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LEGISLATIVE ACTS AND OTHER INSTRUMENTS

Subject:	COUNCIL REGULATION amending Regulation (EC) No 765/2006 concerning restrictive measures in view of the situation in Belarus and the involvement of Belarus in the Russian aggression against Ukraine

ANNEX

The Annexes to Regulation (EU) No 765/2006 are amended as follows:

(1) Annex Va is replaced by the following:

‘ANNEX Va

List of goods and technology referred to in Articles 1f(1) and 1fa(1)

Part A

General Notes, Acronyms and Abbreviations, and Definitions in Annex I to Regulation (EU) 2021/821 apply to this Annex, with the exception of “Part I – General Notes, Acronyms and Abbreviations, and Definitions, General Notes to Annex I, point 2”.

Definitions of Terms used in the Common Military List (CML) of the European Union (2020/C 85/01) apply to this Annex.

Without prejudice to Article 1m of this Regulation, non-controlled items containing one or more components listed in this Annex are not subject to the controls under Articles 1f(1) and 1fa(1) of this Regulation.

Category I – Electronics

X.A.I.001 Electronic devices and components.

a. "Microprocessor microcircuits", "microcomputer microcircuits", and microcontroller microcircuits having any of the following:

1. A performance speed of 5 GigaFLOPS or more and an arithmetic logic unit with an access width of 32 bit or more;

2. A clock frequency rate exceeding 25 MHz; or

3. More than one data or instruction bus or serial communication port that provides a direct external interconnection between parallel "microprocessor microcircuits" with a transfer rate of 2,5 Mbyte/s;

b. Storage integrated circuits, as follows:

1. Electrically erasable programmable read-only memories (EEPROMs) with a storage capacity;

a. Exceeding 16 Mbits per package for flash memory types; or

b. Exceeding either of the following limits for all other EEPROM types:

1. Exceeding 1 Mbit per package; or

2. Exceeding 256 kbit per package and a maximum access time of less than 80 ns;

2. Static random access memories (SRAMs) with a storage capacity:

a. Exceeding 1 Mbit per package; or

b. Exceeding 256 kbit per package and a maximum access time of less than 25 ns;

c. Analogue-to-digital converters having any of the following:

1. A resolution of 8 bit or more, but less than 12 bit, with an output rate greater than 200 Mega Samples Per Second (MSPS);

2. A resolution of 12 bit with an output rate greater than 105 Mega Samples per Second (MSPS);

3. A resolution of more than 12 bit but equal to or less than 14 bit with an output rate greater than 10 Mega Samples per Second (MSPS); or

4. A resolution of more than 14 bit with an output rate greater than 2,5 Mega Samples Per Second (MSPS);

d. Field programmable logic devices having a maximum number of single-ended digital input/outputs between 200 and 700;

e. Fast Fourier Transform (FFT) processors having a rated execution time for a 1 024 point complex FFT of less than 1 ms;

f. Custom integrated circuits for which the function is unknown, or the control status of the equipment in which the integrated circuits will be used is unknown to the manufacturer, having any of the following:

1. More than 144 terminals; or

2. A typical basic propagation delay time of less than 0,4 ns;

g. Traveling-wave "vacuum electronic devices", pulsed or continuous wave, as follows:

1. Coupled cavity devices, or derivatives thereof;

2. Devices based on helix, folded waveguide, or serpentine waveguide circuits, or derivatives thereof, having any of the following:

a. An "instantaneous bandwidth" of half an octave or more and average power (expressed in kW) times frequency (expressed in GHz) of more than 0,2; or

b. An "instantaneous bandwidth" of less than half an octave; and average power (expressed in kW) times frequency (expressed in GHz) of more than 0,4;

h. Flexible waveguides designed for use at frequencies exceeding 40 GHz;

i. Surface acoustic wave and surface skimming (shallow bulk) acoustic wave devices, having either of the following:

1. A carrier frequency exceeding 1 GHz; or

2. A carrier frequency of 1 GHz or less; and

a. A "frequency side-lobe rejection" exceeding 55 dB;

b. A product of the maximum delay time and bandwidth (time in μs and bandwidth in MHz) of more than 100; or

c. A dispersive delay of more than 10 μs;

Technical Note: For the purpose of X.A.I.001.i "Frequency side-lobe rejection" is the maximum rejection value specified in data sheet.

j. "Cells" as follows:

1. "Primary cells" having an "energy density" of 550 Wh/kg or less at 293 K (20 °C);

2. "Secondary cells" having an "energy density" of 350 Wh/kg or less at 293 K (20 °C);

Note: X.A.I.001.j does not control batteries, including single cell batteries.

Technical Notes:

1. *For the purpose of X.A.I.001.j energy density (Wh/kg) is calculated from the nominal voltage multiplied by the nominal capacity in ampere-hours (Ah) divided by the mass in kilograms. If the nominal capacity is not stated, energy density is calculated from the nominal voltage squared then multiplied by the discharge duration in hours divided by the discharge load in Ohms and the mass in kilograms.*

2. *For the purpose of X.A.I.001.j, a "cell" is defined as an electrochemical device, which has positive and negative electrodes, and electrolyte, and is a source of electrical energy. It is the basic building block of a battery.*

3. *For the purpose of X.A.I.001.j.1, a "primary cell" is a "cell" that is not designed to be charged by any other source.*

4. *For the purpose of X.A.I.001.j.2, a "secondary cell" is a "cell" that is designed to be charged by an external electrical source.*

k. "Superconductive" electromagnets or solenoids specially designed to be fully charged or discharged in less than one minute, having all of the following:

Note: X.A.I.001.k does not control "superconductive" electromagnets or solenoids designed for Magnetic Resonance Imaging (MRI) medical equipment.

1. Maximum energy delivered during the discharge divided by the duration of the discharge of more than 500 kJ per minute;

2. Inner diameter of the current carrying windings of more than 250 mm; and

3. Rated for a magnetic induction of more than 8T or "overall current density" in the winding of more than 300 A/mm^2;

l. Circuits or systems for electromagnetic energy storage, containing components manufactured from "superconductive" materials specially designed for operation at temperatures below the "critical temperature" of at least one of their "superconductive" constituents, having all of the following:

1. Resonant operating frequencies exceeding 1 MHz;

2. A stored energy density of 1 MJ/m^3 or more; and

3. A discharge time of less than 1 ms;

m. Hydrogen/hydrogen-isotope thyratrons of ceramic-metal construction and rate for a peak current of 500 A or more;

n. Ceramic frequency filters;

o. Solar cells, cell-interconnect-coverglass (CIC) assemblies, solar panels, and solar arrays, which are "space qualified" and not controlled by 3A001.e.4[1];

p. Cermet trimmers.

[1] Ref. Annex I to Regulation (EU) 2021/821

X.A.I.002 General purpose “electronic assemblies”, modules and equipment.

a. Electronic test equipment, other than those specified in the CML or in Regulation (EU) 2021/821;

b. Digital instrumentation magnetic tape data recorders having any of the following characteristics:

1. A maximum digital interface transfer rate exceeding 60 Mbit/s and employing helical scan techniques;

2. A maximum digital interface transfer rate exceeding 120 Mbit/s and employing fixed head techniques; or

3. “Space qualified”;

c. Equipment, with a maximum digital interface transfer rate exceeding 60 Mbit/s, designed to convert digital video magnetic tape recorders for use as digital instrumentation data recorders;

d. Non-modular analogue oscilloscopes having a bandwidth of 1 GHz or greater;

e. Modular analogue oscilloscope systems having either of the following characteristics:

1. A mainframe with a bandwidth of 1 GHz or greater; or

2. Plug-in modules with an individual bandwidth of 4 GHz or greater;

f. Analogue sampling oscilloscopes for the analysis of recurring phenomena with an effective bandwidth greater than 4 GHz;

g. Digital oscilloscopes and transient recorders, using analogue-to-digital conversion techniques, capable of storing transients by sequentially sampling single-shot inputs at successive intervals of less than 1 ns (greater than 1 Giga Samples per Second (GSPS)), digitising to 8 bits or greater resolution and storing 256 or more samples.

Note: X.A.I.002 controls the following specially designed components for analogue oscilloscopes:

1. Plug-in units;

2. External amplifiers;

3. Pre-amplifiers;

4. Sampling devices;

5. Cathode ray tubes.

X.A.I.003 Specific processing equipment, other than those specified in the CML or in Regulation (EU) 2021/821, as follows:

a. Frequency changers and their specially designed components, other than those specified in the CML or in Regulation (EU) 2021/821;

b. Mass spectrometers, other than those specified in the CML or in Regulation (EU) 2021/821;

c. All flash X-ray machines, or components of pulsed power systems designed thereof, including Marx generators, high power pulse shaping networks, high voltage capacitors, and triggers;

d. Pulse amplifiers, other than those specified in the CML or in Regulation (EU) 2021/821;

e. Electronic equipment for time delay generation or time interval measurement, as follows:

   1. Digital time delay generators with a resolution of 50 ns or less over time intervals of 1 μs or greater; or

   2. Multi-channel (three or more) or modular time interval meter and chronometry equipment with resolution of 50 ns or less over time intervals of 1 μs or greater;

f. Chromatography and spectrometry analytical instruments.

X.B.I.001 Equipment for the manufacture of electronic components or materials, as follows and specially designed components and accessories therefor:

a. Equipment specially designed for the manufacture of electron tubes, optical elements and specially designed components therefor controlled by 3A001[2] or X.A.I.001;

b. Equipment specially designed for the manufacture of semiconductor devices, integrated circuits and "electronic assemblies", as follows, and systems incorporating or having the characteristics of such equipment:

Note: X.B.I.001.b. also controls equipment used or modified for use in the manufacture of other devices, such as imaging devices, electro-optical devices, acoustic-wave devices.

1. Equipment for the processing of materials for the manufacture of devices and components as specified in the heading of X.B.I.001.b, as follows:

Note: X.B.I.001 does not control quartz furnace tubes, furnace liners, paddles, boats (except specially designed caged boats), bubblers, cassettes or crucibles specially designed for the processing equipment controlled by X.B.I.001.b.1.

a. Equipment for producing polycrystalline silicon and materials controlled by 3C001[3];

[2] Ref. Annex I to Regulation (EU) 2021/821
[3] Ref. Annex I to Regulation (EU) 2021/821

b. Equipment specially designed for purifying or processing III/V and II/VI semiconductor materials controlled by 3C001, 3C002, 3C003, 3C004, or 3C005[4] except crystal pullers, for which see X.B.I.001.b.1.c below;

c. Crystal pullers and furnaces, as follows:

Note: X.B.I.001.b.1.c does not control diffusion and oxidation furnaces.

1. Annealing or recrystallizing equipment other than constant temperature furnaces employing high rates of energy transfer capable of processing wafers at a rate exceeding 0,005 m^2 per minute;

2. "Stored program controlled" crystal pullers having any of the following characteristics:

a. Rechargeable without replacing the crucible container;

b. Capable of operation at pressures above 2,5 x 10^5 Pa; or

c. Capable of pulling crystals of a diameter exceeding 100 mm;

[4] Ref. Annex I to Regulation (EU) 2021/821

d. "Stored program controlled" equipment for epitaxial growth having any of the following characteristics:

1. Capable of producing silicon layer with a thickness uniform to less than ± 2,5 % across a distance of 200 mm or more;

2. Capable of producing a layer of any material other than silicon with a thickness uniformity across the wafer of equal to or better than ± 3,5 %; or

3. Rotation of individual wafers during processing;

e. Molecular beam epitaxial growth equipment;

f. Magnetically enhanced "sputtering" equipment with specially designed integral load locks capable of transferring wafers in an isolated vacuum environment;

g. Equipment specially designed for ion implantation, ion-enhanced or photo-enhanced diffusion, having any of the following characteristics:

1. Patterning capability;

2. Beam energy (accelerating voltage) exceeding 200 keV;

3. Optimised to operate at a beam energy (accelerating voltage) of less than 10 keV; or

4. Capable of high energy oxygen implant into a heated "substrate";

h. "Stored program controlled" equipment for the selective removal (etching) by means of anisotropic dry methods (e.g., plasma), as follows:

1. "Batch types" having either of the following:

a. End-point detection, other than optical emission spectroscopy types; or

b. Reactor operational (etching) pressure of 26,66 Pa or less;

2. "Single wafer types" having any of the following:

a. End-point detection, other than optical emission spectroscopy types;

b. Reactor operational (etching) pressure of 26,66 Pa or less; or

c. Cassette-to-cassette and load locks wafer handling;

Notes:

1. *"Batch types" refers to machines not specially designed for production processing of single wafers. Such machines can process two or more wafers simultaneously with common process parameters, e.g., RF power, temperature, etch gas species, flow rates.*

2. *"Single wafer types" refers to machines specially designed for production processing of single wafers. These machines may use automatic wafer handling techniques to load a single wafer into the equipment for processing. The definition includes equipment that can load and process several wafers but where the etching parameters, e.g., RF power or end point, can be independently determined for each individual wafer.*

i. Chemical vapour deposition (CVD) equipment, e.g., plasma-enhanced CVD (PECVD) or photo-enhanced CVD, for semiconductor device manufacturing, having either of the following capabilities, for deposition of oxides, nitrides, metals or polysilicon:

   1. Chemical vapour deposition equipment operating below 10^5 Pa; or

2. PECVD equipment operating either below 60 Pa or having automatic cassette-to-cassette and load lock wafer handling;

Note: X.B.I.001.b.1.i does not control low pressure chemical vapour deposition (LPCVD) systems or reactive "sputtering" equipment.

j. Electron beam systems specially designed or modified for mask making or semiconductor device processing having any of the following characteristics:

1. Electrostatic beam deflection;

2. Shaped, non-Gaussian beam profile;

3. Digital-to-analogue conversion rate exceeding 3 MHz;

4. Digital-to-analogue conversion accuracy exceeding 12 bit; or

5. Target-to-beam position feedback control precision of 1 μm or finer;

Note: X.B.I.001.b.1.j does not control electron beam deposition systems or general purpose scanning electron microscopes.

k. Surface finishing equipment for the processing of semiconductor wafers as follows:

1. Specially designed equipment for backside processing of wafers thinner than 100 μm and the subsequent separation thereof; or

2. Specially designed equipment for achieving a surface roughness of the active surface of a processed wafer with a two-sigma value of 2 μm or less, total indicator reading (TIR);

Note: X.B.I.001.b.1.k does not control single-side lapping and polishing equipment for wafer surface finishing.

l. Interconnection equipment which includes common single or multiple vacuum chambers specially designed to permit the integration of any equipment controlled by X.B.I.001 into a complete system;

m. "Stored program controlled" equipment using "lasers" for the repair or trimming of "monolithic integrated circuits" with either of the following characteristics:

1. Positioning accuracy less than ± 1 μm; or

2. Spot size (kerf width) less than 3 μm.

Technical Note: For the purpose of X.B.I.001.b.1, "sputtering" is an overlay coating process wherein positively charged ions are accelerated by an electric field towards the surface of a target (coating material). The kinetic energy of the impacting ions is sufficient to cause target surface atoms to be released and deposited on the substrate. (Note: Triode, magnetron or radio frequency sputtering to increase adhesion of coating and rate of deposition are ordinary modifications of the process.)

2. Masks, mask substrates, mask-making equipment and image transfer equipment for the manufacture of devices and components as specified in the heading of X.B.I.001, as follows:

Note: The term masks refers to those used in electron beam lithography, X-ray lithography, and ultraviolet lithography, as well as the usual ultraviolet and visible photo-lithography.

a. Finished masks, reticles and designs therefor, except:

1. Finished masks or reticles for the production of integrated circuits not controlled by 3A001[5]; or

2. Masks or reticles, having both of the following characteristics:

a. Their design is based on geometries of 2,5 μm or more; and

[5] Ref. Annex I to Regulation (EU) 2021/821

b. The design does not include special features to alter the intended use by means of production equipment or "software";

b. Mask substrates as follows:

1. Hard surface (e.g., chromium, silicon, molybdenum) coated "substrates" (e.g., glass, quartz, sapphire) for the preparation of masks having dimensions exceeding 125 mm x 125 mm; or

2. Substrates specially designed for X-ray masks;

c. Equipment, other than general purpose computers, specially designed for computer aided design (CAD) of semiconductor devices or integrated circuits;

d. Equipment or machines, as follows, for mask or reticle fabrication:

1. Photo-optical step and repeat cameras capable of producing arrays larger than 100 mm x 100 mm, or capable of producing a single exposure larger than 6 mm x 6 mm in the image (i.e., focal) plane, or capable of producing line widths of less than 2,5 μm in the photoresist on the "substrate";

2. Mask or reticle fabrication equipment using ion or “laser” beam lithography capable of producing line widths of less than 2,5 μm; or

3. Equipment or holders for altering masks or reticles or adding pellicles to remove defects;

Note: X.B.I.001.b.2.d.1 and b.2.d.2 do not control mask fabrication equipment using photo-optical methods which was either commercially available before 1 January 1980, or has a performance no better than such equipment.

e. “Stored program controlled” equipment for the inspection of masks, reticles or pellicles with:

1. A resolution of 0,25 μm or finer; and

2. A precision of 0,75 μm or finer over a distance in one or two coordinates of 63,5 mm or more;

Note: X.B.I.001.b.2.e does not control general purpose scanning electron microscopes except when specially designed and instrumented for automatic pattern inspection.

f. Align and expose equipment for wafer production using photo-optical or X-ray methods, e.g., lithography equipment, including both projection image transfer equipment and step and repeat (direct step on wafer) or step and scan (scanner) equipment, capable of performing any of the following functions:

Note: X.B.I.001.b.2.f does not control photo-optical contact and proximity mask align and expose equipment or contact image transfer equipment.

