				4.	Puccinia graminis (syn. Puccinia graminis f. sp. tritici);
				5.	Puccinia striiformis (syn. Puccinia glumarum);
				6.	Magnaporthe grisea (pyricularia grisea/

		pyricularia oryzae).
I.1A.057	1C450	Toxic chemicals and toxic chemical precursors, as follows, and "chemical mixtures" containing one or more thereof: N.B.: See also entry I.1A.052, I.1A.053.d. and Military Goods Controls. a. Toxic chemicals, as follows: 1. Amiton: O,O-Diethyl S-[2-(diethylamino)ethyl] phosphorothiolate (78-53-5) and corresponding alkylated or protonated salts; 2. PFIB: 1,1,3,3,3-Pentafluoro-2-(trifluoromethyl)-1-propene (382-21-8); N.B.: See Military Goods Controls for BZ: 3-Quinuclidinyl benzilate (6581-06-2); 4. Phosgene: Carbonyl dichloride (75-44-5); 5. Cyanogen chloride (506-77-4); 6. Hydrogen cyanide (74-90-8); 7. Chloropicrin: Trichloronitromethane (76-06-2); *Note 1: I.1A.057 does not prohibit "chemical*

				mixtures" containing one or more of the chemicals specified in entries I.1A.057.a.1. and .a.2. in which no individually specified chemical constitutes more than 1 % by the weight of the mixture. *Note 2: I.1A.057 does not prohibit "chemical mixtures" containing one or more of the chemicals specified in entries I.1A.057.a.4., .a.5., .a.6. and .a.7. in which no individually specified chemical constitutes more than 30 % by the weight of the mixture.* *Note 3: I.1A.057 does not control products identified as consumer goods packaged for retail sale for personal use or packaged for individual use.*
			b.*	Toxic chemical precursors, as follows:
				1. Chemicals, other than those specified in the Military Goods Controls or in I.1A.052, containing a phosphorus

		atom to which is bonded one methyl, ethyl or propyl (normal or iso) group but not further carbon atoms; *Note: I.1A.057.b.1 does not control Fonofos: O-Ethyl S-phenyl ethylphosphonothiolothionate (944-22-9)*;
		2. N,N-Dialkyl [methyl, ethyl or propyl (normal or iso)] phosphoramidic dihalides, other than N,N-Dimethylaminophosphoryl dichloride;
		N.B.: See I.IA.052.57. for N,N-Dimethylaminophosphoryl dichloride.
		3. Dialkyl [methyl, ethyl or propyl (normal or iso)] N,N-dialkyl [methyl, ethyl or propyl (normal or iso)]-phosphoramidates,

			other than Diethyl-N,N-dimethylphosphoramidate which is specified in I.1A.052;
		4.	N,N-Dialkyl [methyl, ethyl or propyl (normal or iso)] aminoethyl-2-chlorides and corresponding protonated salts, other than N,N-Diisopropyl-(beta)-aminoethyl chloride or N,N-Diisopropyl-(beta)-aminoethyl chloride hydrochloride which are specified in I.1A.052;
		5.	N,N-Dialkyl [methyl, ethyl or propyl (normal or iso)] aminoethane-2-ols and corresponding protonated salts, other than N,N-Diisopropyl-(beta)-aminoethanol (96-80-0)

			and N,N-Diethylaminoethanol (100-37-8) which are specified in I.1A.052; *Note: I.1A.057.b.5. does not prohibit the following*: a. *N,N-Dimethylaminoethanol (108-01-0) and corresponding protonated salts*; b. *Protonated salts of N,N-Diethylaminoethanol (100-37-8)*;
		6.	N,N-Dialkyl [methyl, ethyl or propyl (normal or iso)] aminoethane-2-thiols and corresponding protonated salts, other than N,N-Diisopropyl-(beta)-aminoethane thiol which is specified in I.1A.052; N.B.: See I.1A.052 for ethyldiethanolamine (139-87-7);

		8. Methyldiethanolamine (105-59-9). *Note 1: I.1A.057 does not prohibit "chemical mixtures" containing one or more of the chemicals specified in entries I.1A.057.b.1., .b.2., .b.3., .b.4., .b.5. and .b.6. in which no individually specified chemical constitutes more than 10 % by the weight of the mixture.* *Note 2: I.1A.057 does not prohibit "chemical mixtures" containing one or more of the chemicals specified in entry I.1A.057.b.8. in which no individually specified chemical constitutes more than 30 % by the weight of the mixture.* *Note 3: I.1A.057 does not prohibit products identified as consumer goods packaged for retail sale for personal use or packaged for individual use.*

I.1B

TECHNOLOGY, INCLUDING SOFTWARE

No	**Relevant item(s) from Annex to Regulation (EC) No 1183/2007**	**Description**
I.1B.001	*ex* 1D001	"Software" specially designed or modified for the

		"development", "production" or "use" of equipment specified in I.1A.006.
I.1B.002	1D101	"Software" specially designed or modified for the "use" of goods specified in I.1A.007 to I.1A.009, or I.1A.011 to I.1A.013.
I.1B.003	1D103	"Software" specially designed for analysis of reduced observables such as radar reflectivity, ultraviolet/ infrared signatures and acoustic signatures.
I.1B.004	1D201	"Software" specially designed for the "use" of goods specified in I.1A.014.
I.1B.005	1E001	"Technology" according to the General Technology Note for the "development" or "production" of equipment or materials specified in I.1A.006 to I.1A.053, I.1A.055 or I.1A.057.
I.1B.006	1E101	"Technology" according to the General Technology Note for the "use" of goods specified in I.1A.001, I.1A.006 to I.1A.013 I.1A.026, I.1A.028, I.1A.029 to I.1A.032, I.1B.002 or I.1B.003.
I.1B.007	*ex* 1E102	"Technology" according to the General Technology Note for the "development" of "software" specified in I.1B.001to I.1B.003.
I.1B.008	1E103	"Technology" for the regulation of temperature, pressure or atmosphere in autoclaves or hydroclaves, when used for the "production" of "composites" or partially processed "composites".
I.1B.009	1E104	"Technology" relating to the "production" of pyrolytically derived materials formed on

		a mould, 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. *Note: I.1B.009 includes "technology" for the composition of precursor gases, flow-rates and process control schedules and parameters*.
I.1B.010	*ex* 1E201	"Technology" according to the General Technology Note for the "use" of goods specified in I.1A.002 to I.1A.005, I.1A.014 to I.1A.023, I.1A.024.b., I.1A.033 to I.1A.051, or I.1B.004.
I.1B.011	1E202	"Technology" according to the General Technology Note for the "development" or "production" of goods specified in I.1A.002 to I.1A.005.
I.1B.012	1E203	"Technology" according to the General Technology Note for the "development" of "software" specified in I.1B.004.

I.2 MATERIALS PROCESSING

I.2A

GOODS

No	**Relevant item(s) from Annex to Regulation (EC) No 1183/2007**	**Description**
I.2A.001	*ex* 2A001*	Anti-friction bearings and bearing systems, as follows, and components therefor: *Note: I.2A.001 does not prohibit balls with tolerances specified by the manufacturer*

a Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

		in accordance with ISO 3290 as grade 5 or worse. Radial ball bearings having all tolerances specified by the manufacturer in accordance with ISO 492 Tolerance Class 2 (or ANSI/ABMA Std 20 Tolerance Class ABEC-9 or RBEC-9, or other national equivalents), or better and having all of the following characteristics: a. An inner ring bore diameter between 12 and 50 mm; b. An outer ring outside diameter between 25 and 100 mm; and c. A width between 10 and 20 mm.
I.2A.002	2A225	Crucibles made of materials resistant to liquid actinide metals, as follows: a. Crucibles having both of the following characteristics: 1. A volume of between 150 cm^3 and 8 000 cm^3; and 2. Made of or coated with any of the following materials, having a purity of 98 % or greater by weight: a. Calcium fluoride (CaF_2); b. Calcium zirconate

a Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

					(metazirconate) ($CaZrO_3$);
				c.	Cerium sulphide (Ce_2S_3);
				d.	Erbium oxide (erbia) (Er_2O_3);
				e.	Hafnium oxide (hafnia) (HfO_2);
				f.	Magnesium oxide (MgO);
				g.	Nitrided niobium-titanium-tungsten alloy (approximately 50 % Nb, 30 % Ti, 20 % W);
				h.	Yttrium oxide (yttria) (Y_2O_3); or
				i.	Zirconium oxide (zirconia) (ZrO_2);
			b.	Crucibles having both of the following characteristics:	
				1.	A volume of between 50 cm^3 and 2 000 cm^3; and

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		2. Made of or lined with tantalum, having a purity of 99,9 % or greater by weight; c. Crucibles having all of the following characteristics: 1. A volume of between 50 cm^3 and 2 000 cm^3; 2. Made of or lined with tantalum, having a purity of 98 % or greater by weight; and 3. Coated with tantalum carbide, nitride, boride, or any combination thereof
I.2A.003	2A226	Valves having all of the following characteristics: a. A “nominal size” of 5 mm or greater; b. Having a bellows seal; and c. Wholly made of or lined with aluminium, aluminium alloy, nickel, or nickel alloy containing

a Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

		more than 60 % nickel by weight. Technical Note: *For valves with different inlet and outlet diameters, the "nominal size" in I.2A.003 refers to the smallest diameter*
I.2A.004	*ex* 2B001.a*, 2B001.d	Machine tools and any combination thereof, for removing (or cutting) metals, ceramics or "composites", which, according to the manufacturer's technical specification, can be equipped with electronic devices for "numerical control", and specially designed components as follows: N.B.: See also I.2A.016. *Note 1: I.2A.004 does not prohibit special purpose machine tools limited to the manufacture of gears*. *Note 2: I.2A.004 does not prohibit special purpose machine tools limited to the manufacture of any of the following parts*: a. *Crankshafts or camshafts*; b. *Tools or cutters*; c. *Extruder worms*; *Note 3: A machine tool having at least two of the three turning, milling or grinding capabilities (e.g., a turning machine with milling capability), must be evaluated against each applicable entry I.2A.004.a and I.2A.016*. a.* Machine tools for turning, for machines capable of machining diameters greater than 35 mm, having

a Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

		all of the following characteristics: 1. Positioning accuracy with "all compensations available" equal to or less (better) than 6 μm according to ISO 230/2 (1988)[a] or national equivalents along any linear axis; and 2. Two or more axes which can be coordinated simultaneously for "contouring control"; *Note 1: I.2A.004.a. does not prohibit turning machines specially designed for the production of contact lenses, having all of the following characteristics*: 1. *Machine controller limited to using ophthalmic based software for part programming data input; and*

a Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

		2. *No vacuum chucking.* *Note 2: I.2A.004.a does not prohibit bar machines (Swissturn), limited to machining only bar feed thru, if maximum bar diameter is equal to or less than 42 mm and there is no capability of mounting chucks. Machines may have drilling and/or milling capabilities for machining parts with diameters less than 42 mm.* d. Electrical discharge machines (EDM) of the non-wire type which have two or more rotary axes which can be coordinated simultaneously for "contouring control";
I.2A.005	*ex* 2B006.b*	Dimensional inspection or measuring systems, equipment and "electronic assemblies", as follows: b.* Linear and angular displacement measuring instruments, as follows: 1.* Linear displacement measuring instruments having any of the following: Technical Note:

a Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

			For the purpose of I.2A.005.b.1. "linear displacement" means the change of distance between the measuring probe and the measured object. a. Non-contact type measuring systems with a "resolution" equal to or less (better) than 0,2 µm within a measuring range up to 0,2 mm; b. Linear voltage differential transformer systems having all of the following characteristics:

a Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

					1.	"Linearity" equal to or less (better) than 0,1 % within a measuring range up to 5 mm; and
					2.	Drift equal to or less (better) than 0,1 % per day at a standard ambient test room temperature ± 1 K; or
				c.	Measuring systems having all of the following:	
					1.	Containing a "laser"; and