1. Production of a pattern size of less than 2,5 μm;

2. Alignment with a precision finer than ± 0,25 μm (3 sigma);

3. Machine-to-machine overlay no better than ± 0,3 μm; or

4. A light source wavelength shorter than 400 nm;

g. Electron beam, ion beam or X-ray equipment for projection image transfer capable of producing patterns less than 2,5 μm;

Note: For focused, deflected-beam systems (direct write systems), see X.B.I.001.b.1.j.

h. Equipment using "lasers" for direct write on wafers capable of producing patterns less than 2,5 μm.

3. Equipment for the assembly of integrated circuits, as follows:

a. "Stored program controlled" die bonders having all of the following characteristics:

1. Specially designed for "hybrid integrated circuits";

2. X-Y stage positioning travel exceeding 37,5 x 37,5 mm; and

3. Placement accuracy in the X-Y plane of finer than ± 10 μm;

b. "Stored program controlled" equipment for producing multiple bonds in a single operation (e.g., beam lead bonders, chip carrier bonders, tape bonders);

c. Semi-automatic or automatic hot cap sealers, in which the cap is heated locally to a higher temperature than the body of the package, specially designed for ceramic microcircuit packages controlled by 3A001[6] and that have a throughput equal to or more than one package per minute.

Note: X.B.I.001.b.3 does not control general purpose resistance type spot welders.

[6] Ref. Annex I to Regulation (EU) 2021/821

4. Filters for clean rooms capable of providing an air environment of 10 or less particles of 0,3 μm or smaller per 0,02832 m^3 and filter materials therefor.

Technical Note: For the purpose of X.B.I.001, "stored program controlled" is a control using instructions stored in an electronic storage that a processor can execute in order to direct the performance of predetermined functions. Equipment may be "stored program controlled" whether the electronic storage is internal or external to the equipment.

X.B.I.002 Equipment for the inspection or testing of electronic components and materials, and specially designed components and accessories therefor.

a. Equipment specially designed for the inspection or testing of electron tubes, optical elements and specially designed components therefor controlled by 3A001[7] or X.A.I.001;

b. Equipment specially designed for the inspection or testing of semiconductor devices, integrated circuits and "electronic assemblies", as follows, and systems incorporating or having the characteristics of such equipment:

Note: X.B.I.002.b also controls equipment used or modified for use in the inspection or testing of other devices, such as imaging devices, electro-optical devices, acoustic-wave devices.

[7] Ref. Annex I to Regulation (EU) 2021/821

1. “Stored program controlled” inspection equipment for the automatic detection of defects, errors or contaminants of 0,6 μm or less in or on processed wafers, substrates, other than printed circuit boards or chips, using optical image acquisition techniques for pattern comparison;

   Note: X.B.I.002.b.1 does not control general purpose scanning electron microscopes, except when specially designed and instrumented for automatic pattern inspection.

2. Specially designed “stored program controlled” measuring and analysis equipment, as follows:

   a. Specially designed for the measurement of oxygen or carbon content in semiconductor materials;

   b. Equipment for line width measurement with a resolution of 1 μm or finer;

   c. Specially designed flatness measurement instruments capable of measuring deviations from flatness of 10 μm or less with a resolution of 1 μm or finer.

3. “Stored program controlled” wafer probing equipment having any of the following characteristics:

   a. Positioning accuracy finer than 3,5 μm;

   b. Capable of testing devices having more than 68 terminals; or

c. Capable of testing at a frequency exceeding 1 GHz;

4. Test equipment as follows:

a. "Stored program controlled" equipment specially designed for testing discrete semiconductor devices and unencapsulated dice, capable of testing at frequencies exceeding 18 GHz;

Technical Note: Discrete semiconductor devices include photocells and solar cells.

b. "Stored program controlled" equipment specially designed for testing integrated circuits and "electronic assemblies" thereof, capable of functional testing:

1. At a "pattern rate" exceeding 20 MHz; or

2. At a "pattern rate" exceeding 10 MHz but not exceeding 20 MHz and capable of testing packages of more than 68 terminals.

Notes: X.B.I.002.b.4.b does not control test equipment specially designed for testing:

1. Memories;

2. Assemblies or a class of "electronic assemblies" for home and entertainment applications; and

3. *Electronic components, "electronic assemblies" and integrated circuits not controlled by 3A001[8] or X.A.I.001 provided such test equipment does not incorporate computing facilities with "user accessible programmability".*

Technical Note: For purposes of X.B.I.002.b.4.b, "pattern rate" is defined as the maximum frequency of digital operation of a tester. It is therefore equivalent to the highest data rate that a tester can provide in non-multiplexed mode. It is also referred to as test speed, maximum digital frequency or maximum digital speed.

c. Equipment specially designed for determining the performance of focal-plane arrays at wavelengths of more than 1 200 nm, using "stored program controlled" measurements or computer aided evaluation and having any of the following characteristics:

1. Using scanning light spot diameters of less than 0,12 mm;

2. Designed for measuring photosensitive performance parameters and for evaluating frequency response, modulation transfer function, uniformity of responsivity or noise; or

3. Designed for evaluating arrays capable of creating images with more than 32 x 32 line elements;

[8] Ref. Annex I to Regulation (EU) 2021/821

5. Electron beam test systems designed for operation at 3 keV or below, or "laser" beam systems, for non-contactive probing of powered-up semiconductor devices having any of the following:

   a. Stroboscopic capability with either beam blanking or detector strobing;

   b. An electron spectrometer for voltage measurements with a resolution of less than 0,5 V; or

   c. Electrical tests fixtures for performance analysis of integrated circuits;

   Note: X.B.I.002.b.5 does not control scanning electron microscopes, except when specially designed and instrumented for non-contactive probing of a powered-up semiconductor device.

6. "Stored program controlled" multifunctional focused ion beam systems specially designed for manufacturing, repairing, physical layout analysis and testing of masks or semiconductor devices and having either of the following characteristics:

   a. Target-to-beam position feedback control precision of 1 μm or finer; or

   b. Digital-to-analogue conversion accuracy exceeding 12 bit;

7. Particle measuring systems employing "lasers" designed for measuring particle size and concentration in air having both of the following characteristics:

   a. Capable of measuring particle sizes of 0,2 μm or less at a flow rate of 0,02832 m^3 per minute or more; and

   b. Capable of characterizing Class 10 clean air or better.

Technical Note: For the purpose of X.B.I.002, "stored program controlled" is a control using instructions stored in an electronic storage that a processor can execute in order to direct the performance of predetermined functions. Equipment may be "stored program controlled" whether the electronic storage is internal or external to the equipment.

X.B.I.003 Equipment for the manufacture of Printed Circuit Boards (PCBs) and specially designed components and accessories therefor, as follows:

a. Film processing equipment;

b. Solder mask coating equipment;

c. Photo plotter equipment;

d. Plating or electroplating deposition equipment;

e. Vacuum chambers and presses;

f. Roll laminators;

g. Alignment equipment; or

h. Etching equipment.

X.B.I.004 Automated optical inspection equipment for testing Printed Circuit Boards (PCBs), based on optical or electrical sensors, and capable to detect any of the following quality defects:

a. Spacing, area, volume or height;

b. Bill boarding;

c. Components (presence, absence, flipped, offset, polarity, or skew);

d. Solder (bridging, insufficient solder joints);

e. Leads (insufficient paste, lifting);

f. Tombstoning; or

g. Electrical (shorts, opens, resistance, capacitance, power, grid performance).

X.C.I.001 Positive resists designed for semiconductor lithography specially adjusted (optimised) for use at wavelengths between 370 and 193 nm.

X.C.I.002 Chemicals and materials of the type used in the production of Printed Circuit Boards (PCBs), as follows:

a. PCB composite substrates made of glass fibre or cotton (e.g. FR-4, FR-2, FR-6, CEM-1, G-10, etc.);

b. Multilayer PCB substrates, containing at least one layer of any of the following materials:

1. Aluminium;

2. Polytetrafluoroethylene (PTFE); or

3. Ceramic materials (e.g. alumina, titanium oxide, etc.);

c. Etchant chemicals:

1. Ferric chloride (7705-08-0);

2. Cupric chloride (7447-39-4);

3. Ammonium persulphate (7727-54-0);

4. Sodium persulphate (7775-27-1); or

5. Chemical preparations specially designed for etching and containing any of the chemicals included in X.C.I.002.c.1 to X.C.I.002.c.4.

Note: X.C.I.002.c does not control "chemical mixtures" containing one or more of the chemicals specified in entry X.C.I.002.c in which no individually specified chemical constitutes more than 10 % by the weight of the mixture.

d. Copper foil with a minimum purity 95 % and of a thickness less than 100 µm;

e. Polymeric substances and films thereof of less than 0,5 mm of thickness, as follows:

1. Aromatic polyimides;

2. Parylenes;

3. Benzocyclobutenes (BCBs); or

4. Polybenzoxazoles.

X.D.I.001 "Software" specially designed for the "development", "production", or "use" of electronic devices or components controlled by X.A.I.001, general purpose electronic equipment controlled by X.A.I.002, or manufacturing and test equipment controlled by X.B.I.001 and X.B.I.002; or "software" specially designed for the "use" of equipment controlled by 3B001.g and 3B001.h[9].

X.D.I.002 "Software" specially designed for the test, "development" or "production" of Printed Circuit Boards (PCBs).

[9] Ref. Annex I to Regulation (EU) 2021/821

X.E.I.001 "Technology" for the "development", "production" or "use" of electronic devices or components controlled by X.A.I.001, general purpose electronic equipment controlled by X.A.I.002, or manufacturing and test equipment controlled by X.B.I.001 or X.B.I.002, or materials controlled by X.C.I.001.

X.E.I.002 "Technology" for the "development", "production" or "use" of Printed Circuit Boards (PCBs).

Category II – Computers

Note: Category II does not control goods for the personal use of the natural persons.

X.A.II.001 Computers, "electronic assemblies" and related equipment, not controlled by 4A001 or 4A003[10], and specially designed components therefor.

Note: The control status of the "digital computers" and related equipment described in X.A.II.001 is determined by the control status of other equipment or systems provided:

a. The "digital computers" or related equipment are essential for the operation of the other equipment or systems;

b. The "digital computers" or related equipment are not a "principal element" of the other equipment or systems; and

[10] Ref. Annex I to Regulation (EU) 2021/821

N.B.1: The control status of "signal processing" or "image enhancement" equipment specially designed for other equipment with functions limited to those required for the other equipment is determined by the control status of the other equipment even if it exceeds the "principal element" criterion.

N.B.2: For the control status of "digital computers" or related equipment for telecommunications equipment, see Category 5, Part 1 (Telecommunications)[11].

c. The "technology" for the "digital computers" and related equipment is determined by 4E[12].

a. Electronic computers and related equipment, and "electronic assemblies" and specially designed components therefor, rated for operation at an ambient temperature above 343 K (70 °C);

b. "Digital computers", including equipment of "signal processing" or "image enhancement", having an "Adjusted Peak Performance" ("APP") equal to or greater than 0,0128 Weighted TeraFLOPS (WT);

c. "Electronic assemblies" that are specially designed or modified to enhance performance by aggregation of processors, as follows:

1. Designed to be capable of aggregation in configurations of 16 or more processors;

[11] Ref. Annex I to Regulation (EU) 2021/821
[12] Ref. Annex I to Regulation (EU) 2021/821

2. Not used;

Note 1: X.A.II.001.c applies only to "electronic assemblies" and programmable interconnections with a "APP" not exceeding the limits in X.A.II.001.b, when shipped as unintegrated "electronic assemblies". It does not apply to "electronic assemblies" inherently limited by nature of their design for use as related equipment controlled by X.A.II.001.k.

Note 2: X.A.II.001.c does not control any "electronic assembly" specially designed for a product or family of products whose maximum configuration does not exceed the limits of X.A.II.001.b.

d. Not used;

e. Not used;

f. Equipment for "signal processing" or "image enhancement" having an "Adjusted Peak Performance" ("APP") equal to or greater than 0,0128 Weighted TeraFLOPS WT;

g. Not used;

h. Not used;

i. Equipment containing "terminal interface equipment" exceeding the limits in X.A.III.101;

Technical Note: For the purpose of X.A.II.001.i, "terminal interface equipment" means equipment at which information enters or leaves the telecommunication system, e.g. telephone, data device, computer, etc.

j. Equipment specially designed to provide external interconnection of "digital computers" or associated equipment that allows communications at data rates exceeding 80 Mbyte/s.

Note: X.A.II.001.j does not control internal interconnection equipment (e.g., backplanes, buses) passive interconnection equipment, "network access controllers" or "communication channel controllers".

Technical Note: For the purpose of X.A.II.001.j, "communication channel controllers" is the physical interface which controls the flow of synchronous or asynchronous digital information. It is an assembly that can be integrated into computer or telecommunications equipment to provide communications access.

k. Hybrid computers and "electronic assemblies" and specially designed components therefor containing analogue-to-digital converters having all of the following characteristics:

1. 32 channels or more; and

2. A resolution of 14 bit (plus sign bit) or more with a conversion rate of 200 000 Hz or more.

X.D.II.001 "Program" proof and validation "software", "software" allowing the automatic generation of "source codes", and operating system "software" that are specially designed for "real-time processing" equipment.

a. "Program" proof and validation "software" using mathematical and analytical techniques and designed or modified for "programs" having more than 500 000 "source code" instructions;

b. "Software" allowing the automatic generation of "source codes" from data acquired on line from external sensors described in the Regulation (EU) 2021/821; or

c. Operating system "software" specially designed for "real-time processing" equipment that guarantees a "global interrupt latency time" of less than 20 μs.

Technical Note: For the purpose of X.D.II.001, "global interrupt latency time" is the time taken by the computer system to recognise an interrupt due to the event, service the interrupt and perform a context switch to an alternate memory-resident task waiting on the interrupt.

X.D.II.002 "Software" other than that controlled in 4D001[13] specially designed or modified for the "development", "production" or "use" of equipment controlled by 4A101[14].

X.E.II.001 "Technology" for the "development", "production" or "use" of equipment controlled by X.A.II.001, or "software" controlled by X.D.II.001 or X.D.II.002.

[13] Ref. Annex I to Regulation (EU) 2021/821
[14] Ref. Annex I to Regulation (EU) 2021/821

X.E.II.002 "Technology" for the "development" or "production" of equipment designed for "multi-data-stream processing".

Technical Note: For the purpose of X.E.II.002, "multi-data-stream processing" is a microprogram or equipment architecture technique that permits simultaneous processing of two or more data sequences under the control of one or more instruction sequences by means such as:

1. *Single Instruction Multiple Data (SIMD) architectures such as vector or array processors;*

2. *Multiple Single Instruction Multiple Data (MSIMD) architectures;*

3. *Multiple Instruction Multiple Data (MIMD) architectures, including those that are tightly coupled, closely coupled or loosely coupled; or*

4. *Structured arrays of processing elements, including systolic arrays.*

Category III. Part 1 – Telecommunications

Note: Category III.Part 1 does not control goods for the personal use of the natural persons.

X.A.III.101 Telecommunication equipment.

a. Any type of telecommunications equipment, not controlled by 5A001.a[15], specially designed to operate outside the temperature range from 219 K (– 54 °C) to 397 K (124 °C).

[15] Ref. Annex I to Regulation (EU) 2021/821

b. Telecommunication transmission equipment and systems, and specially designed components and accessories therefor, having any of the following characteristics, functions or features:

Note: Telecommunication transmission equipment:

a. Categorised as follows, or combinations thereof:

1. Radio equipment (e.g., transmitters, receivers and transceivers);

2. Line terminating equipment;

3. Intermediate amplifier equipment;

4. Repeater equipment;

5. Regenerator equipment;

6. Translation encoders (transcoders);

7. Multiplex equipment (statistical mutiplex included);

8. Modulators/demodulators (modems);

9. Transmultiplex equipment (see CCITT Rec. G701);

10. "Stored program controlled" digital crossconnection equipment;

11. "Gateways" and bridges;

12. "Media access units"; and

b. Designed for use in single or multi-channel communication via any of the following:

1. Wire (line);

2. Coaxial cable;

3. Optical fibre cable;

4. Electromagnetic radiation; or

5. Underwater acoustic wave propagation.

1. Employing digital techniques, including digital processing of analogue signals, and designed to operate at a "digital transfer rate" at the highest multiplex level exceeding 45 Mbit/s or a "total digital transfer rate" exceeding 90 Mbit/s;

   Note: X.A.III.101.b.1 does not control equipment specially designed to be integrated and operated in any satellite system for civil use.

2. Modems using the "bandwidth of one voice channel" with a "data signalling rate" exceeding 9 600 bits per second;

3. Being "stored program controlled" digital cross connect equipment with "digital transfer rate" exceeding 8,5 Mbit/s per port;

4. Being equipment containing any of the following:

   a. "Network access controllers" and their related common medium having a "digital transfer rate" exceeding 33 Mbit/s; or

   b. "Communication channel controllers" with a digital output having a "data signalling rate" exceeding 64 000 bit/s per channel;

   Note: If any uncontrolled equipment contains a "network access controller", it cannot have any type of telecommunications interface, except those described in, but not controlled by X.A.III.101.b.4.

5. Employing a "laser" and having any of the following characteristics:

   a. A transmission wavelength exceeding 1 000 nm; or

   b. Employing analogue techniques and having a bandwidth exceeding 45 MHz;

   c. Employing coherent optical transmission or coherent optical detection techniques (also called optical heterodyne or homodyne techniques);

   d. Employing wavelength division multiplexing techniques; or

   e. Performing "optical amplification";

6. Radio equipment operating at input or output frequencies exceeding:

   a. 31 GHz for satellite-earth station applications; or

   b. 26,5 GHz for other applications;

   Note: X.A.III.101.b.6 does not control equipment for civil use when conforming with an International Telecommunications Union (ITU) allocated band between 26,5 GHz and 31 GHz.

7. Being radio equipment employing any of the following:

   a. Quadrature-amplitude-modulation (QAM) techniques above level 4 if the "total digital transfer rate" exceeds 8,5 Mbit/s;

   b. QAM techniques above level 16 if the "total digital transfer rate" is equal to or less than 8,5 Mbit/s;

   c. Other digital modulation techniques and having a "spectral efficiency" exceeding 3 bit/s/Hz; or

   d. Operating in the 1,5 MHz to 87,5 MHz band and incorporating adaptive techniques providing more than 15 dB suppression of an interfering signal.

   Notes:

   1. X.A.III.101.b.7 does not control equipment specially designed to be integrated and operated in any satellite system for civil use.

2. *X.A.III.101.b.7 does not control radio relay equipment for operation in an International Telecommunications Union (ITU) allocated band:*

a. Having any of the following:

1. Not exceeding 960 MHz; or

2. With a "total digital transfer rate" not exceeding 8,5 Mbit/s; and

b. Having a "spectral efficiency" not exceeding 4 bit/s/Hz.

c. "Stored program controlled" switching equipment and related signalling systems, having any of the following characteristics, functions or features, and specially designed components and accessories therefor:

Note: Statistical multiplexers with digital input and digital output which provide switching are treated as "stored program controlled" switches.

1. "Data (message) switching" equipment or systems designed for "packet-mode operation", "electronic assemblies" and components therefor, other than those specified in the CML or in Regulation (EU) 2021/821;

2. Not used;

3. Routing or switching of "datagram" packets;

   Note: X.A.III.101.c.3 does not control networks restricted to using only "network access controllers" or to "network access controllers" themselves.

4. Not used;

5. Multi-level priority and pre-emption for circuit switching;

   Note: X.A.III.101.c.5 does not control single-level call preemption.

6. Designed for automatic hand-off of cellular radio calls to other cellular switches or automatic connection to a centralised subscriber data base common to more than one switch;

7. Containing "stored program controlled" digital cross connect equipment with "digital transfer rate" exceeding 8,5 Mbit/s per port;

8. "Common channel signalling" operating in either non-associated or quasi-associated mode of operation;

9. "Dynamic adaptive routing";

10. Being packet switches, circuit switches and routers with ports or lines exceeding any of the following:

a. A “data signalling rate” of 64 000 bit/s per channel for a “communications channel controller”; or

Note: X.A.III.101.c.10.a does not control multiplex composite links composed only of communication channels not individually controlled by X.A.III.101.b.1.

b. A “digital transfer rate” of 33 Mbit/s for a “network access controller” and related common media;

Note: X.A.III.101.c.10 does not control packet switches or routers with ports or lines not exceeding the limits in X.A.III.101.c.10.

11. “Optical switching”;

12. Employing “Asynchronous Transfer Mode” (“ATM”) techniques.

d. Optical fibres and optical fibre cables of more than 50 m in length designed for single mode operation;

e. Centralised network control having all of the following characteristics:

1. Receives data from the nodes; and

2. Process these data in order to provide control of traffic not requiring operator decisions, and thereby performing “dynamic adaptive routing”;

Note 1: X.A.III.101.e does not include cases of routing decisions taken on predefined information.

Note 2: X.A.III.101.e does not preclude control of traffic as a function of predictable statistical traffic conditions.

f. Phased array antennas, operating above 10,5 GHz, containing active elements and distributed components, and designed to permit electronic control of beam shaping and pointing, except for landing systems with instruments meeting International Civil Aviation Organization (ICAO) standards (microwave landing systems (MLS));

g. Mobile communications equipment other than those specified in the CML or in Regulation (EU) 2021/821, “electronic assemblies” and components therefor;

h. Radio relay communications equipment designed for use at frequencies equal to or exceeding 19,7 GHz and components therefor, other than those specified in the CML or in Regulation (EU) 2021/821; or

i. Video game controllers, gaming controllers, flight simulator controllers, gamepads, joysticks and other input units, for video game consoles or entertainment systems, either corded or cordless.

Technical Note: For the purpose of X.A.III.101:

1) *"Asynchronous transfer mode" ("ATM") is a transfer mode in which the information is organised into cells; it is asynchronous in the sense that the recurrence of cells depends on the required or instantaneous bit rate.*

2) *"Bandwidth of one voice channel" is data communication equipment designed to operate in one voice channel of 3 100 Hz, as defined in CCITT Recommendation G.151.*

3) *"Communications channel controller" is the physical interface that controls the flow of synchronous or asynchronous digital information. It is an assembly that can be integrated into computer or telecommunications equipment to provide communications access.*

4) *"Datagram" is a self-contained, independent entity of data carrying sufficient information to be routed from the source to the destination data terminal equipment without reliance on earlier exchanges between this source and destination data terminal equipment and the transporting network.*

5) *"Fast select" is a facility applicable to virtual calls that allows data terminal equipment to expand the possibility to transmit data in call set-up and clearing "packets" beyond the basic capabilities of a virtual call.*

6) *"Gateway" is the function, realised by any combination of equipment and "software", to carry out the conversion of conventions for representing, processing or communicating information used on one system into the corresponding, but different conventions used in another system.*

7) *"Integrated Services Digital Network" (ISDN) is a unified end- to-end digital network, in which data originating from all types of communication (e.g., voice, text, data, still and moving pictures) are transmitted from one port (terminal) in the exchange (switch) over one access line to and from the subscriber.*

8) *"Packet" is a group of binary digits including data and call control signals that is switched as a composite whole. The data, call control signals, and possible error control information are arranged in a specified format.*

9) *"Common channel signalling" means the transmission of control information (signalling) via a separate channel than that used for the messages. The signalling channel usually controls multiple message channels.*

10) *"Data signalling rate" means the rate, as defined in ITU Recommendation 53-36, taking into account that, for non-binary modulation, baud and bit per second are not equal. Bits for coding, checking and synchronization functions are to be included.*

11) *"Dynamic adaptive routing" means Automatic rerouting of traffic based on sensing and analysis of current actual network conditions.*

12) "Media access unit" means equipment that contains one or more communication interfaces ("network access controller", "communications channel controller", modem or computer bus) to connect terminal equipment to a network.

13) "Spectral efficiency" is the "digital transfer rate" [bits/s] / 6 dB spectrum bandwidth in Hz.

14) "Stored program controlled" is a control using instructions stored in an electronic storage that a processor can execute in order to direct the performance of predetermined functions.

Note: Equipment may be "stored program controlled" whether the electronic storage is internal or external to the equipment.

X.B.III.101 Telecommunications test equipment, other than those specified in the CML or in Regulation (EU) 2021/821.

X.C.III.101 Preforms of glass or of any other material optimised for the manufacture of optical fibres controlled by X.A.III.101.

X.D.III.101 "Software" specially designed or modified for the "development", "production" or "use" of equipment controlled by X.A.III.101 and X.B.III.101, and dynamic adaptive routing "software" as described as follows:

a. "Software", other than in machine-executable form, specially designed for "dynamic adaptive routing";

b. Not used.

X.E.III.101 "Technology" for the "development", "production" or "use" of equipment controlled by X.A.III.101 or X.B.III.101, or "software" controlled by X.D.III.101, and other "technologies" as follows:

a. Specific "technologies" as follows:

1. "Technology" for the processing and application of coatings to optical fibre specially designed to make it suitable for underwater use;

2. "Technology" for the "development" of equipment employing "Synchronous Digital Hierarchy" ("SDH") or "Synchronous Optical Network" ("SONET") techniques.

Technical Note: For the purpose of X.E.III.101:

1) "Synchronous digital hierarchy" (SDH) is a digital hierarchy providing a means to manage, multiplex, and access various forms of digital traffic using a synchronous transmission format on different types of media. The format is based on the Synchronous Transport Module (STM) that is defined by CCITT Recommendation G.703, G.707, G.708, G.709 and others yet to be published. The first level rate of "SDH" is 155,52 Mbits/s.

2) *"Synchronous optical network" (SONET) is a network providing a means to manage, multiplex and access various forms of digital traffic using a synchronous transmission format on fibre optics. The format is the North America version of "SDH" and also uses the Synchronous Transport Module (STM). However, it uses the Synchronous Transport Signal (STS) as the basic transport module with a first level rate of 51,81 Mbits/s. The SONET standards are being integrated into those of "SDH".*

Category III. Part 2 – Information Security

Note: Category III. Part 2 does not control goods for the personal use of the natural persons.

X.A.III.201 Equipment as follows:

a. Not used;

b. Not used;

c. Goods classified as mass market encryption in accordance with Cryptography Note – Note 3 to Category 5, Part 2[16].

[16] Ref. Annex I to Regulation (EU) 2021/821

X.D.III.201 "Information Security" "software" as follows:

Note: This entry does not control "software" designed or modified to protect against malicious computer damage, e.g., viruses, where the use of "cryptography" is limited to authentication, digital signature and/or the decryption of data or files.

a. Not used;

b. Not used;

c. "Software" classified as mass market encryption "software" in accordance with Cryptography Note – Note 3 to Category 5, Part 2[17].

X.E.III.201 "Information Security" "technology" according to the General Technology Note, as follows:

a. Not used;

b. "Technology", other than specified in the CML or in Regulation (EU) 2021/821, for the "use" of mass market goods controlled by X.A.III.201.c or mass market "software" controlled by X.D.III.201.c.

Category IV – Sensors and Lasers

X.A.IV.001 Marine or terrestrial acoustic equipment, capable of detecting or locating underwater objects or features or positioning surface vessels or underwater vehicles; and specially designed components, other than those specified in the CML or in Regulation (EU) 2021/821.

[17] Ref. Annex I to Regulation (EU) 2021/821

X.A.IV.002 Optical Sensors as follows:

a. Image intensifier tubes and specially designed components therefor, as follows:

1. Image intensifier tubes having all the following:

a. A peak response in wavelength range exceeding 400 nm, but not exceeding 1 050 nm;

b. A microchannel plate for electron image amplification with a hole pitch (centre-to-centre spacing) of less than 25 μm; and

c. Having any of the following:

1. An S-20, S-25 or multialkali photocathode; or

2. A GaAs or GaInAs photocathode;

2. Specially designed microchannel plates having both of the following characteristics:

a. 15 000 or more hollow tubes per plate; and

b. Hole pitch (centre-to-centre spacing) of less than 25 μm.

b. Direct view imaging equipment operating in the visible or infrared spectrum, incorporating image intensifier tubes having the characteristics listed in X.A.IV.002.a.1.

X.A.IV.003 Cameras as follows:

a. Cameras that meet the criteria of Note 3 to 6A003.b.4.[18];

b. Not used;

X.A.IV.004 Optics as follows:

Note: X.A.IV.004 does not control optical filters with fixed air gaps or Lyot-type filters.

a. Optical filters:

1. For wavelengths longer than 250 nm, comprised of multi-layer optical coatings and having either of the following:

a. Bandwidths equal to or less than 1 nm Full Width Half Intensity (FWHI) and peak transmission of 90 % or more; or

b. Bandwidths equal to or less than 0,1 nm FWHI and peak transmission of 50 % or more;

2. For wavelengths longer than 250 nm, and having all of the following:

a. Tunable over a spectral range of 500 nm or more;

b. Instantaneous optical bandpass of 1,25 nm or less;

[18] Ref. Annex I to Regulation (EU) 2021/821

c. Wavelength resettable within 0,1 ms to an accuracy of 1 nm or better within the tunable spectral range; and

d. A single peak transmission of 91 % or more;

3. Optical opacity switches (filters) with a field of view of 30° or wider and a response time equal to or less than 1 ns;

b. "Fluoride fibre" cable, or optical fibres therefor, having an attenuation of less than 4 dB/km in the wavelength range exceeding 1 000 nm but not exceeding 3 000 nm;

Technical Note: For the purpose of X.A.IV.004.b "Fluoride fibres" are fibres manufactured from bulk fluoride compounds.

X.A.IV.005 "Lasers" as follows:

a. Carbon dioxide (CO_2) "lasers" having any of the following:

1. A CW output power exceeding 10 kW;

2. A pulsed output with a "pulse duration" exceeding 10 μs; and

a. An average output power exceeding 10 kW; or

b. A pulsed "peak power" exceeding 100 kW; or

3. A pulsed output with a “pulse duration” equal to or less than 10 μs; and

   a. A pulse energy exceeding 5 J per pulse and “peak power” exceeding 2,5 kW; or

   b. An average output power exceeding 2,5 kW;

b. Semiconductor lasers, as follows:

   1. Individual, single-transverse mode semiconductor “lasers” having:

      a. An average output power exceeding 100 mW; or

      b. A wavelength exceeding 1 050 nm;

   2. Individual, multiple-transverse mode semiconductor “lasers”, or arrays of individual semiconductor “lasers”, having a wave-length exceeding 1 050 nm;

c. Ruby “lasers” having an output energy exceeding 20 J per pulse;

d. Non-“tunable” “pulsed lasers” having an output wavelength exceeding 975 nm but not exceeding 1 150 nm and having any of the following:

1. A “pulse duration” equal to or exceeding 1 ns but not exceeding 1 μs, and having any of the following:

a. A single transverse mode output and having any of the following:

1. A “wall-plug efficiency” exceeding 12 % and an “average output power” exceeding 10 W and capable of operating at a pulse repetition frequency greater than 1 kHz; or

2. An “average output power” exceeding 20 W; or

b. A multiple transverse mode output and having any of the following:

1. A “wall-plug efficiency” exceeding 18 % and an “average output power” exceeding 30W;

2. A “peak power” exceeding 200 MW; or

3. An “average output power” exceeding 50 W; or

2. A “pulse duration” exceeding 1 μs and having any of the following:

a. A single transverse mode output and having any of the following:

1. A “wall-plug efficiency” exceeding 12 % and an “average output power” exceeding 10 W and capable of operating at a pulse repetition frequency greater than 1 kHz; or

2. An “average output power” exceeding 20 W; or

b. A multiple transverse mode output and having any of the following:

1. A “wall-plug efficiency” exceeding 18 % and an “average output power” exceeding 30 W; or

2. An “average output power” exceeding 500 W;

e. Non-“tunable” continuous wave “(CW) lasers”, having an output wavelength exceeding 975 nm but not exceeding 1 150 nm and having any of the following:

1. A single transverse mode output and having any of the following:

a. A “wall-plug efficiency” exceeding 12 % and an “average output power” exceeding 10 W and capable of operating at a pulse repetition frequency greater than 1 kHz; or

b. An “average output power” exceeding 50 W; or

2. A multiple transverse mode output and having any of the following:

a. A “wall-plug efficiency” exceeding 18 % and an “average output power” exceeding 30 W; or

b. An “average output power” exceeding 500 W;

Note: X.A.IV.005.e.2.b does not control multiple transverse mode, industrial “lasers” with output power less than or equal to 2 kW with a total mass greater than 1 200kg. For the purpose of this note, total mass includes all components required to operate the “laser”, e.g., “laser”, power supply, heat exchanger, but excludes external optics for beam conditioning and/or delivery.

f. Non-“tunable” “lasers”, having a wavelength exceeding 1 400 nm, but not exceeding 1 555 nm and having any of the following:

1. An output energy exceeding 100 mJ per pulse and a pulsed “peak power” exceeding 1 W; or

2. An average or CW output power exceeding 1 W;

g. Free electron “lasers”.