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			2. Maintaining, for at least 12 hours, over a temperature range of ± 1 K around a standard temperature and at a standard pressure, all of the following: a. A “res ove thei full scal of 0,1 µm or less (bet and b. A “me unc equ to or less (bet tha (0,2 +

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				L/2000 µm (L is the measuring length in mm *Note: I.2A.005.b.1. does not prohibit measuring interferometer systems, without closed or open loop feedback, containing a laser to measure slide movement errors of machine tools, dimensional inspection machines, or similar equipment.*
			2.	Angular displacement measuring instruments having an "angular position deviation" equal to or less

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		(better) than 0,00025°; *Note: I.2A.005.b.2. does not prohibit optical instruments, such as autocollimators, using collimated light (e.g. laser light) to detect angular displacement of a mirror*
I.2A.006	2B007.c	"Robots" having the following characteristics and specially designed controllers and "end-effectors" therefor: N.B.: See also I.2A.019. c. Specially designed or rated as radiation-hardened to withstand a total radiation dose greater than 5×10^3 Gy (silicon) without operational degradation. Technical Note: *The term Gy (silicon) refers to the energy in Joules per kilogram absorbed by an unshielded silicon sample when exposed to ionising radiation*.
I.2A.007	2B104	"Isostatic presses" having all of the following: N.B.: See also I.2A.017.

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		a. Maximum working pressure of 69 MPa or greater; b. Designed to achieve and maintain a controlled thermal environment of 873 K (600 °C) or greater; and c. Possessing a chamber cavity with an inside diameter of 254 mm or greater.
I.2A.008	2B105	Chemical vapour deposition (CVD) furnaces designed or modified for the densification of carbon-carbon composites.
I.2A.009	2B109	Flow-forming machines and specially designed components as follows: N.B.: See also I.2A.020. a. Flow-forming machines having all of the following: 1. According to the manufacturer's technical specification, can be equipped with "numerical control" units or a computer control, even when not equipped with such units; and 2. With more than two axes which can be coordinated simultaneously

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		for "contouring control". b. Specially designed components for flow-forming machines specified in I.2A.009.a. *Note: I.2A.009 does not prohibit machines that are not usable in the production of propulsion components and equipment (e.g. motor cases) for "missiles".* Technical Note: *Machines combining the function of spin-forming and flow-forming are for the purpose of I.2A.009 regarded as flow-forming machines*
I.2A.010	2B116	Vibration test systems, equipment and components therefor, as follows: a. Vibration test systems employing feedback or closed loop techniques and incorporating a digital controller, capable of vibrating a system at an acceleration equal to or greater than 10 g rms between 20 Hz and 2 kHz and imparting forces equal to or greater than 50 kN, measured "bare table"; b. Digital controllers, combined with specially designed vibration test software, with a "real-time bandwidth" greater than 5 kHz designed for use with vibration test

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		systems specified in I.2A.010.a.; c. Vibration thrusters (shaker units), with or without associated amplifiers, capable of imparting a force equal to or greater than 50 kN, measured “bare table”, and usable in vibration test systems specified in I.2A.010.a.; d. Test piece support structures and electronic units designed to combine multiple shaker units in a system capable of providing an effective combined force equal to or greater than 50 kN, measured “bare table”, and usable in vibration systems specified in I.2A.010.a. Technical Note: *In I.2A.010, “bare table” means a flat table, or surface, with no fixture or fittings*
I.2A.011	2B117	Equipment and process controls, other than those specified in I.2A.007 or I.2A.008, designed or modified for densification and pyrolysis of structural composite rocket nozzles and reentry vehicle nose tips.
I.2A.012	2B119	Balancing machines and related equipment, as follows: N.B.: See also I.2A.021. a. Balancing machines having

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			all the following characteristics: 1. Not capable of balancing rotors/ assemblies having a mass greater than 3 kg; 2. Capable of balancing rotors/ assemblies at speeds greater than 12 500 rpm; 3. Capable of correcting unbalance in two planes or more; and 4. Capable of balancing to a residual specific unbalance of 0,2 g mm per kg of rotor mass; *Note: I.2A.012.a. does not prohibit balancing machines designed or modified for dental or other medical equipment*.
		b.	Indicator heads designed or modified for use with machines specified in I.2A.012.a. Technical Note: *Indicator heads are sometimes*

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		known as balancing instrumentation
I.2A.013	2B120	Motion simulators or rate tables having all of the following characteristics: a. Two axes or more; b. Slip rings capable of transmitting electrical power and/or signal information; and c. Having any of the following characteristics: 1. For any single axis having all of the following: a. Capable of rates of 400 degrees/s or more, or 30 degrees/s or less; and b. A rate resolution equal to or less than 6 degrees/s and an accuracy equal

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		to or less than 0,6 degrees/s; 2. Having a worst-case rate stability equal to or better (less) than plus or minus 0,05 % averaged over 10 degrees or more; or 3. A positioning accuracy equal to or better than 5 arc second. *Note: I.2A.013 does not prohibit rotary tables designed or modified for machine tools or for medical equipment*.
I.2A.014	2B121	Positioning tables (equipment capable of precise rotary positioning in any axes), other than those specified in I.2A.013, having all the following characteristics: a. Two axes or more; and b. A positioning accuracy equal to or better than 5 arc second. *Note: I.2A.014 does not prohibit rotary tables designed or modified for machine tools or for medical equipment*.

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I.2A.015	2B122	Centrifuges capable of imparting accelerations above 100 g and having slip rings capable of transmitting electrical power and signal information.
I.2A.016	2B201, 2B001.b.2 and 2B001.c.2	Machine tools and any combination thereof, as follows, for removing or cutting metals, ceramics or “composites”, which, according to the manufacturer’s technical specification, can be equipped with electronic devices for simultaneous “contouring control” in two or more axes: *Note: For “numerical control” units prohibited because of their associated “software” see I.2B.002.* a. Machine tools for milling, having any of the following characteristics: 1. Positioning accuracies with “all compensations available” equal to or less (better) than 6 μm according to ISO 230/2 (1988)[a] or national equivalents along any linear axis; 2. Two or more contouring rotary axes; or

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			3.		Five or more axes which can be coordinated simultaneously for "contouring control".
			Note: I.2A.016.a. does not prohibit milling machines having the following characteristics:		
				a.	*X-axis travel greater than 2 m; and*
				b.	*Overall positioning accuracy on the x-axis more (worse) than 30 μm*.
		b.	Machine tools for grinding, having any of the following characteristics:		
			1.		Positioning accuracies with "all compensations available" equal to or less (better) than 4 μm according to ISO 230/2 (1988)[a] or national equivalents along any linear axis;

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		2. Two or more contouring rotary axes; or 3. Five or more axes which can be coordinated simultaneously for "contouring control". *Note: I.2A.016.b. does not prohibit the following grinding machines*: a. *Cylindrical external, internal, and external-internal grinding machines having all of the following characteristics*: 1. *Limited to a maximum workpiece capacity of 150 mm outside diameter or length; and* 2. *Axes limited to x, z and c;*

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		b. *Jig grinders that do not have a z-axis or a w-axis with an overall positioning accuracy less (better) than 4 μm according to ISO 230/2 (1988)[a] or national equivalents*. *Note 1: I.2A.016 does not prohibit special purpose machine tools limited to the manufacture of any of the following parts*: a. *Gears*; b. *Crankshafts or camshafts*; c. *Tools or cutters*; d. *Extruder worms*. *Note 2: A machine tool having at least two of the three turning, milling or grinding capabilities (e.g., a turning machine with milling capability), must be evaluated against each applicable entry I.2A.004.a. or I.2A.016.a. or b.*
I.2A.017	2B204	"Isostatic presses", other than those specified in I.2A.007,

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		and related equipment, as follows: a. "Isostatic presses" having both of the following characteristics: 1. Capable of achieving a maximum working pressure of 69 MPa or greater; and 2. A chamber cavity with an inside diameter in excess of 152 mm; b. Dies, moulds and controls, specially designed for "isostatic presses" specified in I.2A.017.a. Technical Note: *In I.2A.017 the inside chamber dimension is that of the chamber in which both the working temperature and the working pressure are achieved and does not include fixtures. That dimension will be the smaller of either the inside diameter of the pressure chamber or the inside diameter of the insulated furnace chamber, depending on which of the two chambers is located inside the other*.
I.2A.018	2B206	Dimensional inspection machines, instruments or systems, other than those

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		specified in I.2A.005, as follows: a. Computer controlled or numerically controlled dimensional inspection machines having both of the following characteristics: 1. Two or more axes; and 2. A one-dimensional length "measurement uncertainty" equal to or less (better) than (1,25 + L/1 000) µm tested with a probe of an "accuracy" of less (better) than 0,2 µm (L is the measured length in millimetres) (Ref.: VDI/VDE 2617 Parts 1 and 2); b. Systems for simultaneous linear-angular inspection of hemishells, having both of the following characteristics: 1. "Measurement uncertainty" along any

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		linear axis equal to or less (better) than 3,5 µm per 5 mm; and 2. "Angular position deviation" equal to or less than 0,02 °. *Note 1: Machine tools that can be used as measuring machines are prohibited if they meet or exceed the criteria specified for the machine tool function or the measuring machine function.* *Note 2: A machine specified in I.2A.018 is prohibited if it exceeds the prohibition threshold anywhere within its operating range.* Technical Notes: *1. The probe used in determining the measurement uncertainty of a dimensional inspection system shall be described in VDI/VDE 2617 parts 2, 3 and 4.* *2. All parameters of measurement values in I.2A.018 represent plus/minus i.e., not total band.*
I.2A.019	2B207	"Robots", "end effectors" and control units, other than those specified in I.2A.006, as follows: a. "Robots" or "end effectors" specially designed to comply with national safety

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		standards applicable to handling high explosives (for example, meeting electrical code ratings for high explosives); b. Control units specially designed for any of the "robots" or "end effectors" specified in I.2A.019.a.
I.2A.020	2B209	Flow forming machines, spin forming machines capable of flow forming functions, other than those specified in I.2A.009, and mandrels, as follows: a. Machines having both of the following characteristics: 1. Three or more rollers (active or guiding); and 2. Which, according to the manufacturer's technical specification, can be equipped with "numerical control" units or a computer control; b. Rotor-forming mandrels designed to form cylindrical rotors of inside diameter between 75 mm and 400 mm.