Technical Note: For the purpose of X.A.IV.005 "Wall-plug efficiency" is defined as the ratio of "laser" output power (or "average output power") to total electrical input power required to operate the "laser", including the power supply/conditioning and thermal conditioning/heat exchanger.

X.A.IV.006 "Magnetometers", "Superconductive" electromagnetic sensors, and specially designed components therefor, as follows:

a. "Magnetometers", other than those specified in the CML or in Regulation (EU) 2021/821, having a "sensitivity" lower (better) than 1,0 nT (rms) per square root Hz.

Technical Note: For the purposes of X.A.IV.006.a, "sensitivity" (noise level) is the root mean square of the device-limited noise floor which is the lowest signal that can be measured.

b. "Superconductive" electromagnetic sensors, components manufactured from "superconductive" materials:

1. Designed for operation at temperatures below the "critical temperature" of at least one of their "superconductive" constituents (including Josephson effect devices or "superconductive" quantum interference devices (SQUIDS));

2. Designed for sensing electromagnetic field variations at frequencies of 1 kHz or less; and

3. Having any of the following characteristics:

   a. Incorporating thin-film SQUIDS with a minimum feature size of less than 2 μm and with associated input and output coupling circuits;

   b. Designed to operate with a magnetic field slew rate exceeding 1 x 10^6 magnetic flux quanta per second;

   c. Designed to function without magnetic shielding in the earth's ambient magnetic field; or

   d. Having a temperature coefficient less (smaller) than 0,1 magnetic flux quantum/K.

X.A.IV.007 Gravity meters (gravimeters) for ground use, other than those specified in the CML or in Regulation (EU) 2021/821, as follows:

   a. Having a static accuracy of less (better) than 100 μGal; or

   b. Being of the quartz element (Worden) type.

X.A.IV.008 Radar systems, equipment and major components, other than those specified in the CML or in Regulation (EU) 2021/821, and specially designed components therefor, as follows:

a. Airborne radar equipment, other than those specified in the CML or in Regulation (EU) 2021/821, and specially designed components therefor;

b. "Space-qualified" "laser" radar or Light Detection and Ranging (LIDAR) equipment specially designed for surveying or for meteorological observation;

c. Millimeter wave enhanced vision radar imaging systems specially designed for rotary wing aircraft and having all of the following:

1. Operates at a frequency of 94 GHz;

2. An average output power of less than 20 mW;

3. Radar beam width of 1 degree; and

4. Operating range equal to or greater than 1 500 m.

Technical Notes:

1. For the purpose of X.A.IV.008, a "major component" includes any assembled element which forms a portion of an "end item" without which the "end item" is inoperable.

*2. For the purpose of X.A.IV.008, an "*end item*" is a system, equipment or assembled commodity ready for its intended use.*

X.A.IV.009 Specific processing equipment, as follows:

a. Seismic detection equipment not controlled by X.A.IV.009.c;

b. Radiation hardened TV cameras, other than those specified in the CML or in Regulation (EU) 2021/821; or

c. Seismic intrusion detection systems that detect, classify and determine the bearing on the source of a detected signal.

X.B.IV.001 Equipment, including tools, dies, fixtures or gauges, and other specially designed components and accessories therefor, specially designed or modified for any of the following:

a. For the manufacture or inspection of:

1. Free electron “laser” magnet wigglers;

2. Free electron “laser” photo injectors;

b. For the adjustment, to required tolerances, of the longitudinal magnetic field of free electron “lasers”.

X.C.IV.001 Optical sensing fibres that are modified structurally to have a "beat length" of less than 500 mm (high birefringence) or optical sensor materials not described in 6C002.b[19] and having a zinc content of equal to or more than 6 % by "mole fraction".

Technical Note: For the purpose of X.C.IV.001:

1) "Mole fraction" is defined as the ratio of moles of ZnTe to the sum of the moles of CdTe and ZnTe present in the crystal.

2) "Beat length" is the distance over which two orthogonally polarised signals, initially in phase, must pass in order to achieve a 2 Pi radian(s) phase difference.

X.C.IV.002 Optical materials, as follows:

a. Low optical absorption materials, as follows:

1. Bulk fluoride compounds containing ingredients with a purity of 99,999 % or better; or

Note: X.C.IV.002.a.1 controls fluorides of zirconium or aluminium and variants.

2. Bulk fluoride glass made from compounds controlled by 6C004.e.1[20];

[19] Ref. Annex I to Regulation (EU) 2021/821
[20] Ref. Annex I to Regulation (EU) 2021/821

b. "Optical fibre preforms" made from bulk fluoride compounds containing ingredients with a purity of 99,999 % or better, specially designed for the manufacture of "fluoride fibres" controlled by X.A.IV.004.b.

Technical Note: For the purpose of X.C.IV.002:

1) "Fluoride fibres" are fibres manufactured from bulk fluoride compounds.

2) "Optical fibre preforms" are bars, ingots, or rods of glass, plastic or other materials that have been specially processed for use in fabricating optical fibres. The characteristics of the preform determine the basic parameters of the resultant drawn optical fibres.

X.D.IV.001 "Software", other than those specified in the CML or in Regulation (EU) 2021/821, specially designed for the "development", "production", or "use" of goods controlled by 6A002, 6A003[21], X.A.IV.001, X.A.IV.006, X.A.IV.007, or X.A.IV.008.

X.D.IV.002 "Software" specially designed for the "development" or "production" of equipment controlled by X.A.IV.002, X.A.IV.004, or X.A.IV.005.

X.D.IV.003 Other "software", as follows:

a. Air Traffic Control (ATC) "software" application "programs" hosted on general purpose computers located at Air Traffic Control centres, and capable of automatically handing over primary radar target data (if not correlated with secondary surveillance radar (SSR) data) from the host ATC centre to another ATC centre;

[21] Ref. Annex I to Regulation (EU) 2021/821

b. “Software” specially designed for seismic intrusion detection systems in X.A.IV.009.c; or

c. “Source code” specially designed for seismic intrusion detection systems in X.A.IV.009.c.

X.E.IV.001 “Technology” for the “development”, “production” or “use” of equipment controlled by X.A.IV.001, X.A.IV.006, X.A.IV.007, X.A.IV.008 or X.A.IV.009.c.

X.E.IV.002 “Technology” for the “development” or “production” of equipment, materials or “software” controlled by X.A.IV.002, X.A.IV.004, or X.A.IV.005, X.B.IV.001, X.C.IV.001, X.C.IV.002, or X.D.IV.003.

X.E.IV.003 Other “technology” as follows:

a. Optical fabrication technologies for serially producing optical components at a rate exceeding 10 m^2 of surface area per year on any single spindle and having all of the following:

1. Area exceeding 1 m^2; and

2. Surface figure exceeding λ/10 (rms) at the designed wavelength;

b. “Technology” for optical filters with a bandwidth equal to or less than 10 nm, a field of view (FOV) exceeding 40° and a resolution exceeding 0,75 line pairs per milliradian;

c. "Technology" for the "development" or "production" of cameras controlled by X.A.IV.003;

d. "Technology" "required" for the "development" or "production" of non-triaxial fluxgate "magnetometers" or non-triaxial fluxgate "magnetometer" systems, having any of the following:

1. "Sensitivity" lower (better) than 0,05 nT (rms) per square root Hz at frequencies of less than 1 Hz; or

2. "Sensitivity" lower (better) than 1 x 10^{-3} nT (rms) per square root Hz at frequencies of 1 Hz or more.

e. "Technology" "required" for the "development" or "production" of infrared up-conversion devices having all of the following:

1. A response in the wavelength range exceeding 700 nm but not exceeding 1 500 nm; and

2. A combination of an infrared photodetector, light emitting diode (OLED), and nanocrystal to convert infrared light into visible light.

Technical Note: For the purposes of X.E.IV.003, "sensitivity" (or noise level) is the root mean square of the device-limited noise floor which is the lowest signal that can be measured.

Category V – Navigation and Avionics

X.A.V.001 Airborne communication equipment, all "aircraft" inertial navigation systems, and other avionic equipment, including components, other than those specified in the CML or in Regulation (EU) 2021/821.

Note 1: X.A.V.001. does not control headsets or microphones.

Note 2: X.A.V.001. does not control goods for the personal use of the natural persons.

X.B.V.001 Other equipment specially designed for the test, inspection, or "production" of navigation and avionics equipment.

X.D.V.001 "Software", other than specified in the CML or in Regulation (EU) 2021/821, for the "development", "production", or "use" of navigation, airborne communication and other avionics.

X.E.V.001 "Technology", other than specified in the CML or in Regulation (EU) 2021/821, for the "development", "production" or "use" of navigation, airborne communication, and other avionics equipment.

Category VI – Marine

X.A.VI.001 Vessels, marine systems or equipment, and specially designed components therefor, components and accessories as follows:

a. Underwater vision systems, as follows:

1. Television systems (comprising camera, lights, monitoring and signal transmission equipment) having a limiting resolution when measured in air of more than 500 lines and specially designed or modified for remote operation with a submersible vehicle; or

2. Underwater television cameras having a limiting resolution when measured in air of more than 700 lines;

Technical Note: Limiting resolution in television is a measure of horizontal resolution usually expressed in terms of the maximum number of lines per picture height discriminated on a test chart, using IEEE Standard 208/1960 or any equivalent standard.

b. Photographic still cameras specially designed or modified for underwater use, having a film format of 35 mm or larger, and having autofocusing or remote focusing specially designed for underwater use;

c. Stroboscopic light systems, specially designed or modified for underwater use, capable of a light output energy of more than 300 J per flash;

d. Other underwater camera equipment, other than those specified in the CML or in Regulation (EU) 2021/821;

e. Marine boilers designed to have any of the following characteristics:

1. Heat release rate (at maximum rating) equal to or in excess of 1 966,4 kW/m^3 of furnace volume; or

2. Ratio of steam generated in kilogram per hour (at maximum rating) to the dry weight of the boiler in kilograms equal to or in excess of 37,6;

f. Vessels (surface or underwater), including inflatable boats, and specially designed components therefor, other than those specified in the CML or in Regulation (EU) 2021/821;

Note: X.A.VI.001.f does not control vessels on temporary sojourn, used for private transport or for the transport of passengers or goods from or through the customs territory of the Union.

g. Marine engines (both inboard and outboard) and submarine engines and specially designed components therefor, other than those specified in the CML or in Regulation (EU) 2021/821;

h. Self-contained underwater breathing apparatus (scuba gear) and accessories therefor, other than those specified in the CML or in Regulation (EU) 2021/821;

i. Life jackets, inflation cartridges, dive compasses and dive computers;

Note: X.A.VI.001.i does not control goods for the personal use of the natural persons.

j. Underwater lights and propulsion equipment; or

Note: X.A.VI.001.j does not control goods for the personal use of the natural persons.

k. Air compressors and filtration system specially designed for filling air cylinders.

X.D.VI.001 "Software" specially designed or modified for the "development", "production" or "use" of equipment controlled by X.A.VI.001.

X.D.VI.002 "Software" specially designed for the operation of unmanned submersible vehicles used in the oil and gas industry.

X.E.VI.001 "Technology" for the "development", "production" or "use" of equipment controlled by X.A.VI.001.

X.A.VII.001 Diesel engines, and tractors and specially designed components therefor, other than those specified in the CML or in Regulation (EU) 2021/821:

a. Diesel engines, other than those specified in the CML or in Regulation (EU) 2021/821, for trucks, tractors, and automotive applications, having an overall power output of 298 kW or more.

b. Off highway wheel tractors of carriage capacity 9 tonnes or more; and major components and accessories, other than those specified in the CML or in Regulation (EU) 2021/821.

c. Road tractors for semi-trailers, with single or tandem rear axles rated for 9 tonnes per axel or more and specially designed major components.

Note: X.A.VII.001.b and X.A.VII.001.c do not control vehicles on temporary sojourn, used for private transport or for the transport of passengers or goods from or through the customs territory of the Union.

Technical Notes:

1. *For the purpose of X.A.VII.001, a "major component" includes any assembled element which forms a portion of an "end item" without which the "end item" is inoperable.*

2. *For the purpose of X.A.VII.001, an "end item" is a system, equipment or assembled commodity ready for its intended use.*

X.A.VII.002 Gas turbine engines and components, other than those specified in the CML or in Regulation (EU) 2021/821.

a. Not used.

b. Not used.

c. Aero gas turbine engines and components specially designed therefor.

d. Not used.

e. Pressurised aircraft breathing equipment components specially designed therefor, other than those specified in the CML or in Regulation (EU) 2021/821.

X.A.VII.003 Aircraft engines, other than those specified in X.A.VII.002, the CML or in Regulation (EU) 2021/821, as follows:

a. Reciprocating or rotary internal combustion piston engines; or

b. Electric engines.

Technical Note: For the purpose of X.A.VII.003 aircrafts includes: aeroplanes, UAVs, helicopters, autogyros, hybrid aircrafts or radio-controlled models.

X.B.VII.001 Vibration test equipment and specially designed components, other than those specified in the CML or in Regulation (EU) 2021/821.

Note: X.B.VII.001. controls only equipment for the "development" or "production". It does not control condition monitoring systems.

X.B.VII.002 Specially designed equipment, tooling or fixtures for manufacturing or measuring gas turbine blades, vanes or tip shroud castings, as follows:

a. Automated equipment using non-mechanical methods for measuring airfoil wall thickness;

b. Tooling, fixtures or measuring equipment for the "laser", water jet or ECM/EDM hole drilling processes controlled by 9E003.c[22];

c. Ceramic core leaching equipment;

d. Ceramic core manufacturing equipment or tools;

e. Ceramic shell wax pattern preparation equipment;

f. Ceramic shell burn out or firing equipment.

X.D.VII.001 "Software", other than those specified in the CML or in Regulation (EU) 2021/821, for the "development" or "production" of equipment controlled by X.A.VII.001 or X.B.VII.001.

[22] Ref. Annex I to Regulation (EU) 2021/821

X.D.VII.002 "Software", for the "development" or "production" of equipment controlled by X.A.VII.002 or X.B.VII.002.

X.E.VII.001 "Technology", other than those specified in the CML or in Regulation (EU) 2021/821, for the "development" or "production" or "use" of equipment controlled by X.A.VII.001 or X.B.VII.001.

X.E.VII.002 "Technology", for the "development", "production" or "use" of equipment controlled by X.A.VII.002 or X.B.VII.002.

X.E.VII.003 Other "technology", not described by 9E003[23], as follows:

a. Rotor blade tip clearance control systems employing active compensating casing "technology" limited to a design and development data base; or

b. Gas bearing for turbine engine rotor assemblies.

Category VIII – Miscellaneous items

X.A.VIII.001 Equipment for oil production or oil exploration as follows:

a. Drill head integrated measurement equipment, including inertial navigation systems for measurement while drilling (MWD);

b. Gas monitoring systems and detectors therefor, designed for continuous operation and detection of hydrogen sulphide;

[23] Ref. Annex I to Regulation (EU) 2021/821

c. Equipment for seismological measurements, including reflection seismetics and seismic vibrators;

d. Sediment echo sounders.