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		Note: I.2A.020.a. includes machines which have only a single roller designed to deform metal plus two auxiliary rollers which support the mandrel, but do not participate directly in the deformation process.
I.2A.021	2B219	Centrifugal multiplane balancing machines, fixed or portable, horizontal or vertical, as follows: a. Centrifugal balancing machines designed for balancing flexible rotors having a length of 600 mm or more and having all of the following characteristics: 1. Swing or journal diameter greater than 75 mm; 2. Mass capability of from 0,9 to 23 kg; and 3. Capable of balancing speed of revolution greater than 5 000 r.p.m.; b. Centrifugal balancing machines designed for balancing hollow cylindrical rotor components and having all of the following characteristics: 1. Journal diameter

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		greater than 75 mm; 2. Mass capability of from 0,9 to 23 kg; 3. Capable of balancing to a residual imbalance equal to or less than 0,01 kg × mm/kg per plane; and 4. Belt drive type.
I.2A.022	2B225	Remote manipulators that can be used to provide remote actions in radiochemical separation operations or hot cells, having either of the following characteristics: a. A capability of penetrating 0,6 m or more of hot cell wall (through-the-wall operation); or b. A capability of bridging over the top of a hot cell wall with a thickness of 0,6 m or more (over-the-wall operation). Technical Note: *Remote manipulators provide translation of human operator actions to a remote operating arm and terminal fixture. They may be of "master/slave" type or operated by joystick or keypad*.
I.2A.023	2B226	Controlled atmosphere (vacuum or inert gas) induction furnaces, and

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		power supplies therefor, as follows: a. Furnaces having all of the following characteristics: 1. Capable of operation above 1 123 K (850 °C); 2. Induction coils 600 mm or less in diameter; and 3. Designed for power inputs of 5 kW or more; b. Power supplies, with a specified power output of 5 kW or more, specially designed for furnaces specified in I.2A.023.a. *Note: I.2A.023.a. does not prohibit furnaces designed for the processing of semiconductor wafers*.
I.2A.024	2B227	Vacuum or other controlled atmosphere metallurgical melting and casting furnaces and related equipment as follows: a. Arc remelt and casting furnaces having both of the following characteristics: 1. Consumable electrode capacities between 1 000 cm^3 and 20

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		000 cm^3, and 2. Capable of operating with melting temperatures above 1 973 K (1 700 °C); b. Electron beam melting furnaces and plasma atomization and melting furnaces, having both of the following characteristics: 1. A power of 50 kW or greater; and 2. Capable of operating with melting temperatures above 1 473 K (1 200 °C). c. Computer control and monitoring systems specially configured for any of the furnaces specified in I.2A.024.a. or b.
I.2A.025	2B228	Rotor fabrication or assembly equipment, rotor straightening equipment, bellows forming mandrels and dies, as follows: a. Rotor assembly equipment for assembly of gas centrifuge rotor tube sections, baffles, and end caps;

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		Note: I.2A.025.a. includes precision mandrels, clamps, and shrink fit machines.
		b. Rotor straightening equipment for alignment of gas centrifuge rotor tube sections to a common axis; Technical Note: *In I.2A.025.b. such equipment normally consists of precision measuring probes linked to a computer that subsequently controls the action of, for example, pneumatic rams used for aligning the rotor tube sections*.
		c. Bellows-forming mandrels and dies for producing single convolution bellows. Technical Note: *In I.2A.025.c. the bellows have all of the following characteristics*: 1. *Inside diameter between 75 mm and 400 mm*; 2. *Length equal to or greater than 12,7 mm*; 3. *Single convolution depth greater*

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		than 2 mm; and 4. *Made of high-strength aluminium alloys, maraging steel or high strength "fibrous or filamentary materials".*
I.2A.026	2B230	"Pressure transducers" capable of measuring absolute pressures at any point in the range 0 to 13 kPa and having both of the following characteristics: a. Pressure sensing elements made of or protected by aluminium, aluminium alloy, nickel or nickel alloy with more than 60 % nickel by weight; and b. Having either of the following characteristics: 1. A full scale of less than 13 kPa and an "accuracy" of better than + 1 % of full-scale; or 2. A full scale of 13 kPa or greater and an "accuracy" of better

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		than + 130 Pa. Technical Note: *For the purposes of I.2A.026, "accuracy" includes non linearity, hysteresis and repeatability at ambient temperature*.
I.2A.027	2B231	Vacuum pumps having all of the following characteristics: a. Input throat size equal to or greater than 380 mm; b. Pumping speed equal to or greater than 15 m^3/s; and c. Capable of producing an ultimate vacuum better than 13 mPa. Technical Note: *1*. *The pumping speed is determined at the measurement point with nitrogen gas or air*. *2*. *The ultimate vacuum is determined at the input of the pump with the input of the pump blocked off*
I.2A.028	2B232	Multistage light gas guns or other high-velocity gun systems (coil, electromagnetic, and electrothermal types, and other advanced systems) capable of accelerating projectiles to 2 km/s or greater
I.2A.029	*ex* 2B350* (2B350.a.1-7, *ex* 2B350.b.1-7, 2B350.c.1-7, *ex* 2B350.d.1-8, *ex* 2B350.e.1-8, 2B350.f, *ex* 2B350.g.1-7, *ex* 2B350.h.1-7, *ex* 2B350.i.1-10 and 2B350.j)	Chemical manufacturing facilities, equipment and components, as follows: a.* Reaction vessels or reactors, with or without agitators, with total internal

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			(geometric) volume greater than 0,1 m^3 (100 litres) and less than 20 m^3 (20 000 litres), where all surfaces that come in direct contact with the chemical(s) being processed or contained are made from any of the following materials: 1. Alloys with more than 25 % nickel and 20 % chromium by weight; 2. Fluoropolymers; 3. Glass (including vitrified or enamelled coating or glass lining); 4. Nickel or alloys with more than 40 % nickel by weight; 5. Tantalum or tantalum alloys; 6. Titanium or titanium alloys; or 7. Zirconium or zirconium alloys;
		b.*	Agitators for use in reaction vessels or reactors specified in I.2A.029.a. where all surfaces of the

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			agitator that come in direct contact with the chemical(s) being processed or contained are made from any of the following materials: 1. Alloys with more than 25 % nickel and 20 % chromium by weight; 2. Fluoropolymers; 3. Glass (including vitrified or enamelled coatings or glass lining); 4. Nickel or alloys with more than 40 % nickel by weight; 5. Tantalum or tantalum alloys; 6. Titanium or titanium alloys; or 7. Zirconium or zirconium alloys;
		c.*	Storage tanks, containers or receivers with a total internal (geometric) volume greater than 0,1 m^3 (100 litres) where all surfaces that come in direct contact with the chemical(s) being

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			processed or contained are made from any of the following materials: 1. Alloys with more than 25 % nickel and 20 % chromium by weight; 2. Fluoropolymers; 3. Glass (including vitrified or enamelled coatings or glass lining); 4. Nickel or alloys with more than 40 % nickel by weight; 5. Tantalum or tantalum alloys; 6. Titanium or titanium alloys; or 7. Zirconium or zirconium alloys;
		d.*	Heat exchangers or condensers with a heat transfer surface area greater than 0,15 m^2, and less than 20 m^2, where all surfaces that come in direct contact with the chemical(s) being processed are made from any of the following materials:

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			1.	Alloys with more than 25 % nickel and 20 % chromium by weight;
			2.	Fluoropolymers;
			3.	Glass (including vitrified or enamelled coatings or glass lining);
			4.*	Graphite;
			5.	Nickel or alloys with more than 40 % nickel by weight;
			6.	Tantalum or tantalum alloys;
			7.	Titanium or titanium alloys;
			8.	Zirconium or zirconium alloys;
		e.*	Distillation or absorption columns of internal diameter greater than 0,1 m where all surfaces that come in direct contact with the chemical(s) being processed are made from any of the following materials:	
			1.	Alloys with more than 25 % nickel and 20 %

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				chromium by weight;
			2.	Fluoropolymers;
			3.	Glass (including vitrified or enamelled coatings or glass lining);
			4.*	Graphite;
			5.	Nickel or alloys with more than 40 % nickel by weight;
			6.	Tantalum or tantalum alloys;
			7.	Titanium or titanium alloys; or
			8.	Zirconium or zirconium alloys;
		f.		Remotely operated filling equipment in which all surfaces that come in direct contact with the chemical(s) being processed are made from any of the following materials:
			1.	Alloys with more than 25 % nickel and 20 % chromium by weight; or
			2.	Nickel or alloys with more than 40 %

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		nickel by weight; g.* Valves in which all surfaces that come in direct contact with the chemical(s) being processed or contained are made from any of the following materials: 1. Alloys with more than 25 % nickel and 20 % chromium by weight; 2. Fluoropolymers; 3. Glass (including vitrified or enamelled coatings or glass lining); 4. Nickel or alloys with more than 40 % nickel by weight; 5. Tantalum or tantalum alloys; 6. Titanium or titanium alloys; or 7. Zirconium or zirconium alloys; h.* Multi-walled piping incorporating a leak detection port, in which all surfaces that come in direct contact with the chemical(s) being processed or

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			contained are made from any of the following materials: 1. Alloys with more than 25 % nickel and 20 % chromium by weight; 2. Fluoropolymers; 3. Glass (including vitrified or enamelled coatings or glass lining); 4.* Graphite; 5. Nickel or alloys with more than 40 % nickel by weight; 6. Tantalum or tantalum alloys; 7. Titanium or titanium alloys; or 8. Zirconium or zirconium alloys;
		i.*	Pumps, with manufacturer's specified maximum flow-rate greater than 0,6 m^3/hour, or vacuum pumps with manufacturer's specified maximum flow-rate greater than 5 m^3/hour (under standard temperature (273 K (0 °C)) and

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			pressure (101,3 kPa) conditions), in which all surfaces that come in direct contact with the chemical(s) being processed are made from any of the following materials: 1. Alloys with more than 25 % nickel and 20 % chromium by weight; 2. Ceramics; 3. Ferrosilicon; 4. Fluoropolymers; 5. Glass (including vitrified or enamelled coatings or glass lining); 6.* Graphite; 7. Nickel or alloys with more than 40 % nickel by weight; 8. Tantalum or tantalum alloys; 9. Titanium or titanium alloys; or 10. Zirconium or zirconium alloys;
		j.	Incinerators designed to destroy chemicals specified in entry I.1A.052, having specially designed waste