X.A.VIII.002 Equipment, “electronic assemblies” and components, specially designed for quantum computers, quantum electronics, quantum sensors, quantum processing units, qubit circuits, qubit devices or quantum radar systems, including pockels cells.

Note 1: Quantum computers perform computations that harness the collective properties of quantum states, such as superposition, interference and entanglement.

Note 2: Units, circuits and devices include but are not limited to superconducting circuits, Quantum annealing, Ion Trap, photonic interaction, silicon/spin, cold atoms.

X.A.VIII.003 Microscopes, related equipment and detectors as follows:

a. Scanning electron microscopes (SEM);

b. Scanning auger microscopes;

c. Transmission electron microscopes (TEM);

d. Atomic force microscopes (AFM);

e. Scanning force microscopes (SFM);

f. Equipment and detectors, specially designed for use with the microscopes specified in X.A.VIII.003.a to X.A.VIII.0003.e, employing any of the following material analysis techniques:

1. X-ray photo spectroscopy (XPS);

2. Energy-dispersive X-ray spectroscopy (EDX, EDS); or

3. Electron spectroscopy for chemical analysis (ESCA).

X.A.VIII.004 Collector equipment for metal ores in deep seabed.

X.A.VIII.005 Manufacturing equipment and machine tools as follows:

a. Additive manufacturing equipment for the "production" of metal parts;

Note: X.A.VIII.005.a only applies to the following systems:

1. Powder-bed systems using selective laser melting (SLM), laser cusing, direct metal laser sintering (DMLS) or electron beam melting (EBM); or

2. Powder-fed systems using laser cladding, direct energy deposition or laser metal deposition.

b. Additive manufacturing equipment for "energetic materials", including equipment using ultrasonic extrusion;

c. Vat photopolymerization (VVP) additive manufacturing equipment using stereo lithography (SLA) or digital light processing (DLP).

X.A.VIII.006 Equipment for the "production" of printed electronics for organic light emitting diodes (OLED), organic field-effect transistors (OFET) or organic photovoltaic cells (OPVC).

X.A.VIII.007 Equipment for the "production" of microelectromechanical systems (MEMS) using the mechanical properties of silicon, including sensors in chip format like pressure membranes, bending beams or micro adjustment devices.

X.A.VIII.008 Equipment, specially designed for the production of E-Fuels (electrofuels and synthetic fuels) or ultra efficient solar cells (efficiency > 30 %).

X.A.VIII.009 Equipment for Ultra-High-Vacuum (UHV) as follows:

a. UHV pumps (sublimation, turbomolecular, diffusion, cryogenic, ion getter);

b. UHV pressure gauges.

Note: UHV means 100 nanoPascals (nPa) or lower.

X.A.VIII.010 "Cryogenic refrigeration systems" designed to maintain temperatures below 1,1 K for 48 hrs or more and related cryogenic refrigeration equipment as follows:

a. Pulse Tubes;

b. Cryostats;

c. Dewars;

d. Gas Handling System (GHS);

e. Compressors; or

f. Control Units.

Note: "Cryogenic refrigeration systems" include but are not limited to Dilution Refrigeration, Adiabatic Demagnisation Refrigerators and Laser Cooling Systems.

X.A.VIII.011 "Decapsulation" equipment for semiconductor devices.

Note: "Decapsulation" is the removal of a cap, lid, or encapsulating material from a packaged integrated circuit by mechanical, thermal, or chemical means.

X.A.VIII.012 High Quantum Efficiency (QE) photodetectors with a QE greater than 80 % in the wavelength range exceeding 400 nm but not exceeding 1 600 nm.

X.AVIII.013 Numerical controlled machine tools, having one or more linear axis with a travel length greater than 8 000 mm.

X.A.VIII.014 Water cannon systems for riot or crowd control, and components specially designed therefor.

Note: X.A.VIII.014 water cannon systems include, for example: vehicles or fixed stations equipped with remotely operated water cannon that are designed to protect the operator from an outside riot with features such as armor, shatter resistant windows, metal screens, bull-bars, or run-flat tires. Components specially designed for water cannons may include, for example: deck gun water nozzles, pumps, reservoirs, cameras, and lights that are hardened or shielded against projectiles, elevating masts for those items, and teleoperation systems for those items.

X.A.VIII.015 Law enforcement striking weapons, including saps, police batons, side handle batons, tonfas, sjamboks, and whips.

X.A.VIII.016 Police helmets and shields; and specially designed components, other than those specified in the CML or in Regulation (EU) 2021/821.

X.A.VIII.017 Law enforcement restraint devices, including leg irons, shackles, and handcuffs; straight jackets; stun cuffs; shock belts; shock sleeves; multipoint restraint devices such as restraint chairs; and specially designed components and accessories, other than those specified in the CML or in Regulation (EU) 2021/821.

Note: X.A.VIII.017 applies to restraint devices used in law enforcement activities. It does not apply to medical devices that are equipped to restrain patient movement during medical procedures. It does not apply to devices that confine memory impaired patients to appropriate medical facilities. It does not apply to safety equipment such as safety belts or child automobile safety seats.

X.A.VIII.018 Oil and gas exploration equipment, "software", and data, as follows (see List of Items Controlled):

a. Not used.

b. Hydraulic fracturing items, as follows:

1. Hydraulic fracturing design and analysis "software" and data;

2. Hydraulic fracturing "proppant", "fracking fluid", and chemical additives therefor; or

3. High pressure pumps.

Technical Note:

A "proppant" is a solid material, typically treated sand or man-made ceramic materials, designed to keep an induced hydraulic fracture open, during or following a fracturing treatment. It is added to a "fracking fluid" which may vary in composition depending on the type of fracturing used, and can be gel, foam or slickwater-based.

X.A.VIII.019 Specific processing equipment, as follows (see List of Items Controlled):

a. Ring magnets;

b. Not used.

X.A.VIII.020 Weapons and devices designed for the purpose of riot control or self-protection, as follows:

a. Portable electric discharge weapons that can target only one individual each time an electric shock is administered, including but not limited to electric shock batons, electric shock shields, stun guns and electric shock dart guns;

b. Kits containing all essential components for assembly of portable electric discharge weapons controlled by item X.A.VIII.020.a; or

Note: The following goods are considered to be essential components:

1. *The unit producing an electric shock;*

2. *The switch, whether or not on a remote control; and*

3. *The electrodes or, where applicable, the wires through which the electrical shock is to be administered.*

c. Fixed or mountable electric discharge weapons that cover a wide area and can target multiple individuals with electrical shocks.

X.A.VIII.021 Weapons and equipment disseminating incapacitating or irritating chemical substances for the purpose of riot control or self-protection and certain related substances, as follows:

a. Portable weapons and equipment which either administer a dose of an incapacitating or irritating chemical substance that targets one individual or disseminate a dose of such substance affecting a small area, e.g. in the form of a spray fog or cloud, when the chemical substance is administered or disseminated;

Note 1: This item does not control equipment controlled by item ML7(e) of the CML of the European Union.

Note 2: This item does not control individual portable equipment, even if containing a chemical substance, when accompanying their user for the user's own personal protection.

Note 3: In addition to relevant chemical substances, such as riot control agents or PAVA, the goods controlled by items X.A.VIII.021.c and X.A.VIII.021.d shall be deemed to be incapacitating or irritating chemical substances.

b. Pelargonic acid vanillylamide (PAVA) (CAS 2444-46-4);

c. Oleoresin capsicum (OC) (CAS 8023-77-6);

d. Mixtures containing at least 0,3 % by weight of PAVA or OC and a solvent (such as ethanol, 1-propanol or hexane), which could be administered as such as incapacitating or irritating agents, in particular in aerosols and in liquid form, or used for manufacturing of incapacitating or irritating agents;

Note 1: This item does not control sauces and preparations therefor, soups or preparations therefor and mixed condiments or seasonings, provided that PAVA or OC is not the only constituent flavour in them.

Note 2: This item does not control medicinal products for which a marketing authorisation has been granted in accordance with Union law.

e. Fixed equipment for the dissemination of incapacitating or irritating chemical substances, which can be attached to a wall or to a ceiling inside a building, comprises a canister of irritating or incapacitating chemical agents and is activated using a remote control system;

Note: In addition to relevant chemical substances, such as riot control agents or PAVA, the goods controlled by items X.A.VIII.021.c and X.A.VIII.021.d shall be deemed to be incapacitating or irritating chemical substances.

f. Fixed or mountable equipment for the dissemination of incapacitating or irritating chemical agents that covers a wide area and is not designed to be attached to a wall or to a ceiling inside a building;

Note 1: This item does not control equipment controlled by item ML7(e) of the CML of the European Union.

Note 2: In addition to relevant chemical substances, such as riot control agents or PAVA, the goods controlled by items X.A.VIII.021.c and X.A.VIII.021.d shall be deemed to be incapacitating or irritating chemical substances.

g. Other irritating chemical substances, and mixtures thereof containing at least 0,3 % by weight of the active substance, as follows:

1. Dibenzo[b,f][1,4]oxazepine (CR) (CAS 257-07-8);

2. 8-Methyl-N-vanillyl-trans-6-nonenamide (capsaicin) (CAS 404-86-4);

3. 8-Methyl-N-vanillylnonamide (dihydrocapsaicin) (CAS 19408-84-5);

4. N-Vanillyl-9-methyldec-7-(E)-enamide (homocapsaicin) (CAS 58493-48-4);

5. N-Vanillyl-9-methyldecanamide (homodihydrocapsaicin) (CAS 20279-06-5);

6. N-Vanillyl-7-methyloctanamide (nordihydrocapsaicin) (CAS 28789-35-7);

7. 4-Nonanolylmorpholine (MPA) (CAS 5299-64-9);

8. Cis-4-acetylaminodicyclohexylmethane (CAS 37794-87-9);

9. N,N′-Bis(isopropyl)ethylenediimine; or

10. N,N′-Bis(tert-butyl)ethylenediimine.

h. Chemical precursors to Riot Control Agents (RCAs) or irritating substances, as follows:

1. Malononitril (CAS 109-77-3);

2. 2-Chlorobenzaldehyde (CAS 89-98-5);

3. 2-Chlorobenzyl alcohol (CAS 17849-38-6);

4. 2-Chlorobenzylamine (CAS 89-97-4);

5. 1-Chloro-2-(dimethoxymethyl)-benzene (CAS 70380-66-4);

6. Acetophenone (CAS 98-86-2);

7. Chloroacetyl chloride (CAS 79-04-9); or

8. 2-Aminophenol (CAS 95-55-6).

X.A.VIII.022 Products which could be used for the execution of human beings by means of lethal injection, as follows:

a. Short and intermediate acting barbiturate anaesthetic agents including, but not limited to:

1. Amobarbital (CAS 57-43-2);

2. Amobarbital sodium salt (CAS 64-43-7);

3. Pentobarbital (CAS 76-74-4);

4. Pentobarbital sodium salt (CAS 57-33-0);

5. Secobarbital (CAS 76-73-3);

6. Secobarbital sodium salt (CAS 309-43-3);

7. Thiopental (CAS 76-75-5); or

8. Thiopental sodium salt (CAS 71-73-8), also known as thiopentone sodium;

b. Products containing one of the anaesthetic agents listed under X.A.VIII.022.a.

X.A.VIII.023 Nettings, canopies, tents, blankets and apparel, specially designed for camouflage.

X.A.VIII.024 "All-terrain vehicles".

Technical Note:

"All-terrain vehicles" means any motorised vehicle designed to travel on three or four low pressure (less than 0.9 bar gauge pressure) tires on unpaved surfaces, typically having a seat designed to be straddled by the operator and handlebars for steering control. "All-terrain vehicles" may include, for example, quad bikes, off-road vehicles, utility terrain vehicles.

X.B.VIII.001 Specific processing equipment, as follows (see List of Items Controlled):

a. Hot cells; or

b. Glove boxes suitable for use with radioactive materials.

X.C.VIII.001 Metal powders and metal alloy powders, usable for any of the systems listed in X.A.VIII.005.a.

X.C.VIII.002 Advanced materials as follows:

a. Materials for cloaking or adaptive camouflage;

b. Metamaterials, e.g. with a negative refractive index;

c. Not used;

d. High entropy alloys (HEA);

e. Heusler compounds; or

f. Kitaev materials, including kitaev spin liquids.

X.C.VIII.003 Conjugated polymers (conductive, semiconductive, electroluminescent) for printed or organic electronics.

X.C.VIII.004 Energetic materials as follows and mixtures thereof:

a. Ammonium picrate (CAS 131-74-8);

b. Black powder;

c. Hexanitrodiphenylamine (CAS 131-73-7);

d. Difluoroamine (CAS 10405-27-3);

e. Nitrostarch (CAS9056-38-6);

f. Not used;

g. Tetranitronaphthalene;

h. Trinitroanisole;

i. Trinitronaphthalene;

j. Trinitroxylene;

k. N-pyrrolidinone; 1-methyl-2-pyrrolidinone (CAS 872-50-4);

l. Dioctylmaleate (CAS 142-16-5);

m. Ethylhexylacrylate (CAS 103-11-7);

n. Triethylaluminium (TEA) (CAS 97-93-8), trimethylaluminium (TMA) (CAS 75-24-1), and other pyrophoric metal alkyls and aryls of lithium, sodium, magnesium, zinc or boron;

o. Nitrocellulose (CAS 9004-70-0);

p. Nitroglycerin (or glyceroltrinitrate, trinitroglycerine) (NG) (CAS 55-63-0);

q. 2,4,6-trinitrotoluene (TNT) (CAS 118-96-7);

r. Ethylenediaminedinitrate (EDDN) (CAS 20829-66-7);

s. Pentaerythritoltetranitrate (PETN) (CAS 78-11-5);

t. Lead azide (CAS 13424-46-9), normal lead styphnate(CAS 15245-44-0) and basic lead styphnate (CAS 12403-82-6), and primary explosives or priming compositions containing azides or azide complexes;

u. Not used;

v. Not used;

w. Diethyldiphenylurea (CAS 85-98-3); dimethyldiphenylurea (CAS 611-92-7); methylethyldiphenyl urea.

x. N,N-diphenylurea (unsymmetrical diphenylurea) (CAS 603-54-3);

y. Methyl-N,N-diphenylurea (methyl unsymmetrical diphenylurea) (CAS 13114-72-2);

z. Ethyl-N,N-diphenylurea (ethyl unsymmetrical diphenylurea) (CAS 64544-71-4);

aa. Not used;

bb. 4-Nitrodiphenylamine (4-NDPA)(CAS 836-30-6);

cc. 2,2-dinitropropanol (CAS 918-52-5); or

dd. Not used.

X.D.VIII.001 "Software", specially designed for the "development", "production" or "use" of equipment specified in X.A.VIII.005 to X.A.VIII.0013.

X.D.VIII.002 "Software", specially designed for the "development", "production" or "use" of equipment, "electronic assemblies" or components specified in X.A.VIII.002.

X.D.VIII.003 "Software" for digital twins of additive manufacturing products or for the determination of the reliability of additive manufacturing products.

X.D.VIII.004 "Software" specially designed for the "development," "production" or "use" of commodities controlled by X.A.VIII.014.

X.D.VIII.005 Specific “software”, as follows (see List of Items Controlled):

a. “Software” for neutronic calculations/modeling;

b. “Software” for radiation transport calculations/modeling; or

c. “Software” for hydrodynamic calculations/modeling.

X.E.VIII.001 “Technology” for the “development”, “production” or “use” of equipment specified in X.A.VIII.001 to X.A.VIII.0013.

X.E.VIII.002 “Technology” for the “development”, “production” or “use” of materials specified in X.C.VIII.002 or X.C.VIII.003

X.E.VIII.003 “Technology” for digital twins of additive manufacturing products, for the determination of the reliability of additive manufacturing products or for “software” specified in X.D.VIII.003.

X.E.VIII.004 “Technology” for the “development”, “production” or “use” of “software” specified in X.D.VIII.001 to X.D.VIII.002.

X.E.VIII.005 “Technology” “required” for the “development” or “production” of commodities controlled by X.A.VIII.014.

X.E.VIII.006 “Technology” exclusively for the “development” or “production” of equipment controlled by X.A.VIII.017.