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		supply systems, special handling facilities and an average combustion chamber temperature greater than 1 273 K (1 000 °C), in which all surfaces in the waste supply system that come into direct contact with the waste products are made from or lined with any of the following materials: 1. Alloys with more than 25 % nickel and 20 % chromium by weight; 2. Ceramics; or 3. Nickel or alloys with more than 40 % nickel by weight
I.2A.030	2B351	Toxic gas monitoring systems, as follows; and dedicated detectors therefor: a. Designed for continuous operation and usable for the detection of chemical warfare agents or chemicals specified in I.1A.052, at concentrations of less than 0,3 mg/m^3; or b. Designed for the detection of

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		cholinesterase-inhibiting activity.
I.2A.031	*ex* 2B352* and — (2B352.a, 2B352.b, 2B352.c, *ex* 2B352.d.1, *ex* 2B352.e, *ex* 2B352.f.1, 2B352.f.2 and 2B352.g)	Equipment capable of use in handling biological materials, as follows: a. Complete biological containment facilities at P3, P4 containment level; Technical Note: *P3 or P4 (BL3, BL4, L3, L4) containment levels are as specified in the WHO Laboratory Biosafety manual (2nd edition, Geneva 1993)*. b.* Fermenters capable of cultivation of pathogenic "microorganisms", viruses or capable of toxin production, without the propagation of aerosols; Technical Note: *Fermenters include bioreactors, chemostats and continuous-flow systems*. c. Centrifugal separators, capable of the continuous separation of pathogenic micro-organisms, without the propagation of aerosols, having all the following characteristics: 1. Flow rate exceeding 100 litres per hour; 2. Components of

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				polished stainless steel or titanium;
			3.	One or more sealing joints within the steam containment area; and
			4.	Capable of in-situ steam sterilisation in a closed state;
				Technical Note: *Centrifugal separators include decanters*.
		d.*		Cross (tangential) flow filtration equipment and components as follows:
			1.	Cross (tangential) flow filtration equipment capable of continuous separation of pathogenic micro-organisms, viruses, toxins or cell cultures, without the propagation of aerosols, having both of the

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following characteristics:

a. A total filtration area equal to or greater than 5 m^2; and

b. Capable of being sterilised or disinfected without preliminary dismantling;

Technical Note:
In I.2A.031.d.1.b. sterilised denotes the elimination of all viable microbes from the equipment through the use of either physical (e.g. steam) or chemical agents. Disinfected denotes the destruction of potential microbial infectivity in the equipment through the use of chemical agents with a germicidal effect. Disinfection and sterilisation are distinct from sanitisation, the latter referring to cleaning procedures designed to lower the microbial content of equipment without

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			necessarily achieving elimination of all microbial infectivity or viability.
		e.*	Steam sterilisable freeze drying equipment with a condenser capacity exceeding 50 kg of ice in 24 hours and less than 1 000 kg of ice in 24 hours;
		f.*	Protective and containment equipment, as follows:
			1.* Protective suits with full or partial ventilation; *Note: I.2A.031.f.1. does not prohibit suits designed to be worn with self-contained breathing apparatus*.
			2. Class III biological safety cabinets or isolators with similar performance standards; *Note: In I.2A.031.f.2., isolators include flexible isolators, dry boxes, anaerobic chambers,*

a Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

		glove boxes and laminar flow hoods (closed with vertical flow). g. Chambers designed for aerosol challenge testing with "microorganisms", viruses or "toxins" and having a capacity of 1 m^3 or greater.
I.2A.032	—	Equipment capable of use in handling biological materials, other than that specified in I.2A.031, as follows: a. Equipment for the micro-encapsulation of live micro-organisms and toxins in the range of 1-10 μm particle size, as follows: 1. Interfacial polycondensors; 2. Phase separators. b. Conventional or turbulent air-flow clean-air rooms and self-contained fan-HEPA filter units that may be used for P3 or P4 (BL3, BL4, L3, L4) containment facilities.

a Manufacturers calculating positioning accuracy in accordance with ISO 230/2 (1997) should consult the competent authorities of the Member State in which they are established.

I.2B

TECHNOLOGY, INCLUDING SOFTWARE

No	Relevant item(s) from Annex to Regulation (EC) No 1183/2007	Description

I.2B.001	*ex* 2D001	"Software", other than that specified in I.2B.002, specially designed or modified for the "development", "production" or "use" of equipment specified in I.2A.004 to I.2A.006.
I.2B.002	2D002	"Software" for electronic devices, even when residing in an electronic device or system, enabling such devices or systems to function as a "numerical control" unit, capable of co-ordinating simultaneously more than four axes for "contouring control". *Note 1: I.2B.002 does not prohibit "software" specially designed or modified for the operation of machine tools not specified in Category I.2.*
I.2B.003	2D101	"Software" specially designed or modified for the "use" of equipment specified in I.2A.007 to I.2A.015.
I.2B.004	2D201	"Software" specially designed for the "use" of equipment specified in I.2A.017 to I.2A.024. *Note:"Software" specially designed for equipment specified in I.2A.018 includes "software" for simultaneous measurements of wall thickness and contour*
I.2B.005	2D202	"Software" specially designed or modified for the "development", "production" or "use" of equipment specified in I.2A.016.
I.2B.006	*ex* 2E001 and —	"Technology" according to the General Technology Note for the "development" of equipment or "software" specified in I.2A.002 to I.2A.004, I.2A.006.b., I.2A.006.c, I.2A.007 to

		I.2A.032, I.2B.001, I.2B.003 or I.2B.004.
I.2B.007	*ex* 2E002 and —	"Technology" according to the General Technology Note for the "production" of equipment specified in I.2A.002 to I.2A.004, I.2A.006.b., I.2A.006.c, I.2A.007 to I.2A.032
I.2B.008	2E101	"Technology" according to the General Technology Note for the "use" of equipment or "software" specified in I.2A.007, I.2A.009, I.2A.010, I.2A.012 to I.2A.015 or I.2B.003.
I.2B.009	*ex* 2E201	"Technology" according to the General Technology Note for the "use" of equipment or "software" specified in I.2A.002 to I.2A.005, I.2A.006.b., I.2A.006.c., I.2A.016 to I.2A.020, I.2A.022 to I.2A.028, I.2B.004 or I.2B.005.
I.2B.010	2E301	"Technology" according to the General Technology Note for the "use" of goods specified in I.2A.029 to I.2A.031.

I.3 ELECTRONICS

I.3A

GOODS

No	**Relevant item(s) from Annex to Regulation (EC) No 1183/2007**	**Description**
I.3A.001	*ex* 3A001.a*	Electronic components, as follows: a. General purpose integrated circuits, as follows: *Note 1: The prohibition status of wafers (finished or unfinished),*

			in which the function has been determined, is to be evaluated against the parameters of I.3A.001.a. *Note 2: Integrated circuits include the following types*: *"Monolithic integrated circuits"*; *"Hybrid integrated circuits"*; *"Multichip integrated circuits"*; *"Film type integrated circuits", including silicon-on-sapphire integrated circuits*; *"Optical integrated circuits"*.
		1.*	Integrated circuits having all of the following characteristics:
			a. Designed or rated as radiation hardened to withstand a total irradiation dose of 5×10^3 Gy (silicon)

		or higher; and b. Usable in protecting rocket systems and “unmanned aerial vehicles” against nuclear effects (e.g.. Electromagnetic Pulse (EMP), X-rays, combined blast and thermal effects), and usable for “missiles”.
I.3A.002	3A101	Electronic equipment, devices and components, as follows: a. Analogue-to-digital converters, usable in “missiles”, designed to meet military specifications for ruggedized equipment; b. Accelerators capable of delivering electromagnetic radiation produced by bremsstrahlung from accelerated electrons of 2 MeV or greater, and systems containing those accelerators.

		Note: I.3A.002.b. above does not specify equipment specially designed for medical purposes.
I.3A.003	3A201	Electronic components as follows; a. Capacitors having either of the following sets of characteristics: 1. a. Voltage rating greater than 1,4 kV; b. Energy storage greater than 10 J; c. Capacitance greater than 0,5 µF; and d. Series inductance less than 50 nH; or 2. a. Voltage rating greater than 750 V; b. Capacitance greater than 0,25 µF; and c. Series inductance less

			than 10 nH;
		b.	Superconducting solenoidal electromagnets having all of the following characteristics: 1. Capable of creating magnetic fields greater than 2 T; 2. A ratio of length to inner diameter greater than 2; 3. Inner diameter greater than 300 mm; and 4. Magnetic field uniform to better than 1 % over the central 50 % of the inner volume; *Note: I.3A.003.b. does not prohibit magnets specially designed for and exported "as parts of" medical nuclear magnetic resonance (NMR) imaging systems. The phrase "as part of" does not necessarily mean physical part in the same shipment; separate shipments from different sources are allowed, provided the related export*

							documents clearly specify that the shipments are dispatched "as part of" the imaging systems.
				c.			Flash X-ray generators or pulsed electron accelerators having either of the following sets of characteristics:
					1.	a.	An accelerator peak electron energy of 500 keV or greater but less than 25 MeV; and
						b.	With a "figure of merit" (K) of 0,25 or greater; or
					2.	a.	An accelerator peak electron energy of 25 MeV or greater; and
						b.	A "peak power"

		greater than 50 MW.
		Note: I.3A.003.c. does not prohibit accelerators that are component parts of devices designed for purposes other than electron beam or X-ray radiation (electron microscopy, for example) nor those designed for medical purposes: Technical Note: *1. The "figure of merit" K is defined as*: $K = 1,7 \times 10^3 V^{2,.65} Q$ *V is the peak electron energy in million electron volts*. *If the accelerator beam pulse duration is less than or equal to 1 μs, then Q is the total accelerated charge in Coulombs. If the accelerator beam pulse duration is greater than 1 μs, then Q is the maximum accelerated charge in 1 μs*. *Q equals the integral of i with respect to t, over the lesser of 1 μs or the time duration of the beam pulse ($Q = \int i dt$), where i is beam current*

		in amperes and t is time in seconds.
		2. *"Peak power" = (peak potential in volts) × (peak beam current in amperes)*.
		3. *In machines based on microwave accelerating cavities, the time duration of the beam pulse is the lesser of 1 μs or the duration of the bunched beam packet resulting from one microwave modulator pulse*.
		4. *In machines based on microwave accelerating cavities, the peak beam current is the average current in the time duration of a bunched*

		beam packet
I.3A.004	3A225	Frequency changers or generators, other than those specified in I.0A.002.b.13., having all of the following characteristics: a. Multiphase output capable of providing a power of 40 W or greater; b. Capable of operating in the frequency range between 600 and 2 000 Hz; c. Total harmonic distortion better (less) than 10 %; and d. Frequency control better (less) than 0,1 %. Technical Note: *Frequency changers in I.3A.004 are also known as converters or inverters*.
I.3A.005	3A226	High-power direct current power supplies, other than those specified in I.0A.002.j.6., having both of the following characteristics: a. Capable of continuously producing, over a time period of 8 hours, 100 V or greater with current output of 500 A or greater; and b. Current or voltage stability better than 0,1 % over a time period of 8 hours
I.3A.006	3A227	High-voltage direct current power supplies, other than those specified in I.0A.002.j.5., having both of the following characteristics: a. Capable of continuously

		producing, over a time period of 8 hours, 20 kV or greater with current output of 1 A or greater; and b. Current or voltage stability better than 0,1 % over a time period of 8 hours.
I.3A.007	3A228	Switching devices, as follows: a. Cold-cathode tubes, whether gas filled or not, operating similarly to a spark gap, having all of the following characteristics: 1. Containing three or more electrodes; 2. Anode peak voltage rating of 2,5 kV or more; 3. Anode peak current rating of 100 A or more; and 4. Anode delay time of 10 μs or less; *Note: I.3A.007 includes gas krytron tubes and vacuum sprytron tubes*. b. Triggered spark-gaps having both of the following characteristics: 1. An anode delay time of 15 μs or less; and

		2. Rated for a peak current of 500 A or more; c. Modules or assemblies with a fast switching function having all of the following characteristics: 1. Anode peak voltage rating greater than 2 kV; 2. Anode peak current rating of 500 A or more; and 3. Turn-on time of 1 μs or less.
I.3A.008	3A229	Firing sets and equivalent high-current pulse generators as follows: N.B.: See also Military Goods Controls. a. Explosive detonator firing sets designed to drive multiple controlled detonators specified in I.3A.011; b. Modular electrical pulse generators (pulsers) having all of the following characteristics: 1. Designed for portable, mobile, or ruggedized-use; 2. Enclosed in a dust-tight enclosure;

		3. Capable of delivering their energy in less than 15 μs; 4. Having an output greater than 100 A; 5. Having a “rise time” of less than 10 μs into loads of less than 40 ohms; 6. No dimension greater than 254 mm; 7. Weight less than 25 kg; and 8. Specified for use over an extended temperature range 223 K (– 50 °C) to 373 K (100 °C) or specified as suitable for aerospace applications. *Note: I.3A.008.b. includes xenon flash-lamp drivers*. Technical Note: *In I.3A.008.b.5. “rise time” is defined as the time interval from 10 % to 90 % current amplitude when*

		driving a resistive load
I.3A.009	3A230	High-speed pulse generators having both of the following characteristics: a. Output voltage greater than 6 V into a resistive load of less than 55 ohms, and b. "Pulse transition time" less than 500 ps. Technical Note: *In I.3A.009, "pulse transition time" is defined as the time interval between 10 % and 90 % voltage amplitude*
I.3A.010	3A231	Neutron generator systems, including tubes, having both of the following characteristics: a. Designed for operation without an external vacuum system; and b. Utilizing electrostatic acceleration to induce a tritium-deuterium nuclear reaction
I.3A.011	3A232	Detonators and multipoint initiation systems, as follows: N.B.: See also Military Goods Controls. a. Electrically driven explosive detonators, as follows: 1. Exploding bridge (EB); 2. Exploding bridge wire (EBW); 3. Slapper; 4. Exploding foil

		initiators (EFI); b. Arrangements using single or multiple detonators designed to nearly simultaneously initiate an explosive surface over greater than 5 000 mm^2 from a single firing signal with an initiation timing spread over the surface of less than 2,5 µs. *Note: I.3A.011 does not prohibit detonators using only primary explosives, such as lead azide*. Technical Note: *In I.3A.011 the detonators of concern all utilise a small electrical conductor (bridge, bridge wire or foil) that explosively vapourises when a fast, high-current electrical pulse is passed through it. In nonslapper types, the exploding conductor starts a chemical detonation in a contacting high-explosive material such as PETN (Pentaerythritoltetranitrate). In slapper detonators, the explosive vapourisation of the electrical conductor drives a flyer or slapper across a gap and the impact of the slapper on an explosive starts a chemical detonation. The slapper in some designs is driven by a magnetic force. The term exploding foil detonator may refer to either an EB or a slapper-type detonator. Also, the word initiator is sometimes used in place of the word detonator*
I.3A.012	3A233	Mass spectrometers, other than those specified in I.0A.002.g., capable of

		measuring ions of 230 atomic mass units or greater and having a resolution of better than 2 parts in 230, as follows, and ion sources therefor: a. Inductively coupled plasma mass spectrometers (ICP/MS); b. Glow discharge mass spectrometers (GDMS); c. Thermal ionization mass spectrometers (TIMS); d. Electron bombardment mass spectrometers which have a source chamber constructed from, lined with or plated with materials resistant to UF_6; e. Molecular beam mass spectrometers having either of the following characteristics: 1. A source chamber constructed from, lined with or plated with stainless steel or molybdenum and equipped with a cold trap capable of cooling to 193 K (–80 °) or less; or 2. A source chamber constructed from,

		lined with or plated with materials resistant to UF_6; f. Mass spectrometers equipped with a microfluorination ion source designed for actinides or actinide fluorides.

I.3B

TECHNOLOGY, INCLUDING SOFTWARE

No	**Relevant item(s) from Annex to Regulation (EC) No 1183/2007**	**Description**
I.3B.001	3D101	"Software" specially designed or modified for the "use" of equipment specified in I.3A.002.b
I.3B.002	*ex* 3E001	"Technology" according to the General Technology Note for the "development" or "production" of equipment or materials specified in I.3A.001 to I.3A.003, or in I.3A.007 to I.3A.012.
I.3B.003	*ex* 3E101	"Technology" according to the General Technology Note for the "use" of equipment or "software" specified in I.3A.001, I.3A.002 or I.3B.001.
I.3B.004	3E102	"Technology" according to the General Technology Note for the "development" of "software" specified in I.3B.001.
I.3B.005	*ex* 3E201	"Technology" according to the General Technology Note for the "use" of equipment specified in I.3A.003 to I.3A.012.

I.4 COMPUTERS

I.4A

GOODS

No	Relevant item(s) from Annex to Regulation (EC) No 1183/2007	Description
I.4A.001	4A001.a.1 *	Electronic computers and related equipment, as follows: N.B.: See also I.4A.002. a. Specially designed to have the following characteristics: 1.* Rated for continuous operation at temperatures below 228 K (– 45 °C) or above 328 K (55 °C); *Note: I.4A.001 does not apply to computers specially designed for civil automobile or railway train applications*.
I.4A.002	4A101	Analogue computers, “digital computers” or digital differential analysers, having all of the following characteristics: N.B.: See also Military Goods Controls for computers for use in rockets or missiles. a. Designed or modified for use in space launch vehicles specified in I.9A.001 or sounding rockets

		specified in I.9A.005; and b. Designed as ruggedised or radiation hardened to withstand radiation levels of 5 × 10^3 Gy (silicon) or higher.
I.4A.003	4A102	"Hybrid computers" specially designed for modelling, simulation or design integration of space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005. N.B.: See also Military Goods Controls for rockets or missiles related computers. *Note: This prohibition only applies when the equipment is supplied with "software" specified in I.7B.003 or I.9B.003*.

I.4B

TECHNOLOGY, INCLUDING SOFTWARE

No	**Relevant item(s) from Annex to Regulation (EC) No 1183/2007**	**Description**
I.4B.001	*ex* 4E001.a	"Technology" according to the General Technology Note, for the "development", "production" or "use" of equipment or "software" specified in I.4A.001, I.4A.002 or I.4A.003.

I.5 TELECOMMUNICATIONS AND "INFORMATION SECURITY"

I.5A

GOODS

No	**Relevant item(s) from Annex to Regulation (EC) No 1183/2007**	**Description**

I.5A.001	5A101	Telemetering and telecontrol equipment, including ground equipment, designed or modified for "missiles". Technical Note: *In I.5A.001 "missile" means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km.* *Note:I.5A.001 does not prohibit*: a. *Equipment designed or modified for manned aircraft or satellites*; b. *Ground based equipment designed or modified for terrestrial or marine applications*; c. *Equipment designed for commercial, civil or "Safety of Life" (e.g. data integrity, flight safety) GNSS services*;

I.5B

TECHNOLOGY, INCLUDING SOFTWARE

No	**Relevant item(s) from Annex to Regulation (EC) No 1183/2007**	**Description**
I.5B.001	5D101	"Software" specially designed or modified for the "use" of equipment specified in I.5A.001.
I.5B.002	5E101	"Technology" according to the General Technology Note for the "development", "production" or "use" of equipment specified in I.5A.001 or software specified in I.5B.001.

I.6 SENSORS AND LASERS

I.6A

GOODS

No	Relevant item(s) from Annex to Regulation (EC) No 1183/2007	Description
I.6A.001	*ex* 6A005.b*, *ex* 6A005.c* and *ex* 6A005.d* a.: *ex* 6A005.d.4 b.: *ex* 6A005.b.2-4 c.: *ex* 6A005.c.2	"Lasers", other than those specified in I.0A.002.g.5. or I.0A.002.h.6., components and optical equipment, as follows:[a] a. Pulsed excimer (XeF, XeCl, KrF) "lasers" having all of the following characteristics: 1. Operating at wavelengths between 240 nm and 360 nm; 2. A repetition rate greater than 250 Hz; and 3. An average output power exceeding 500 W. b. Copper (Cu) vapour "lasers" having both of the following characteristics: 1. Operating at wavelengths between 500 nm and 600 nm; and 2. An average output power

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

		exceeding 40 W. c. Solid state "tunable" alexandrite (CR: $BeAl_2O_4$) "lasers" having all of the following characteristics: 1. Operating at wavelengths between 720 nm and 800 nm; 2. A bandwidth of 0,005 nm or less; 3. A repetition rate greater than 125 Hz; and 4. An average output power exceeding 30 W.
I.6A.002	6A007.c	Gravity gradiometers.
I.6A.003	6A102	Radiation hardened "detectors" specially designed or modified for protecting against nuclear effects (e.g. electromagnetic pulse (EMP), X-rays, combined blast and thermal effects) and usable for "missiles", designed or rated to withstand radiation levels which meet or exceed a total irradiation dose of 5×10^5 rads (silicon). Technical Note: *In I.6A.003, a "detector" is defined as a mechanical,*

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

		electrical, optical or chemical device that automatically identifies and records, or registers a stimulus such as an environmental change in pressure or temperature, an electrical or electromagnetic signal or radiation from a radioactive material. This includes devices that sense by one time operation or failure.
I.6A.004	6A107	Gravity meters (gravimeters) and components for gravity meters and gravity gradiometers, as follows: a. Gravity meters, designed or modified for airborne or marine use, and having a static or operational accuracy of 7×10^{-6} m/s^2 (0,7 milligal) or less (better), and having a time-to-steady-state registration of two minutes or less; b. Specially designed components for gravity meters specified in I.6A.004.a. and gravity gradiometers specified in I.6A.002.
I.6A.005	6A108	Radar systems and tracking systems as follows: a. Radar and laser radar systems designed or modified for use in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005;