Category IX – Special Materials and Related Equipment

X.A.IX.001 Chemical agents, including tear gas formulation containing 1 % or less of orthochlorobenzalmalononitrile (CS), or 1 % or less of chloroacetophenone (CN), except in individual containers with a net weight of 20 g or less; liquid pepper except when packaged in individual containers with a net weight of 85,05 g or less; smoke bombs; non-irritant smoke flares, canisters, grenades and charges; and other pyrotechnic articles having dual military and commercial use, and components specially designed therefor, other than those specified in the CML or in Regulation (EU) 2021/821.

X.A.IX.002 Fingerprinting powders, dyes, and inks.

X.A.IX.003 Protective and detection equipment not specially designed for military use and not controlled by 1A004 or 2B351[24], as follows (see List of Items Controlled), and components not specially designed for military use and not controlled by 1A004 or 2B351 therefor:

a. Personal radiation monitoring dosimeters; or

b. Equipment limited by design or function to protect against hazards specific to civil industries, such as mining, quarrying, agriculture, pharmaceuticals, medical, veterinary, environmental, waste management, or to the food industry.

[24] Ref. Annex I to Regulation (EU) 2021/821

Note: X.A.IX.003 does not control items for protection against chemical or biological agents that are consumer goods, packaged for retail sale or personal use, or medical products, such as latex exam gloves, latex surgical gloves, liquid disinfectant soap, disposable surgical drapes, surgical gowns, surgical foot covers, and surgical masks.

X.A.IX.004 Specific processing equipment, other than those specified in the CML or in Regulation (EU) 2021/821, as follows (see List of Items Controlled):

a. Radiation detection, monitoring and measurement equipment, other than those specified in the CML or in Regulation (EU) 2021/821; or

b. Radiographic detection equipment such as X-ray converters, and storage phosphor image plates.

X.B.IX.001 Specific processing equipment, other than those specified in the CML or in Regulation (EU) 2021/821, as follows (see List of Items Controlled):

a. Electrolytic cells for fluorine production, other than those specified in the CML or in Regulation (EU) 2021/821;

b. Particle accelerators;

c. Industrial process control hardware/systems designed for power industries, other than those specified in the CML or in Regulation (EU) 2021/821;

d. Freon and chilled water cooling systems capable of continuous cooling duties of 29,3 kW/hr or greater; or

e. Equipment for the production of structural composites, fibres, prepregs and preforms.

X.C.IX.001 Separate chemically defined compounds according to Note 1 to Chapters 28 and 29 of the Combined Nomenclature:

a. In concentrations of 95 % weight or greater, as follows:

1. Ethylene dichloride (CAS 107-06-2);

2. Nitromethane (CAS 75-52-5);

3. Picric acid (CAS 88-89-1);

4. Aluminium chloride (CAS 7446-70-0);

5. Arsenic (CAS 7440-38-2);

6. Arsenic trioxide (CAS 1327-53-3);

7. Bis(2-chloroethyl)ethylamine hydrochloride (CAS 3590-07-6);

8. Bis(2-chloroethyl)methylamine hydrochloride (CAS 55-86-7);

9. Tris(2-chloroethyl)amine hydrochloride (CAS 817-09-4);

10. Tributylphosphite (CAS 102-85-2);

11. Isocyanatomethane (CAS 624-83-9);

12. Quinaldine (CAS 91-63-4);

13. 2-bromochloroethane (CAS 107-04-0);

14. Benzil (CAS 134-81-6);

15. Diethyl ether (CAS 60-29-7);

16. Dimethyl ether (CAS 115-10-6);

17. Dimethylaminoethanol (CAS 108-01-0);

18. 2-methoxyethanol (CAS 109-86-4);

19. Butyrylcholinesterase (BCHE);

20. Diethylenetriamine (CAS 111-40-0);

21. Dichloromethane (CAS 75-09-2);

22. Dimethylaniline (CAS 121-69-7);

23. Ethyl bromide (CAS 74-96-4);

24. Ethyl chloride (CAS 75-00-3);

25. Ethylamine (CAS 75-04-7);

26. Hexamine (CAS 100-97-0);

27. Isopropanol (CAS 67- 63-0);

28. Isopropyl bromide (CAS 75-26-3);

29. Isopropyl ether (CAS 108-20-3);

30. Methylamine (CAS 74-89-5);

31. Methyl bromide (CAS 74-83-9);

32. Monoisopropylamine (CAS 75-31-0);

33. Obidoxime chloride (CAS 114-90-9);

34. Potassium bromide (CAS 7758-02-3);

35. Pyridine (CAS 110-86-1);

36. Pyridostigmine bromide (CAS 101-26-8);

37. Sodium bromide (CAS 7647-15-6);

38. Sodium metal (CAS 7440-23-5);

39. Tributylamine (CAS 102-82-9);

40. Triethylamine (CAS 121-44-8); or

41. Trimethylamine (CAS 75-50-3).

b. In concentrations of 90 % weight or greater, as follows:

1. Acetone (CAS 67-64-1);

2. Acetylene (CAS 74-86-2);

3. Ammonia (CAS 7664-41-7);

4. Antimony (CAS 7440-36-0);

5. Benzaldehyde (CAS 100-52-7);

6. Benzoin (CAS 119-53-9);

7. 1-Butanol (CAS 71-36-3);

8. 2-Butanol (CAS 78-92-2);

9. Iso-Butanol (CAS 78-83-1);

10. Tert-Butanol (CAS 75-65-0);

11. Calcium carbide (CAS 75-20-7);

12. Carbon monoxide (CAS 630-08-0);

13. Chlorine (CAS 7782-50-5);

14. Cyclohexanol (CAS 108-93-0);

15. Dicyclohexylamine (CAS 101-83-7);

16. Ethanol (CAS 64-17-5);

17. Ethylene (CAS 74-85-1);

18. Ethylene oxide (CAS 75-21-8);

19. Fluoroapatite (CAS 1306-05-4);

20. Hydrogen chloride (CAS 7647-01-0);

21. Hydrogen sulfide (CAS 7783-06-4);

22. Mandelic acid (CAS 90-64-2);

23. Methanol (CAS 67-56-1);

24. Methyl chloride (CAS 74-87-3);

25. Methyl iodide (CAS 74-88-4);

26. Methyl mercaptan (CAS 74-93-1);

27. Monoethyleneglycol (CAS 107-21-1);

28. Oxalyl chloride (CAS 79-37-8);

29. Potassium sulphide (CAS 1312-73-8);

30. Potassium thiocyanate (CAS 333-20-0);

31. Sodium hypochlorite (CAS 7681-52-9);

32. Sulphur (CAS 7704-34-9);

33. Sulphur dioxide (CAS 7446-09-5);

34. Sulphur trioxide (CAS 7446-11-9);

35. Thiophosphoryl chloride (CAS 3982-91-0);

36. Tri-isobutyl phosphite (CAS 1606-96-8);

37. White phosphorus (CAS 12185-10-3);

38. Yellow phosphorus (CAS 7723-14-0);

39. Mercury (CAS 7439-97-6);

40. Barium chloride (CAS 10361-37-2);

41. Sulphuric acid (CAS 7664-93-9);

42. 3,3-dimethyl-1-butene (CAS 558-37-2);

43. 2,2-dimethylpropanal (CAS 630-19-3);

44. 2,2-dimethylpropylchloride (CAS 753-89-9);

45. 2-methylbutene (CAS 26760-64-5);

46. 2-chloro-3-methylbutane (CAS 631-65-2);

47. 2,3-dimethyl-2,3-butanediol (CAS 76-09-5);

48. 2-methyl-2-butene (CAS 513-35-9);

49. Butyl lithium (CAS 109-72-8);

50. Bromo(methyl)magnesium (CAS 75-16-1);

51. Formaldehyde (CAS 50-00-0);

52. Diethanolamine (CAS 111-42-2);

53. Dimethylcarbonate (CAS 616-38-6);

54. Methyldiethanolamine hydrochloride (CAS 54060-15-0);

55. Diethylamine hydrochloride (CAS 660-68-4);

56. Diisopropylamine hydrochloride (CAS 819-79-4);

57. 3-Quinuclidinone hydrochloride (CAS 1193-65-3);

58. 3-Quinuclidinol hydrochloride (CAS 6238-13-7);

59. (R)-3- Quinuclidinol hydrochloride (CAS 42437-96-7);

60. N,N-Diethylaminoethanol hydrochloride (CAS 14426-20-1);

61. Dialkyl(≤C10) chlorophosphates;

62. Dialkyl(≤C10) fluorophosphates;

63. N,N-Methylisopropylacetamidine (CAS 1339185-57-7);

64. N,N-Methylethylacetamidine (CAS 1339632-40-4);

65. N,N-Ethylisopropylacetamidine(CAS 1339156-10-3);

66. N,N-Methylpropylacetamidine(CAS 1344238-28-3);

67. N,N-Ethylpropylacetamidine(CAS 1339737-43-7);

68. N,N-Isopropylpropylacetamidine(CAS 1341389-98-7);

69. N,N-Methylethylpropanamidine (CAS 1339424-26-8);

70. N,N-Ethylisopropylpropanamidine (CAS 1344354-09-1);

71. N,N-Methylpropylpropanamidine (CAS 1340216-25-2);

72. N,N-Ethylpropylpropanamidine (CAS 1341493-60-4);

73. N,N-Isopropylpropylpropanamidine (CAS 1343225-93-3);

74. N,N-Methylisopropylpropanamidine (CAS 1339042-55-5);

75. N,N-Methylethylbutanamidine (CAS 1341049-51-1);

76. N,N-Methylpropylbutanamidine (CAS 1343721-02-7);

77. N,N-Ethylpropylbutanamidine (CAS 1343806-12-1);

78. N,N-Isopropylpropylbutanamidine (CAS 1343316-02-8);

79. N,N-Methylisopropylbutanamidine (CAS 1340219-94-4);

80. N,N-Ethylisopropylbutanamidine (CAS 1342204-10-7);

81. N,N-Methylethylisobutanamidine (CAS 1342365-47-2);

82. N,N-Ethylpropylisobutanamidine (CAS 1342566-58-8);

83. N,N-Methylpropylisobutanamidine (CAS 1342270-21-6);

84. N,N-Isopropylpropylisobutanamidine (CAS 1342156-11-9);

85. N,N-Methylisopropylisobutanamidine (CAS 1341992-96-8);

86. N,N-Ethylisopropylisobutanamidine (CAS 1339048-76-8);

87. N,N-Dimethylacetamidine hydrobromide (CAS 1801188-12-4);

88. N,N-Dimethylacetamidine hydrochloride (CAS 2909-15-1);

89. N,N-Diethylacetamidine hydrochloride (CAS 91400-32-7);

90. N,N-Diethylacetamidine hydrobromide (CAS 78053-54-0);

91. N,N-Dimethylpropanamidine dihydrochloride (CAS 79972-73-9); or

92. N,N-Dimethylpropanamidine hydrochloride (CAS 56776-15-9); or

93. Chloroform (CAS 67-66-3).

X.C.IX.002 Fentanyl and its derivatives Alfentanil, Sufentanil, Remifentanil, Carfentanil, and salts thereof.

Note: X.C.IX.002 does not control products identified as consumer goods packaged for retail sale for personal use or packaged for individual use.

X.C.IX.003 Chemical precursors to Central Nervous System Acting Chemicals, as follows:

a. 4-anilino-N-phenethylpiperidine (CAS 21409-26-7); or

b. N-phenethyl-4-piperidone (CAS 39742-60-4).

Notes:

1. X.C.IX.003 does not control "chemical mixtures" containing one or more of the chemicals specified in entry X.C.IX.003 in which no individually specified chemical constitutes more than 1 % by the weight of the mixture.

2. X.C.IX.003 does not control products identified as consumer goods packaged for retail sale for personal use or packaged for individual use.

X.C.IX.004 Fibrous and filamentary materials, not controlled by 1C010 or 1C210[25], for use in "composite" structures and with a specific modulus of $3{,}18 \times 10^6$ m or greater and a specific tensile strength of $7{,}62 \times 10^4$ m or greater.

[25] Ref. Annex I to Regulation (EU) 2021/821

X.C.IX.005 "Vaccines", "immunotoxins", "medical products", "diagnostic and food testing kits", as follows (see List of Items controlled):

a. "Vaccines" containing, or designed for use against, items controlled by 1C351, 1C353 or 1C354;

b. "Immunotoxins" containing items controlled by 1C351.d; or

c. "Medical products" that contain any of the following:

1. "Toxins" controlled by 1C351.d (except for botulinum toxins controlled by 1C351.d.1, conotoxins controlled by 1C351.d.3, or items controlled for CW reasons under 1C351.d.4 or .d.5); or

2. Genetically modified organisms or genetic elements controlled by 1C353.a.3 (except for those that contain, or code for, botulinum toxins controlled by 1C351.d.1 or conotoxins controlled by 1C351.d.3);

d. "Medical products" not controlled by X.C.IX.005.c that contain any of the following:

1. Botulinum toxins controlled by 1C351.d.1;

2. Conotoxins controlled by 1C351.d.3; or

3. Genetically modified organisms or genetic elements controlled by 1C353.a.3 that contain, or code for, botulinum toxins controlled by 1C351.d.1 or conotoxins controlled by 1C351.d.3; or

e. "Diagnostic and food testing kits" containing items controlled by 1C351.d (except for items controlled for CW reasons under 1C351.d.4 or .d.5).

Technical Notes:

1. *"Medical products" are: (1) pharmaceutical formulations designed for testing and human (or veterinary) administration in the treatment of medical conditions, (2) prepackaged for distribution as clinical or medical products, and (3) approved by the European Medicines Agency (EMA) either to be marketed as clinical or medical products or for use as research new drug.*

2. *"Diagnostic and food testing kits" are specifically developed, packaged and marketed for diagnostic or public health purposes. Biological toxins in any other configuration, including bulk shipments, or for any other end-uses are controlled by 1C351.*

X.C.IX.006 Commercial charges and devices containing energetic materials, other than those specified in the CML or in Regulation (EU) 2021/821, and nitrogen trifluoride in a gaseous state (see List of Items Controlled):

a. Shaped charges specially designed for oil well operations, utilizing one charge functioning along a single axis, that upon detonation produce a hole, and

1. Contain any formulation of "controlled materials";

2. Have only a uniform shaped conical liner with an included angle of 90 degrees or less;

3. Contain more than 0,010 kg but less than or equal to 0,090 kg of "controlled materials"; and

4. Have a diameter not exceeding 114,3 cm;

b. Shaped charges specially designed for oil well operations containing less than or equal to 0,010 kg of "controlled materials";

c. Detonation cord or shock tubes containing less than or equal to 0,064 kg/m of "controlled materials";

d. Cartridge power devices, that contain less than or equal to 0,70 kg of "controlled materials" in the deflagration material;

e. Detonators (electric or nonelectric) and assemblies thereof, that contain less than or equal to 0,01 kg of "controlled materials";

f. Igniters, that contain less than or equal to 0,01 kg of "controlled materials";

g. Oil well cartridges, that contain less than or equal to 0,015 kg of "controlled materials";

h. Commercial cast or pressed boosters containing less than or equal to 1,0 kg of "controlled materials";

i. Commercial prefabricated slurries and emulsions containing less than or equal to 10,0 kg and less than or equal to 35 % by weight of ML8 "controlled materials";

j. Cutters and severing tools containing less than or equal to 3,5 kg of "controlled materials";

k. Pyrotechnic devices when designed exclusively for commercial purposes (e.g., theatrical stages, motion picture special effects, and fireworks displays) and containing less than or equal to 3,0 kg of "controlled materials";

l. Other commercial explosive devices and charges not controlled by X.C.IX.006.a through .k containing less than or equal to 1,0 kg of "controlled materials"; or

Note: X.C.IX.006.l includes automotive safety devices; extinguishing systems; cartridges for riveting guns; explosive charges for agricultural, oil and gas operations, sporting goods, commercial mining, or public works purposes; and delay tubes used in the assembly of commercial explosive devices.

m. Nitrogen trifluoride (NF_3) in a gaseous state.

Notes:

1. "Controlled materials" means controlled energetic materials (see 1C011, 1C111, 1C239 or ML8).