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

			N.B.: See also Military Goods Controls for radar and laser systems for rockets or missiles. *Note: I.6A.005.a. includes the following*: a. *Terrain contour mapping equipment*; b. *Imaging sensor equipment*; c. *Scene mapping and correlation (both digital and analogue) equipment*; d. *Doppler navigation radar equipment*.
		b.	Precision tracking systems, usable for “missiles”, as follows: 1. Tracking systems which use a code translator in conjunction with either surface or airborne references or navigation satellite systems to provide real-time measurements of in-flight

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

		position and velocity; 2. Range instrumentation radars including associated optical/ infrared trackers with all of the following capabilities: a. Angular resolution better than 3 milliradians; b. Range of 30 km or greater with a range resolution better than 10 m rms; c. Velocity resolution better than 3 m/ s. Technical Note: *In I.6A.005.b. "missile" means complete rocket systems and unmanned aerial vehicle systems*

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

		capable of a range exceeding 300 km.
I.6A.006	6A202	Photomultiplier tubes having both of the following characteristics: a. Photocathode area of greater than 20 cm^2; and b. Anode pulse rise time of less than 1 ns.
I.6A.007	6A203	Cameras and components, as follows: a. Mechanical rotating mirror cameras, as follows, and specially designed components therefor: 1. Framing cameras with recording rates greater than 225 000 frames per second; 2. Streak cameras with writing speeds greater than 0,5 mm per microsecond; *Note: In I.6A.007.a. components of such cameras include their synchronizing electronics units and rotor assemblies consisting of turbines, mirrors and bearings*. b. Electronic streak cameras, electronic

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

framing cameras, tubes and devices, as follows:

1. Electronic streak cameras capable of 50 ns or less time resolution;
2. Streak tubes for cameras specified in I.6A.007.b.1.;
3. Electronic (or electronically shuttered) framing cameras capable of 50 ns or less frame exposure time;
4. Framing tubes and solid-state imaging devices for use with cameras specified in I.6A.007.b.3., as follows:
   a. Proximity focused image intensifier tubes having the photocathode deposited on a transparent conductive

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

			coating to decrease photocathode sheet resistance;
		b.	Gate silicon intensifier target (SIT) videcon tubes, where a fast system allows gating the photoelectrons from the photocathode before they impinge on the SIT plate;
		c.	Kerr or Pockels cell electro-optical shuttering;
		d.	Other framing tubes and solid-state imaging devices having a fast-image gating time

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

		of less than 50 ns specially designed for cameras specified in I.6A.007.b.3.; c. Radiation-hardened TV cameras, or lenses therefor, specially designed or rated as radiation hardened to withstand a total radiation dose greater than 50×10^3 Gy (silicon) (5×10^6 rad (silicon)) without operational degradation. Technical Note: *The term Gy (silicon) refers to the energy in Joules per kilogram absorbed by an unshielded silicon sample when exposed to ionising radiation*
I.6A.008	6A205	"Lasers", "laser" amplifiers and oscillators, other than those specified in I.0A.002.g.5., I.0A.002.h.6. and I.6A.001; as follows: a. Argon ion "lasers" having both of the following characteristics: 1. Operating at wavelengths between 400 nm and 515 nm; and

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

			2. An average output power greater than 40 W;
		b.	Tunable pulsed single-mode dye laser oscillators having all of the following characteristics:
			1. Operating at wavelengths between 300 nm and 800 nm;
			2. An average output power greater than 1 W;
			3. A repetition rate greater than 1 kHz; and
			4. Pulse width less than 100 ns;
		c.	Tunable pulsed dye laser amplifiers and oscillators, having all of the following characteristics:
			1. Operating at wavelengths between 300 nm and 800 nm;
			2. An average output power

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

					greater than 30 W;
				3.	A repetition rate greater than 1 kHz; and
				4.	Pulse width less than 100 ns;
				Note: I.6A.008.c. does not prohibit single mode oscillators;	
			d.	Pulsed carbon dioxide “lasers” having all of the following characteristics:	
				1.	Operating at wavelengths between 9 000 nm and 11 000 nm;
				2.	A repetition rate greater than 250 Hz;
				3.	An average output power greater than 500 W; and
				4.	Pulse width of less than 200 ns;
			e.	Para-hydrogen Raman shifters designed to operate at 16 micrometre output wavelength and at a repetition	

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

		rate greater than 250 Hz; f. Neodymium-doped (other than glass) "lasers", having an output wavelength exceeding 1 000 nm but not exceeding 1 100 nm, as follows: 1. Pulse-excited, "Q-switched lasers" having a "pulse duration" equal to or more than 1 ns, and having either of the following: a. A single-transverse mode output having an average output power exceeding 40 W; or b. A multiple-transverse mode output having an average power exceeding 50 W; or

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

		2. Incorporating frequency doubling to give an output wavelength of 500 nm or more but not exceeding 550 nm and having an average output power exceeding 40 W.
I.6A.009	6A225	Velocity interferometers for measuring velocities exceeding 1 km/s during time intervals of less than 10 microseconds. *Note: I.6A.009 includes velocity interferometers such as VISARs (Velocity interferometer systems for any reflector) and DLIs (Doppler laser interferometers).*
I.6A.010	6A226	Pressure sensors, as follows: a. Manganin gauges for pressures greater than 10 GPa; b. Quartz pressure transducers for pressures greater than 10 GPa
I.6A.011	*ex* 6B108*	Systems specially designed for radar cross section measurement usable for “missiles” and their subsystems.

a The texts of points a, b and c in this entry do not correspond with those of points a, b and c of 6A005.

I.6B

TECHNOLOGY, INCLUDING SOFTWARE

No	Relevant item(s) from Annex to Regulation (EC) No 1183/2007	Description
I.6B.001	6D102	"Software" specially designed or modified for the "use" of goods specified in I.6A.005.
I.6B.002	6D103	"Software" which processes post-flight, recorded data, enabling determination of vehicle position throughout its flight path, specially designed or modified for "missiles". Technical Note: *In I.6B.002 "missile" means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km*.
I.6B.003	*ex* 6E001	"Technology" according to the General Technology Note for the "development" of equipment, materials or "software" specified in I.6A.001, I.6A.002.c, I.6A.003, I.6A.004 to I.6A.010, I.6B.001 or I.6B.002.
I.6B.004	*ex* 6E002	"Technology" according to the General Technology Note for the "production" of equipment or materials specified in I.6A.001, I.6A.002.c or I.6A.003 to I.6A.010.
I.6B.005	*ex* 6E101	"Technology" according to the General Technology Note for the "use" of equipment or "software" specified in I.6A.002 to I.6A.005, I.6A.011, I.6B.001 or I.6B.002.
I.6B.006	*ex* 6E201	"Technology" according to the General Technology Note for the "use" of equipment

		specified in I.6A.001 or I.6A.006 to I.6A.010.

I.7 NAVIGATION AND AVIONICS

I.7A

GOODS

No	Relevant item(s) from Annex to Regulation (EC) No 1183/2007	Description
I.7A.001	*ex* 7A002* (*ex* 7A002.a and *ex* 7A002.d)	Gyros having any of the following characteristics, and specially designed components therefor: N.B.: See also I.7A.003. a. A "drift rate""stability", when measured in a 1 g environment over a period of one month and with respect to a fixed calibration value, of less (better) than 0,5 degree per hour when specified to function at linear acceleration levels up to and including 100 g; or d. Specified to function at linear acceleration levels exceeding 100 g.
I.7A.002	7A101, *ex* 7A001.a.3	Accelerometers as follows, and specially designed components therefor: a. Linear accelerometers, designed for use in inertial navigation systems or in guidance systems of all types, usable in "missiles", having all the following characteristics, and specially designed

components therefor;

1. A "bias""repeatability" of less (better) than 1 250 micro g; and
2. A "scale factor""repeatability" of less (better) than 1 250 ppm;

Note: I.7A.002.a. does not specify accelerometers which are specially designed and developed as MWD (Measurement While Drilling) Sensors for use in downhole well service operations.

Technical Notes:

1. In I.7A.002.a. "missile" means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km;

2. In I.7A.002.a. the measurement of "bias" and "scale factor" refers to a

		one sigma standard deviation with respect to a fixed calibration over a period of one year; b. Continuous output accelerometers specified to function at acceleration levels exceeding 100 g.
I.7A.003	7A102*	All types of gyros other than those specified in I.7A.001, usable in "missiles", with a rated "drift rate""stability" of less than 0,5 ° (1 sigma or rms) per hour in a 1 g environment and specially designed components therefor. Technical Note: *In I.7A.003 "missile" means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km*.
I.7A.004	*ex* 7A103 (7A103.a, *ex* 7A103.b and 7A103.c)	Instrumentation, navigation equipment and systems, as follows; and specially designed components therefor: a.* Inertial or other equipment using accelerometers specified in I.7A.002 or gyros specified in I.7A.001 or I.7A.003 and systems incorporating such equipment; b.* Integrated flight instrument systems, which include gyrostabilisers or automatic

			pilots, designed or modified for use in "missiles";
		c.	"Integrated navigation systems", designed or modified for "missiles" and capable of providing a navigational accuracy of 200m Circle of Equal Probability (CEP) or less. Technical Notes: *1. An "integrated navigation system" typically incorporates the following components*: a. *An inertial measurement device (e.g., an attitude and heading reference system, inertial reference unit, or inertial navigation system)*; b. *One or more external sensors used to update the position and/or velocity, either periodically or*

		continuously throughout the flight (e.g., satellite navigation receiver, radar altimeter, and/or Doppler radar); and c. *Integration hardware and software*; *2. In I.7A.004.c. "missile" means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km.*
I.7A.005	7A104	Gyro-astro compasses and other devices, which derive position or orientation by means of automatically tracking celestial bodies or satellites and specially designed components therefor.
I.7A.006	7A105	Receiving equipment for Global Navigation Satellite Systems (GNSS; e.g. GPS, GLONASS, or Galileo), having any of the following characteristics, and specially designed components therefor: a. Designed or modified for use in space launch

			vehicles specified in I.9A.001, unmanned aerial vehicles specified in I.9A.003 or sounding rockets specified in I.9A.005; or N.B.: See also Military Goods Controls for receiving equipment for rockets or missiles.
		b.	Designed or modified for airborne applications and having any of the following: 1. Capable of providing navigation information at speeds in excess of 600 m/s; 2. Employing decryption, designed or modified for military or governmental services, to gain access to GNSS secured signal/data; or 3. Being specially designed to employ anti-jam features (e.g. null steering antenna or electronically

		steerable antenna) to function in an environment of active or passive countermeasures. *Note: I.7A.006.b.2. and I.7A.006.b.3. do not prohibit equipment designed for commercial, civil or "Safety of Life" (e.g., data integrity, flight safety) GNSS services*
I.7A.007	7A106	Altimeters of radar or laser radar type, designed or modified for use in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005. N.B.: See also Military Goods Controls for altimeters for rockets or missiles.
I.7A.008	7A115	Passive sensors for determining bearing to specific electromagnetic source (direction finding equipment) or terrain characteristics, designed or modified for use in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005. N.B.: See also Military Goods Controls for passive sensors for rockets or missiles. *Note: I.7A.008 includes sensors for the following equipment*: a. *Terrain contour mapping equipment*; b. *Imaging sensor equipment (both active and passive)*;

		c. *Passive interferometer equipment*.
I.7A.009	7A116	Flight control systems and servo valves, as follows; designed or modified for use in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005. N.B.: See also Military Goods Controls for flight control systems and servo valves for rockets or missiles. a. Hydraulic, mechanical, electro-optical, or electro-mechanical flight control systems (including fly-by-wire types); b. Attitude control equipment; c. Flight control servo valves designed or modified for the systems specified in I.7A.009.a. or I.7A.009.b., and designed or modified to operate in a vibration environment greater than 10 g rms between 20 Hz and 2 kHz.
I.7A.010	7A117	“Guidance sets”, usable in “missiles” capable of achieving system accuracy of 3,33 % or less of the range (e.g., a “CEP” of 10 km or less at a range of 300 km).
I.7A.011	7B001	Test, calibration or alignment equipment specially designed for equipment specified in I.7A.001 to I.7A.010.
I.7A.012	7B002	Equipment, as follows, specially designed to characterize mirrors for ring “laser” gyros: N.B.: See also I.7A.014.