2. Nitrogen trifluoride when not in a gaseous state is controlled under ML8.d by the CML.

X.C.IX.007 Mixtures not controlled by 1C350 or 1C450[26] that contain chemicals controlled by 1C350 or 1C450 and medical, analytical, diagnostic, and food testing kits not controlled by 1C350 or 1C450 that contain chemicals controlled by 1C350, as follows (see List of Items Controlled):

a. Mixtures containing the following concentrations of precursor chemicals controlled by 1C350:

1. Mixtures containing 10 % or less, by weight, of any single CWC Schedule 2 chemical controlled by 1C350;

2. Mixtures containing less than 30 %, by weight, of:

a. Any single CWC Schedule 3 chemical controlled by 1C350; or

b. Any single non-CWC precursor chemical controlled by 1C350;

b. Mixtures containing the following concentrations of toxic or precursor chemicals controlled by 1C450:

1. Mixtures containing the following concentrations of CWC Schedule 2 chemicals controlled by 1C450:

a. Mixtures containing 1 % or less, by weight, of any single CWC Schedule 2 chemical controlled by 1C450.a.1 and a.2 (i.e., mixtures containing Amiton or PFIB); or

[26] Ref. Annex I to Regulation (EU) 2021/821

b. Mixtures containing 10 % or less, by weight, of any single CWC Schedule 2 chemical controlled by 1C450.b.1, b.2, b.3, b.4, b.5, or b.6;

2. Mixtures containing less than 30 %, by weight, of any single CWC Schedule 3 chemical controlled by 1C450.a.4, a.5., a.6., a.7, or 1C450.b.8;

c. "Medical, analytical, diagnostic, and food testing kits" that contain precursor chemicals controlled by 1C350 in an amount not exceeding 300 grams per chemical.

Technical Note:

For the purpose of this entry, "medical, analytical, diagnostic, and food testing kits" are pre-packaged materials of defined composition that are specifically developed, packaged and marketed for medical, analytical, diagnostic, or public health purposes. Replacement reagents for medical, analytical, diagnostic, and food testing kits described in X.C.IX.007.c are controlled by 1C350 if the reagents contain at least one of the precursor chemicals identified in that entry in concentrations equal to or greater than the control levels for mixtures indicated in 1C350.

X.C.IX.008 Non-fluorinated polymeric substances, not controlled by 1C008[27], as follows (see List of Items Controlled):

a. Polyarylene ether ketones, as follows:

1. Polyether ether ketone (PEEK);

2. Polyether ketone ketone (PEKK);

3. Polyether ketone (PEK); or

4. Polyether ketone ether ketone ketone (PEKEKK);

b. Not used.

X.C.IX.009 Specific materials, other than those specified in the CML or in Regulation (EU) 2021/821, as follows (see List of Items Controlled):

a. Hardened steel and tungsten carbide precision ball bearings (3 mm or greater diameter);

b. 304 and 316 stainless steel plate, other than those specified in the CML or in Regulation (EU) 2021/821;

c. Monel plate;

d. Tributyl phosphate (CAS 126-73-8);

[27] Ref. Annex I to Regulation (EU) 2021/821

e. Nitric acid (CAS 7697-37-2) in concentrations of 20 % weight or greater;

f. Fluorine (CAS 7782-41-4); or

g. Alpha-emitting radionuclides, other than those specified in the CML or in Regulation (EU) 2021/821.

X.C.IX.010 Aromatic polyamides (aramids) not controlled by 1C010, 1C210 or X.C.IX.004, presented in any of the following forms (see List of Items Controlled):

a. Primary forms;

b. Filament yarn or monofilaments;

c. Filament tows;

d. Rovings;

e. Staple or chopped fibres;

f. Fabrics;

g. Pulp or flocks.

X.C.IX.011 Nanomaterials as follows (see List of Items Controlled):

a. Semiconductor nanomaterials;

b. Composite-based nanomaterials; or

c. Any of the following carbon-based nanomaterials:

1. Carbon nanotubes;

2. Carbon nanofibres;

3. Fullerenes;

4. Graphenes; or

5. Carbon onions.

Notes:For the purpose of X.C.IX.011, nanomaterial means a material that meets at least one of the following criteria:

1. Consists of particles, with one or more external dimensions in the size range 1 – 100 nm for more than 1 % of their number size distribution;

2. Has internal or surface structures in one or more dimensions in the size range 1 – 100 nm; or

3. Has a specific surface area by volume greater than 60 m^2/cm^3, excluding materials consisting of particles with a size lower than 1 nm.

X.C.IX.012 Rare-earth metals and compounds, either in organic or inorganic form, including mixtures whether or not intermixed or interalloyed.

Note 1: Rare-earth metals and compounds include Scandium, Yttrium, Lanthanum, Cerium, Praseodymium, Neodymium, Promethium, Samarium, Europium, Gadolinium, Terbium, Dysprosium, Holmium, Erbium, Thulium, Ytterbium and Lutetium;

Note 2: For the purpose of the control X.C.IX.012 minerals containing rare-earth metals are excluded;

Note 3: X.C.IX.012 does not control mixtures in which no individually metal or compound specified in this entry constitutes more than 5 % by the weight of the mixture.

X.C.IX.013 Tungsten, tungsten carbide and alloys, not controlled by 1C117 or 1C226[28], containing more than 90 % tungsten by weight.

Note 1: For the purpose of the control X.C.IX.013, wire is excluded;

Note 2: For the purpose of the control X.C.IX.013, surgical or medical instruments are excluded.

X.C.IX.014 Lithium and lithium compounds, as follows:

a. Lithium (CAS 7439-93-2);

b. Lithium carbonate (CAS 554-13-2);

c. Lithium hydroxide (CAS 1310-65-2 and CAS 1310-66-3);

[28] Ref. Annex I to Regulation (EU) 2021/821

d. Lithium oxide (CAS 12057-24-8);

e. Lithium cobalt oxide (CAS 12190-79-3);

f. Lithium iron phosphate (CAS 15365-14-7);

g. Lithium manganese oxide (CAS 12057-17-9);

h. Lithium nickel manganese cobalt oxide (CAS 346417-97-8); or

i. Lithium titanate (CAS 12031-82-2).

X.C.IX.015 Ultra-High-Molecular-Weight Polyethylene (UHMWPE), not controlled by 1C010 or 1C210[29], presented in any of the following forms:

a. Primary forms;

b. Filament yarn or monofilaments;

c. Filament tows;

d. Rovings;

e. Staple or chopped fibres;

f. Fabrics;

g. Pulp or flocks.

[29] Ref. Annex I to Regulation (EU) 2021/821

X.D.IX.001 Specific “software”, other than those specified in the CML or in Regulation (EU) 2021/821, as follows (see List of Items Controlled):

a. “Software” specially designed for industrial process control hardware/systems controlled by X.B.IX.001, other than those specified in the CML or in Regulation (EU) 2021/821; or

b. “Software” specially designed for equipment for the production of structural composites, fibres, prepregs and preforms controlled by X.B.IX.001, other than those specified in the CML or in Regulation (EU) 2021/821.

X.E.IX.001 “Technology” for the “development”, “production”, or “use” of fibrous and filamentary materials controlled by X.C.IX.004 and X.C.IX.010.

X.E.IX.002 “Technology” for the “development”, “production”, or “use” of nanomaterials controlled by X.C.IX.011.

Category X – Materials Processing

X.A.X.001 Explosives or detonator detection equipment, both bulk and trace based, consisting of an automated device, or combination of devices for automated decision making to detect the presence of different types of explosives, explosive residue, or detonators; and components, other than those specified in the CML or in Regulation (EU) 2021/821:

a. Explosives detection equipment for "automated decision making" to detect and identify bulk explosives utilizing, but not limited to, X-ray (e.g., computed tomography, dual energy, or coherent scattering), nuclear (e.g., thermal neutron analysis, pulse fast neutron analysis, pulse fast neutron transmission spectroscopy, and gamma resonance absorption), or electromagnetic techniques (e.g., quadropole resonance and dielectrometry);

b. Not used;

c. Detonator detection equipment for automated decision making to detect and identify initiation devices (e.g. detonators, blasting caps) utilizing, but not limited to, X-ray (e.g. dual energy or computed tomography) or electromagnetic techniques.

Note: Explosives or detonation detection equipment in X.A.X.001 includes equipment for screening people, documents, baggage, other personal effects, cargo and/or mail.

Technical Notes:

1. *"Automated decision making" is the ability of the equipment to detect explosives or detonators at the design or operator- selected level of sensitivity and provide an automated alarm when explosives or detonators at or above the sensitivity level are detected.*

2. *This entry does not control equipment that depends on operator interpretation of indicators such as inorganic/organic color mapping of the items(s) being scanned.*

3. *Explosives and detonators include commercial charges and devices controlled by X.C.VIII.004 and X.C.IX.006 and energetic materials controlled by 1C011, 1C111 and 1C239*[30].

X.A.X.002 Concealed object detection equipment operating in the frequency range from 30 GHz to 3 000 GHz and having a spatial resolution of 0,1 mrad (milliradian) up to and including 1 mrad (milliradian) at a standoff distance of 100 m; and components, other than those specified in the CML or in Regulation (EU) 2021/821.

Note: Concealed object detection equipment includes but is not limited to equipment for screening people, documents, baggage, other personal effects, cargo and/or mail.

Technical Note:

The range of frequencies span what is generally considered as the millimetre-wave, submillimetre-wave and terahertz frequency regions.

[30] Ref. Annex I to Regulation (EU) 2021/821

X.A.X.003 Bearings and bearing systems not controlled by 2A001 (see List of Items Controlled):

a. Ball bearings or Solid ball bearings, having tolerances specified by the manufacturer in accordance with ABEC 7, ABEC 7P, or ABEC 7T or ISO Standard Class 4 or better (or equivalents) and having any of the following characteristics:

1. Manufactured for use at operating temperatures above 573 K (300 °C) either by using special materials or by special heat treatment; or

2. With lubricating elements or component modifications that, according to the manufacturer's specifications, are specially designed to enable the bearings to operate at speeds exceeding 2,3 million "DN";

b. Solid tapered roller bearings, having tolerances specified by the manufacturer in accordance with ANSI/AFBMA Class 00 (inch) or Class A (metric) or better (or equivalents) and having either of the following characteristics:

1. With lubricating elements or component modifications that, according to the manufacturer's specifications, are specially designed to enable the bearings to operate at speeds exceeding 2,3 million "DN"; or

2. Manufactured for use at operating temperatures below 219 K (– 54 °C) or above 423 K (150 °C);

c. Gas-lubricated foil bearing manufactured for use at operating temperatures of 561 K (288 °C) or higher and a unit load capacity exceeding 1 MPa;

d. Active magnetic bearing systems;

e. Fabric-lined self-aligning or fabric-lined journal sliding bearings manufactured for use at operating temperatures below 219 K (– 54 °C) or above 423 K (150 °C).

Technical Notes:

1. "DN" is the product of the bearing bore diameter in mm and the bearing rotational velocity in rpm.

2. Operating temperatures include those temperatures obtained when a gas turbine engine has stopped after operation.

X.A.X.004 Piping, fittings and valves made of, or lined with stainless, copper-nickel alloy or other alloy steel containing 10 % or more nickel and/or chromium:

a. Pressure tube, pipe, and fittings of 200 mm or more inside diameter, and suitable for operation at pressures of 3,4 MPa or greater;

b. Pipe valves having all of the following characteristics that are not controlled by 2B350.g[31]:

1. A pipe size connection of 200 mm or more inside diameter; and

[31] Ref. Annex I to Regulation (EU) 2021/821

2. Rated at 10,3 MPa or more.

Notes:

1. See X.D.X.005 for "software" for items controlled under this entry.

2. See 2E001 ("development"), 2E002 ("production"), and X.E.X.003 ("use") for technology for items controlled under this entry.

3. See related controls 2A226, 2B350 and X.B.X.010.

X.A.X.005 Pumps designed to move molten metals by electromagnetic forces.

Notes:

1. See X.D.X.005 for "software" for items controlled under this entry.

2. See 2E001 ("development"), 2E002 ("production"), and X.E.X.003 ("use") for "technology" for items controlled under this entry.

3. Pumps for use in liquid-metal-cooled reactors are controlled by 0A001.

X.A.X.006 "Portable electric generators" and specially designed components.

Technical Note:

"Portable electric generators" – The generators that are in X.A.X.006 are portable – 2 268 kg or less on wheels or transportable in a 2,5 tonnes truck without a special set up requirement.

X.A.X.007 Specific processing equipment, other than those specified in the CML or in Regulation (EU) 2021/821, as follows (see List of Items Controlled):

a. Bellows sealed valves;

b. Not used.

X.B.X.001 "Continuous flow reactors" and their "modular components".

Technical Notes:

1. For the purposes of X.B.X.001, "continuous flow reactors" consist of plug and play systems where reactants are continuously fed into the reactor and the resultant product is collected at the outlet.

2. For purposes of X.B.X.001, "modular components" are fluidic modules, liquid pumps, valves, packed-bed modules, mixer modules, pressure gauges, liquid-liquid separators, etc.

X.B.X.002 Nucleic acid assemblers and synthesizers not controlled by 2B352.i, which are partly or entirely automated, and designed to generate nucleic acids greater than 50 bases.

X.B.X.003 Automated peptide synthesizers capable to work under controlled atmosphere conditions.

X.B.X.004 Numerical control units for machine tools and “numerically controlled” machine tools, other than those specified in the CML or in Regulation (EU) 2021/821 (see List of Items Controlled):

a. “Numerical control” units for machine tools:

1. Having four interpolating axes that can be coordinated simultaneously for contouring control; or

2. Having two or more axes that can be coordinated simultaneously for contouring control and a minimum programmable increment better (less) than 0,001 mm;

3. “Numerical control” units for machine tools having two, three or four interpolating axes that can be coordinated simultaneously for contouring control, and capable of receiving directly (on-line) and processing computer-aided-design (CAD) data for internal preparation of machine instructions; or

b. Motion control boards specially designed for machine tools and having any of the following characteristics:

1. Interpolation in more than four axes;

2. Capable of real-time processing of data to modify tool path, feed rate and spindle data, during the machining operation, by any of the following:

   a. Automatic calculation and modification of part program data for machining in two or more axes by means of measuring cycles and access to source data; or

   b. Adaptive control with more than one physical variable measured and processed by means of a computing model (strategy) to change one or more machining instructions to optimize the process; or

3. Capable of receiving and processing CAD data for internal preparation of machine instructions;

c. "Numerically controlled" machine tools that, according to the manufacturer's technical specifications, can be equipped with electronic devices for simultaneous contouring control in two or more axes and that have both of the following characteristics:

   1. Two or more axes that can be coordinated simultaneously for contouring control; and

   2. Positioning accuracies according to ISO 230/2 (2006), with all compensations available:

      a. Better than 15 μm along any linear axis (overall positioning) for grinding machines;

b. Better than 15 μm along any linear axis (overall positioning) for milling machines; or

c. Better than 15 μm along any linear axis (overall positioning) for turning machines; or

d. Machine tools, as follows, for removing or cutting metals, ceramics or composites, that, according to the manufacturer's technical specifications, can be equipped with electronic devices for simultaneous contouring control in two or more axes:

1. Machine tools for turning, grinding, milling or any combination thereof, having two or more axes that can be coordinated simultaneously for contouring control and having any of the following characteristics:

a. One or more contouring "tilting spindles";

Note: X.B.X.004.d.1.a. applies to machine tools for grinding or milling only.

b. "Camming" (axial displacement) in one revolution of the spindle less (better) than 0,0006 mm total indicator reading (TIR);

Note: X.B.X.004.d.1.b. applies to machine tools for turning only.

c. "Run-out" (out-of-true running) in one revolution of the spindle less (better) than 0,0006 mm total indicator reading (TIR); or

d. The positioning accuracies, with all compensations available, are less (better) than: 0,001° on any rotary axis;

2. Electrical discharge machines (EDM) of the wire feed type that have five or more axes that can be coordinated simultaneously for contouring control.

X.B.X.005 Non-"numerically controlled" machine tools for generating optical quality surfaces, (see List of Items Controlled) and specially designed components therefor:

a. Turning machines using a single point cutting tool and having all of the following characteristics:

1. Slide positioning accuracy less (better) than 0,0005 mm per 300 mm of travel;

2. Bidirectional slide positioning repeatability less (better) than 0,00025 mm per 300 mm of travel;

3. Spindle "run-out" and "camming" less (better) than 0,0004 mm total indicator reading (TIR);

4. Angular deviation of the slide movement (yaw, pitch and roll) less (better) than 2 seconds of arc, TIR, over full travel; and

5. Slide perpendicularity less (better) than 0,001 mm per 300 mm of travel;

Technical Note:

The bidirectional slide positioning repeatability (R) of an axis is the maximum value of the repeatability of positioning at any position along or around the axis determined using the procedure and under the conditions specified in part 2.11 of ISO 230/2: 1988.

b. Fly cutting machines having all of the following characteristics:

1. Spindle "run-out" and "camming" less (better) than 0,0004 mm TIR; and

2. Angular deviation of slide movement (yaw, pitch and roll) less (better) than 2 seconds of arc, TIR, over full travel.

X.B.X.006 Gearmaking and/or finishing machinery not controlled by 2B003 capable of producing gears to a quality level of better than AGMA 11.