		a. Scatterometers having a measurement accuracy of 10 ppm or less (better); b. Profilometers having a measurement accuracy of 0,5 nm (5 angstrom) or less (better).
I.7A.013	7B003*	Equipment specially designed for the "production" of equipment specified in I.7A.001 to I.7A.010. *Note: I.7A.013 includes*: a. *Gyro tuning test stations*; b. *Gyro dynamic balance stations*; c. *Gyro run-in/motor test stations*; d. *Gyro evacuation and fill stations*; e. *Centrifuge fixtures for gyro bearings*; f. *Accelerometer axis align stations*; g. *(reserved)* h. *Accelerometer test stations*; i. *Inertial measurement unit (IMU) module testers*; j. *Inertial measurement unit (IMU) platform testers*; k. *Inertial measurement unit (IMU) stable element handling fixtures*; l. *Inertial measurement unit (IMU) platform balance fixture*.
I.7A.014	7B102	Reflectometers specially designed to characterise mirrors, for "laser" gyros, having a measurement

		accuracy of 50 ppm or less (better).
I.7A.015	7B103	"Production facilities" and "production equipment" as follows: a. "Production facilities" specially designed for equipment specified in I.7A.010; b. "Production equipment", and other test, calibration and alignment equipment, other than that specified in I.7A.011 to I.7A.013, designed or modified to be used with equipment specified in I.7A.001 to I.7A.010.

I.7B

TECHNOLOGY, INCLUDING SOFTWARE

No	**Relevant item(s) from Annex to Regulation (EC) No 1183/2007**	**Description**
I.7B.001	*ex* 7D101	"Software" specially designed or modified for the "use" of equipment specified in I.7A.001 to I.7A.008, I.7A.009.a., I.7A.009.b. or I.7A.011 to I.7A.015
I.7B.002	7D102	Integration "software" as follows: a. Integration "software" for the equipment specified in I.7A.004.b.; b. Integration "software" specially designed for the equipment specified in I.7A.004.a. c. Integration "software" designed

		or modified for the equipment specified in I.7A.004.c. *Note: A common form of integration "software" employs Kalman filtering*.
I.7B.003	7D103	"Software" specially designed for modelling or simulation of the "guidance sets" specified in I.7A.010 or for their design integration with the space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005. *Note: "Software" specified in I.7B.003 remains prohibited when combined with specially designed hardware specified in I.4A.003*.
I.7B.004	*ex* 7E001	"Technology" according to the General Technology Note for the "development" of equipment or "software" specified in I.7A.001 to I.7A.015, or in I.7B.001 to I.7B.003.
I.7B.005	*ex* 7E002	"Technology" according to the General Technology Note for the "production" of equipment specified in I.7A.001 to I.7A.015.
I.7B.006	7E101	"Technology" according to the General Technology Note for the "use" of equipment specified in I.7A.001 to I.7A.015 or I.7B.001 to I.7B.003.
I.7B.007	7E102	"Technology" for protection of avionics and electrical subsystems against electromagnetic pulse (EMP) and electromagnetic interference (EMI) hazards, from external sources, as follows: a. Design "technology" for shielding systems;

		b. Design "technology" for the configuration of hardened electrical circuits and subsystems; c. Design "technology" for the determination of hardening criteria of I.7B.007.a. and I.7B.007.b.
I.7B.008	7E104	"Technology" for the integration of the flight control, guidance, and propulsion data into a flight management system for optimization of rocket system trajectory.

I.9 AEROSPACE AND PROPULSION

I.9A

GOODS

No	**Relevant item(s) from Annex to Regulation (EC) No 1183/2007**	**Description**
I.9A.001	*ex* 9A004	Space launch vehicles N.B.: See also I.9A.005. For rockets and missiles see Military Goods Controls. *Note: I.9A.001 does not prohibit payloads*.
I.9A.002	9A011	Ramjet, scramjet or combined cycle engines and specially designed components therefor. N.B.: See also I.9A.012 and I.9A.016
I.9A.003	*ex* 9A012.a	"Unmanned aerial vehicles" ("UAVs"), associated systems, equipment and components as follows: a.* "UAVs" having any of the following:

		1.*	Having all of the following:
			a. Having any of the following:
			1. An autonomous flight control and navigation capability (e.g., an autopilot with an Inertial Navigation System); or
			2. Capability of controlled-flight out of the direct vision range involving a human operator (e.g., televisual remote control); and
			b. Having any of the following:
			1. Incorporating an aerosol dispensing system/

			mechanism with a capacity greater than 20 litres; or
		2. Designed or modified to incorporate an aerosol dispensing system/ mechanism with a capacity greater than 20 litres; or	
		2. Capable of delivering a payload to a range of at least 300 km. Technical notes: *1. An aerosol consists of particulate or liquids other than fuel components, by-products or additives, as part of the payload to be dispersed in the atmosphere.*	

		Examples of aerosols include pesticides for crop dusting and dry chemicals for cloud seeding.
		2. An aerosol dispensing system/ mechanism contains all those devices (mechanical, electrical, hydraulic, etc.), which are necessary for storage and dispersion of an aerosol into the atmosphere. This includes the possibility of aerosol injection into the combustion exhaust vapour and into the propeller slip stream
I.9A.004	9A101	Turbojet and turbofan engines (including turbocompound engines), as follows: a. Engines having both of the

		following characteristics: 1. Maximum thrust value greater than 400 N (achieved un-installed) excluding civil certified engines with a maximum thrust value greater than 8 890 N (achieved un-installed), and 2. Specific fuel consumption of 0,15 kg/N/hr or less (at maximum continuous power at sea level static and standard conditions); b. Engines designed or modified for use in "missiles".
I.9A.005	9A104	Sounding rockets, capable of a range of at least 300 km. N.B.: See also I.9A.001. For rockets and missiles see Military Goods Controls.
I.9A.006	9A105	Liquid propellant rocket engines, as follows: N.B.: See also I.9A.017. a. Liquid propellant rocket engines

		usable in “missiles”, having a total impulse capacity equal to or greater than 1,1 MNs; b. Liquid propellant rocket engines, usable in complete rocket systems or unmanned aerial vehicles, capable of a range of 300 km, other than those specified in I.9A.006.a., having a total impulse capacity equal to or greater than 0,841 MNs.
I.9A.007	9A106	Systems or components, usable in “missiles”, as follows, specially designed for liquid rocket propulsion systems: a. Ablative liners for thrust or combustion chambers; b. Rocket nozzles; c. Thrust vector control sub-systems; Technical Note: *Examples of methods of achieving thrust vector control specified in I.9A.007.c. are:* 1. *Flexible nozzle*; 2. *Fluid or secondary gas injection*; 3. *Movable engine or nozzle*; 4. *Deflection of exhaust gas stream (jet*

			vanes or probes); or 5. *Thrust tabs*.
		d.	Liquid and slurry propellant (including oxidisers) control systems, and specially designed components therefor, designed or modified to operate in vibration environments greater than 10 g rms between 20 Hz and 2 kHz. *Note: The only servo valves and pumps specified in I.9A.007.d., are the following*: a. *Servo valves designed for flow rates equal to or greater than 24 litres per minute, at an absolute pressure equal to or greater than 7 MPa, that have an actuator response time of less than 100 ms*; b. *Pumps, for liquid propellants, with shaft speeds equal to*

		or greater than 8 000 r.p.m. or with discharge pressures equal to or greater than 7 MPa.
I.9A.008	9A107 and *ex* 9A007.a	Solid propellant rocket engines, usable in complete rocket systems or unmanned aerial vehicles, capable of a range of 300 km, having total impulse capacity equal to or greater than 0,841 MNs. N.B.: See also I.9A.017.
I.9A.009	9A108	Components usable in "missiles", as follows, specially designed for solid rocket propulsion systems: a. Rocket motor cases and "insulation" components therefor; b. Rocket nozzles; c. Thrust vector control sub-systems. Technical Note: *Examples of methods of achieving thrust vector control specified in I.9A.009.c. are*: 1. *Flexible nozzle*; 2. *Fluid or secondary gas injection*; 3. *Movable engine or nozzle*; 4. *Deflection of exhaust gas stream (jet vanes or*

		probes); *or* 5. *Thrust tabs*.
I.9A.010	9A109	Hybrid rocket motors, usable in "missiles", and specially designed components therefor. N.B.: See also I.9A.017. Technical Note: *In I.9A.010 "missile" means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km*.
I.9A.011	9A110	Composite structures, laminates and manufactures thereof, specially designed for use in space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005 or the subsystems specified in I.9A.006.a., I.9A.007 to I.9A.009, I.9A.014 or I.9A.017. N.B.: See also Military Goods Controls for composite structures, laminates and manufactures thereof, for rockets and missiles.
I.9A.012	*ex* 9A111*	Pulse jet engines, usable in "missiles", and specially designed components therefor. N.B.: See also I.9A.002 and I.9A.016.
I.9A.013	9A115	Launch support equipment as follows: N.B.: See also Military Goods Controls for launch support equipment for rockets and missiles. a. Apparatus and devices for handling, control, activation or launching, designed or modified for space launch vehicles specified

		in I.9A.001, unmanned aerial vehicles specified in I.9A.003 or sounding rockets specified in I.9A.005; b. Vehicles for transport, handling, control, activation or launching, designed or modified for space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005.
I.9A.014	9A116	Reentry vehicles, usable in "missiles", and equipment designed or modified therefor, as follows: a. Reentry vehicles; b. Heat shields and components therefor fabricated of ceramic or ablative materials; c. Heat sinks and components therefor fabricated of light-weight, high heat capacity materials; d. Electronic equipment specially designed for reentry vehicles.
I.9A.015	9A117	Staging mechanisms, separation mechanisms, and interstages, usable in "missiles".
I.9A.016	*ex* 9A118*	Devices to regulate combustion usable in engines, which are usable in "missiles", specified in I.9A.002 or I.9A.012.
I.9A.017	9A119	Individual rocket stages, usable in complete rocket systems or unmanned aerial

		vehicles, capable of a range of 300 km, other than those specified in I.9A.006, I.9A.008 and I.9A.010.
I.9A.018	9A120	Liquid propellant tanks specially designed for propellants specified in I.1A.029 or "other liquid propellants", used in rocket systems capable of delivering at least a 500 kg payload to a range of at least 300 km. *Note: In I.9A.018 "other liquid propellants" includes, but is not limited to, propellants specified in the Military Goods Controls*
I.9A.019	9A350.a	Spraying or fogging systems, specially designed or modified for fitting to aircraft, "lighter-than-air vehicles" or unmanned aerial vehicles, and specially designed components therefor, as follows: a. Complete spraying or fogging systems capable of delivering, from a liquid suspension, an initial droplet "VMD" of less than 50 μm at a flow rate of greater than two litres per minute; *Note: I.9A.019 does not prohibit spraying of fogging systems and components that are demonstrated not to be capable of delivering biological agents in the form of infectious aerosols*. Technical Notes: *1. Droplet size for spray equipment or nozzles specially designed for use on aircraft, "lighter-than-air vehicles" or unmanned aerial vehicles should be*

		measured using either of the following: a. *Doppler laser method*; b. *Forward laser diffraction method*. *2*. *In I.9A.019 "VMD" means Volume Median Diameter and for water-based systems this equates to Mass Median Diameter (MMD)*.
I.9A.020	*ex* 9B105*	Wind tunnels for speeds of Mach 0,9 or more, usable for "missiles" and their subsystems.
I.9A.021	9B106	Environmental chambers and anechoic chambers, as follows: a. Environmental chambers capable of simulating the following flight conditions: 1. Vibration environments equal to or greater than 10 g rms, measured "bare table", between 20 Hz and 2 kHz imparting forces equal to or greater than 5 kN; and 2. Altitude equal to or greater than 15 km; or 3. Temperature range of at

			least 223 K (– 50 °C) to 398 K (+ 125 °C);
			Technical Notes:
			1. *I.9A.021.a. describes systems that are capable of generating a vibration environment with a single wave (e.g., a sine wave) and systems capable of generating a broad band random vibration (i.e., power spectrum)*;
			2. *In I.9A.021.a.1. "bare table" means a flat table, or surface with no fixture or fittings*.
		b.	Environmental chambers capable of simulating the following flight conditions:
			1. Acoustic environments at an overall sound pressure

		level of 140 dB or greater (referenced to 20 μPa) or with a total rated acoustic power output of 4 kW or greater; and 2. Altitude equal to or greater than 15 km; or 3. Temperature range of at least 223 K (– 50 °C) to 398 K (+125 °C).
I.9A.022	*ex* 9B115	Specially designed "production equipment" for the systems, sub-systems and components specified in I.9A.002, I.9A.004, I.9A.006 to I.9A.010, I.9A.012, I.9A.014 to I.9A.017
I.9A.023	*ex* 9B116	Specially designed "production facilities" for the space launch vehicles specified in I.9A.001, or systems, sub-systems, and components specified in I.9A.002, I.9A.004, I.9A.005 to I.9A.010, I.9A.012, or I.9A.014 to I.9A.017. N.B.: See also Military Goods Controls for "production facilities" for rockets and missiles.
I.9A.024	*ex* 9B117*	Test benches and test stands for solid or liquid propellant rockets or rocket motors, having either of the following characteristics:

		a.* The capacity to handle more than 90 kN of thrust; or b. Capable of simultaneously measuring the three axial thrust components.
I.9A.025	9C108	"Insulation" material in bulk form and "interior lining", for rocket motor cases usable in "missiles" or specially designed for "missiles". Technical Note: *In I.9A.025 "missile" means complete rocket systems and unmanned aerial vehicle systems capable of a range exceeding 300 km*.
I.9A.026	9C110	Resin impregnated fibre prepregs and metal coated fibre preforms therefor, for composite structures, laminates and manufactures specified in I.9A.011, made either with organic matrix or metal matrix utilising fibrous or filamentary reinforcements having a "specific tensile strength" greater than 7,62 × 10^4 m and a "specific modulus" greater than 3,18 × 10^6 m. N.B.: See also I.1A.024 and I.1A.034. *Note: The only resin impregnated fibre prepregs specified in entry I.9A.026 are those using resins with a glass transition temperature (T_g), after cure, exceeding 418 K (145 °C) as determined by ASTM D4065 or equivalent*.

I.9B

TECHNOLOGY, INCLUDING SOFTWARE

No	**Relevant item(s) from Annex to Regulation (EC) No 1183/2007**	**Description**
I.9B.001	*ex* 9D001	"Software" specially designed or modified for the "development" of equipment or "technology" specified in I.9A.002, I.9A.009, I.9A.012, I.9A.015 or I.9A.016.
I.9B.002	9D101	"Software" specially designed or modified for the "use" of goods specified in I.9A.020, I.9A.021, I.9A.023 or I.9A.024.
I.9B.003	9D103	"Software" specially designed for modelling, simulation or design integration of the space launch vehicles specified in I.9A.001 or sounding rockets specified in I.9A.005, or the subsystems specified in I.9A.006.a., I.9A.007, I.9A.009, I.9A.014 or I.9A.017. *Note: "Software" specified in I.9B.003 remains prohibited when combined with specially designed hardware specified in I.4A.003*.
I.9B.004	*ex* 9D104	"Software" specially designed or modified for the "use" of **[**[X1]goods specified in I.9A.002**]**, I.9A.004, I.9A.006, I.9A.007.c., I.9A.007.d., I.9A.008, I.9A.009.c., I.9A.010, I.9A.012, I.9A.013.a., I.9A.014.d., I.9A.015 or I.9A.016.
I.9B.005	9D105	"Software" which coordinates the function of more than one subsystem, specially designed or modified for "use" in space launch vehicles specified in

		I.9A.001 or sounding rockets specified in I.9A.005.
I.9B.006	*ex* 9E001	"Technology" according to the General Technology Note for the "development" of equipment or "software" specified in I.9A.001, I.9A.003, I.9A.021 to I.9A.024, or I.9B.002 to I.9B.005.
I.9B.007	*ex* 9E002	"Technology" according to the General Technology Note for the "production" of equipment specified in I.9A.001, I.9A.003 or I.9A.021 to I.9A.024.
I.9B.008	9E101	"Technology" according to the General Technology Note for the "development" or "production" of goods specified in I.9A.004 to I.9A.017.
I.9B.009	*ex* 9E102	"Technology" according to the General Technology Note for the "use" of space launch vehicles specified in I.9A.001, or goods specified in I.9A.002, I.9A.004 to I.9A.017, I.9A.020 to I.9A.024, I.9B.002 or I.9B.003.

Editorial Information

X1 Substituted by Corrigendum to Commission Regulation (EC) No 117/2008 of 28 January 2008 amending Council Regulation (EC) No 329/2007 concerning restrictive measures against the Democratic People's Republic of Korea (Official Journal of the European Union L 35 of 9 February 2008).

ANNEX II

ANNEX II

Websites for information on the competent authorities referred to in Articles 5, 7, 8, 10 and 15, and address for notifications to the European Commission

BELGIUM

http://www.diplomatie.be/eusanctions

BULGARIA

http://www.mfa.government.bg
CZECH REPUBLIC

http://www.mfcr.cz/mezinarodnisankce
DENMARK

http://www.um.dk/da/menu/Udenrigspolitik/FredSikkerhedOgInternationalRetsorden/Sanktioner/
GERMANY

http://www.bmwi.de/BMWi/Navigation/Aussenwirtschaft/Aussenwirtschaftsrecht/embargos.html
ESTONIA

http://www.vm.ee/est/kat_622/
GREECE

http://www.ypex.gov.gr/www.mfa.gr/en-US/Policy/Multilateral+Diplomacy/International+Sanctions/
SPAIN

www.mae.es/es/Menuppal/Asuntos/Sanciones+Internacionales
FRANCE

http://www.diplomatie.gouv.fr/autorites-sanctions/
IRELAND

www.dfa.ie/un_eu_restrictive_measures_ireland/competent_authorities
ITALY

http://www.esteri.it/UE/deroghe.html
CYPRUS

http://www.mfa.gov.cy/sanctions
LATVIA

http://www.mfa.gov.lv/en/security/4539
LITHUANIA

http://www.urm.lt
LUXEMBOURG

http://www.mae.lu/sanctions
HUNGARY

http://www.kulugyminiszterium.hu/kum/hu/bal/Kulpolitikank/nemzetkozi_szankciok/
MALTA

http://www.doi.gov.mt/EN/bodies/boards/sanctions_monitoring.asp
NETHERLANDS

http://www.minbuza.nl/sancties
AUSTRIA

http://www.bmeia.gv.at/view.php3?f_id=12750&LNG=en&version=
POLAND

http://www.msz.gov.pl
PORTUGAL

http://www.min-nestrangeiros.pt
ROMANIA

http://www.mae.ro/index.php?unde=doc&id=32311&idlnk=1&cat=3
SLOVENIA

http://www.mzz.gov.si/si/zunanja_politika/mednarodna_varnost/omejevalni_ukrepi/
SLOVAKIA

http://www.foreign.gov.sk
FINLAND

http://formin.finland.fi/kvyhteistyo/pakotteet
SWEDEN

http://www.ud.se/sanktioner
UNITED KINGDOM

www.fco.gov.uk/competentauthorities

Address for notifications to the European Commission:

European Commission

DG External Relations

Directorate A Crisis Platform — Policy Coordination in Common Foreign and Security Policy

Unit A2 Crisis Response and Peace Building

CHAR 12/106

B-1049 Bruxelles/Brussel (Belgium)

E-mail: relex-sanctions@ec.europa.eu

Tel. (32-2) 295 55 85

Fax (32-2) 299 08 73

(**1**) OJ L 88, 29.3.2007, p. 1.

(**2**) OJ L 88, 29.3.2007, p. 58.

(**3**) OJ L 159, 30.6.2000, p. 1. Regulation as last amended by Regulation (EC) No 1183/2007 (OJ L 278, 22.10.2007, p. 1).

(**4**) OJ L 278, 22.10.2007, p. 1.

(**5**) OJ L 88, 29.3.2007, p. 58.

(**6**) OJ L 322, 22.11.2006, p. 32.

Changes to legislation:
There are outstanding changes not yet made to Commission Regulation (EC) No 117/2008. Any changes that have already been made to the legislation appear in the content and are referenced with annotations.
View outstanding changes

Changes and effects yet to be applied to :

– Regulation implicit repeal by EUR 2017/1509 Regulation