X.B.X.007 Dimensional inspection or measuring systems or equipment not controlled by 2B006 or 2B206, as follows (see List of Items Controlled):

a. Manual dimensional inspection machines, having both of the following characteristics:

1. Two or more axes; and

2. A measurement uncertainty equal to or less (better) than (3 + L/300) µm in any axes (L measured length in mm).

X.B.X.008 "Robots" not controlled by 2B007 or 2B207 that are capable of employing feedback information in real-time processing from one or more sensors to generate or modify programs or to generate or modify numerical program data.

X.B.X.009 Assemblies, circuit boards or inserts specially designed for machine tools controlled by X.B.X.004, or for equipment controlled by X.B.X.006, X.B.X.007 or X.B.X.008:

a. Spindle assemblies, consisting of spindles and bearings as a minimal assembly, with radial ("run-out") or axial ("camming") axis motion in one revolution of the spindle less (better) than 0,0006 mm total indicator reading (TIR);

b. Single point diamond cutting tool inserts, having all of the following characteristics:

1. Flawless and chip-free cutting edge when magnified 400 times in any direction;

2. Cutting radius from 0,1 to 5 mm inclusive; and

3. Cutting radius out-of-roundness less (better) than 0,002 mm TIR.

c. Specially designed printed circuit boards with mounted components capable of upgrading, according to the manufacturer's specifications, "numerical control" units, machine tools or feed-back devices to or above the levels specified in X.B.X.004, X.B.X.006, X.B.X.007, X.B.X.008, or X.B.X.009.

Technical Note:

This entry does not control 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.

X.B.X.010 Specific processing equipment, other than those specified in the CML or in Regulation (EU) 2021/821, as follows (see List of Items Controlled):

a. Isostatic presses, other than those specified in the CML or in Regulation (EU) 2021/821;

b. Bellows manufacturing equipment, including hydraulic forming equipment and bellows forming dies;

c. Laser welding machines;

d. MIG welders;

e. E-beam welders;

f. Monel equipment, including valves, piping, tanks and vessels;

g. 304 and 316 stainless steel valves, piping, tanks and vessels;

Note: Fittings are considered part of piping for purposes of X.B.X.010.g.

h. Mining and drilling equipment, as follows:

1. Large boring equipment capable of drilling holes greater than 61 cm in diameter;

2. Large earth-moving equipment used in the mining industry;

i. Electroplating equipment designed for coating parts with nickel or aluminium;

j. Pumps designed for industrial service and for use with an electrical motor of 5 HP or greater;

k. Vacuum valves, piping, flanges, gaskets and related equipment specially designed for use in high-vacuum service, other than those specified in the CML or in Regulation (EU) 2021/821;

l. Spin forming and flow forming machines, other than those specified in the CML or in Regulation (EU) 2021/821;

m. Centrifugal multiplane balancing machines, other than those specified in the CML or in Regulation (EU) 2021/821; or

n. Austenitic stainless steel plate, valves, piping, tanks and vessels.

X.B.X.011 Floor-mounted fume hoods (walk-in style) with a minimum nominal width of 2,5 metres.

X.B.X.012 Class II biosafety cabinets and glove boxes.

X.B.X.013 Batch centrifuges with a rotor capacity of 4 litres or greater, usable with biological materials.

X.B.X.014 Fermenters with an internal volume of 10–20 litres, usable with biological materials.

X.B.X.015 Reaction vessels, reactors, agitators, heat exchangers, condensers, pumps (including single seal pumps), valves, storage tanks, containers, receivers, and distillation or absorption columns that meet performance parameters of the control 2B350[32], regardless of their materials of construction.

Note: For the purpose of the control X.B.X.015, plumbing valves and storage tanks with total internal (geometric) volume less than 1 m^3 (1 000 litres) designed for domestic water or gas systems are excluded.

X.B.X.016 Conventional or turbulent air-flow clean-air rooms and self-contained fan-HEPA filter units that may be used for P3 or P4 (BSL 3, BSL 4, L3, L4) containment facilities.

X.B.X.017 Vacuum pumps with a manufacturer's specified maximum flow-rate greater than 1 m^3/h (under standard temperature and pressure conditions), casings (pump bodies), preformed casing-liners, impellers, rotors, and jet pump nozzles designed for such pumps, in which all surfaces that come into direct contact with the chemicals being processed are made from controlled materials.

X.B.X.018 Laboratory equipment, including parts and accessories for such equipment, for the analysis or detection, destructive or non-destructive, of chemical substances.

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32 Ref. Annex I to Regulation (EU) 2021/821

X.B.X.019 Whole chlor-alkali electrolysis cells – mercury, diaphragm, and membrane.

X.B.X.020 Titanium electrodes (including those with coatings produced from other metal oxides), specially designed for use in chlor-alkali cells.

X.B.X.021 Nickel electrodes (including those with coatings produced from other metal oxides), specially designed for use in chlor-alkali cells.

X.B.X.022 Bipolar titanium nickel electrodes (including those with coatings produced from other metal oxides), specially designed for use in chlor-alkali cells.

X.B.X.023 Asbestos diaphragms specially designed for use in chlor-alkali cells.

X.B.X.024 Fluoropolymer based diaphragms specially designed for use in chlor-alkali cells.

X.B.X.025 Fluoropolymer based ion exchange membranes specially designed for use in chlor-alkali cells.

X.B.X.026 Compressors specially designed to compress wet or dry chlorine, regardless of material of construction.

X.B.X.027 Microwave reactors – Machinery, plant or laboratory equipment, whether or not electrically heated, for the treatment of materials by a process involving a change of temperature such as heating.

X.D.X.001 “Software” specially designed or modified for the “development”, “production” or “use” of equipment controlled by X.A.X.001.

X.D.X.002 "Software" "required" for the "development", "production" or "use" of concealed object detection equipment controlled by X.A.X.002.

X.D.X.003 "Software" specially designed for the "development", "production", or "use" of equipment controlled by X.B.X.004, X.B.X.006, or X.B.X.007, X.B.X.008, and X.B.X.009.

X.D.X.004 Specific "software", as follows (see List of Items Controlled):

a. "Software" to provide adaptive control and having both of the following characteristics:

1. For flexible manufacturing units (FMUs); and

2. Capable of generating or modifying, in real-time processing, programs or data by using the signals obtained simultaneously by means of at least two detection techniques, such as:

a. Machine vision (optical ranging);

b. Infrared imaging;

c. Acoustical imaging (acoustical ranging);

d. Tactile measurement;

e. Inertial positioning;

f. Force measurement; and

g. Torque measurement.

Note: X.D.X.004.a does not control "software" which only provides rescheduling of functionally identical equipment within flexible manufacturing units using pre-stored part programs and a pre-stored strategy for the distribution of the part programs.

b. Not used.

X.D.X.005 "Software" specially designed or modified for the "development," "production," or "use" of items controlled by X.A.X.004 or X.A.X.005.

Note: See 2E001 ("development") for "technology" for "software" controlled under this entry.

X.D.X.006 "Software" specially designed for the "development" or "production" of portable electric generators controlled by X.A.X.006.

X.D.X.007 "Software" for the "development", "production", or "use" of CNC equipment, classified in any of the headings from 8456 to 8465 of the Common Customs Tariff, not covered in X.D.X.003.

X.E.X.001 "Technology" "required" for the "development," "production" or "use" of equipment controlled by X.A.X.002 or "required" for the "development" of "software" controlled by X.D.X.002.

Note: See X.A.X.002 and X.D.X.002 for related commodity and "software" controls.

X.E.X.002 "Technology" for the "use" of equipment controlled by X.B.X.004, X.B.X.006, X.B.X.007, or X.B.X.008.

X.E.X.003 "Technology" according to the General Technology Note for the "use" of equipment controlled by X.A.X.004 or X.A.X.005.

X.E.X.004 "Technology" for the "use" of portable electric generators controlled by X.A.X.006.

Part B

1. Semiconductor devices

CN Code	Description
8541 10	Diodes, other than photosensitive or light-emitting diodes (LED)
8541 21	Transistors, other than photosensitive transistors with a dissipation rate of less than 1 W
8541 29	Other transistors, other than photosensitive transistors
8541 30	Thyristors, diacs and triacs (excl. photosensitive semiconductor devices)
8541 49	Photosensitive semiconductor devices (excluding Photovoltaic generators and cells)
8541 51	Other semiconductor devices: Semiconductor-based transducers
8541 59	Other semiconductor devices
8541 60	Mounted piezo-electric crystals
8541 90	Semiconductor devices: Parts

2. Electronic integrated circuits, manufacturing and testing equipment

CN Code	Description
3818 00	Chemical elements doped for use in electronics, in the form of discs, wafers or similar forms; chemical compounds doped for use in electronics
8486 10	Machines and apparatus for the manufacture of boules or wafers
8486 20	Machines and apparatus for the manufacture of semiconductor devices or of electronic integrated circuits
8486 40	Machines and apparatus specified in note 11(C) to this Chapter
8534 00	Printed circuits
8537 10	Boards, panels, consoles, desks, cabinets and other bases, equipped with two or more apparatus of heading 8535 or 8536, for electric control or the distribution of electricity, including those incorporating instruments or apparatus of Chapter 90, and numerical control apparatus, other than switching apparatus of heading 8517, for a voltage not exceeding 1 000 V
8542 31	Processors and controllers, whether or not combined with memories, converters, logic circuits, amplifiers, clock and timing circuits, or other circuits
8542 32	Memories
8542 33	Amplifiers
8542 39	Other Electronic Integrated Circuits
8542 90	Electronic integrated circuits: Parts
8543 20	Signal generators
9027 50	Other instruments and apparatus using optical radiation (UV, visible, IR)
9030 20	Oscilloscopes and oscillographs
9030 32	Multimeters with recording device
9030 39	Instruments and apparatus for measuring or checking voltage, current, resistance or electrical power, with recording device
9030 82	Instruments and apparatus for measuring or checking semiconductor wafers or devices

3. Photographic cameras, sensors and optical components

CN Code	Description
8525 89	Other television cameras, digital cameras and video camera recorders
8529 90	Other parts suitable for use solely or principally with the apparatus of headings 8524 to 8528
9006 30	Cameras specially designed for underwater use, for aerial survey or for medical or surgical examination of internal organs; comparison cameras for forensic or criminological purposes
9006 91	Parts and accessories for cameras
9013 10	Telescopic sights for fitting to arms; periscopes; telescopes designed to form parts of machines, appliances, instruments or apparatus of this Chapter or Section XVI
9013 80	Other optical devices, appliances and instruments
9025 19	Other thermometers and pyrometers, not combined with other instruments
9032 10	Thermostats

4. Other electrical/magnetic components

CN Code	Description
8501 32	DC motors and DC generators of an output exceeding 750 W but not exceeding 75 kW (excluding photovoltaic generators)
8504 31	Transformers having a power handling capacity not exceeding 1 kVA (excluding liquid dielectric transformers)
8504 40	Static converters
8505 11	Permanent magnets and articles intended to become permanent magnets after magnetisation; of metal
8529 10	Aerials and aerial reflectors of all kinds; parts suitable for use therewith
8532 21	Other fixed capacitors of tantalum
8532 22	Aluminium electrolytic fixed electrical capacitors (excluding power capacitors)
8532 24	Ceramic dielectric multilayer capacitors
8533 21	Fixed electrical resistors for a power handling capacity not exceeding 20 W (excluding heating resistors, and fixed carbon resistors)
8533 40	Electrical variable resistors, including rheostats and potentiometers (excluding wirewound variable resistors and heating resistors)
8536 41	Relays, for a voltage not exceeding 60 V
8536 49	Relays for a voltage exceeding 60 V but not exceeding 1 000 V
8536 50	Other switches
8536 69	Plugs and sockets
8536 90	Other apparatus for switching or protecting electrical circuits, or for making connections to or in electrical circuits (for example, switches, relays, fuses, surge suppressors, plugs, sockets, lamp holders and other connectors, junction boxes), for a voltage not exceeding 1 000 V; connectors for optical fibres, optical fibre bundles or cables
8543 70 02	Microwave amplifiers
8543 70 04	Digital flight-data recorders
8543 70 30	Aerial amplifiers
8548 00	Electrical parts of machinery or apparatus, not specified or included elsewhere in Chapter 85

5. Machine tools, additive manufacturing equipment, and related items

CN Code	Description
8205 59 80	Hand tools, including glaziers' diamonds, excluding household tools, and tool for masons, moulders, cement workers, plasterers and painters
8456 11	Machine tools for working any material by removal of material, operated by laser
8457 10	Machining centres for working metal
8458 11	Horizontal lathes, including turning centres, for removing metal, numerically controlled
8458 91	Lathes (including turning centres) for removing metal, numerically controlled (excluding horizontal lathes)
8459 61	Milling machines for metals, numerically controlled (excluding lathes and turning centres of heading 8458, way-type unit head machines, drilling machines, boring-milling machines, boring machines, and knee-type milling machines)
8466 10	Tool holders, for any type of tool for working in the hand and for machine tools; self-opening dieheads
8466 93	Parts and accessories suitable for use solely or principally with the machines of headings 8456 to 8461, n.e.s.
8485 20	Machines for additive manufacturing by plastics or rubber deposit
8485 30	Machines for additive manufacturing by plaster, cement, ceramics or glass deposit
8485 90	Parts of machines for additive manufacturing

6. Energetic materials and precursors

CN Code	Description
2829 90	Perchlorates; bromates and perbromates; iodates and periodates
4706 10	Pulps of fibres derived from recovered (waste and scrap) paper or paperboard or of other fibrous cellulosic material: Cotton linters pulp

7. Electronic devices, modules and assemblies

CN Code	Description
8471 50	Processing units other than those of subheading 8471 41 or 8471 49, whether or not containing in the same housing one or two of the following types of unit: storage units, input units, output units
8471 70 98	Other storage units
8471 80	Units for automatic data-processing machines (excl. processing units, input or output units and storage units)
8517 62	Machines for the reception, conversion and transmission or regeneration of voice, images or other data, including switching and routing apparatus
8517 69	Other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network
8517 79	Parts of telephone sets, telephones for cellular networks or for other wireless networks and of other apparatus for the transmission or reception of voice, images or other data, excluding aerials and aerial reflectors of all kinds and their parts
8526 91	Radio navigational aid apparatus
9014 20	Instruments and appliances for aeronautical or space navigation (other than compasses)
9014 80	Other navigational instruments and appliances

8. Chemicals, metals, alloys, composites and other advanced materials

CN Code	Description
2610 00	Chromium ores and concentrates
2819 10	Chromium trioxide
2819 90	Other chromium oxides and hydroxides
8112 21	Chromium: unwrought; powders
8112 22	Chromium: Waste and scrap
8112 29	Chromium: Other
8112 41	Unwrought rhenium and rhenium waste, scrap and powders
8112 49	Rhenium, other than unwrought, waste, scrap and powders

9. Machinery parts, assemblies and components

CN Code	Description
8482 10	Ball bearings
8482 20	Tapered roller bearings, including cone and tapered roller assemblies
8482 30	Spherical roller bearings
8482 50	Other cylindrical roller bearings, including cage and roller assemblies

10. Miscellaneous

CN Code	Description
8807 30	Other parts of aeroplanes, helicopters or unmanned aircraft

’;

(2) in Annex Vb, the heading is replaced by the following:

'List of partner countries referred to in Articles 1bb(7); 1e(4), 1f(4), 1fc(4), 1ga(4); 1jc(9), 1jc(13) and 1s(4)';

(3) in Annex Vba, the heading is replaced by the following:

'List of countries referred to in Articles 1za(2), 8g(1), 8ga(2) and 7(2a)';

(4) Annex XIVa is replaced by the following:

'ANNEX XIVa

List of goods and technology as referred to in Article 1s(1a)

on the prohibition of transit via Belarus

CN code	Description
8407 10	Spark-ignition reciprocating or rotary internal combustion piston engine, for aircraft
8409 10	Parts suitable for use solely or principally with internal combustion piston engine for aircraft
8409 99	Parts suitable for use solely or principally with compression-ignition internal combustion piston engine (diesel or semi-diesel engine), n.e.s.
8412 21	Hydraulic power engines and motors, linear acting (cylinders)
8413 50	Reciprocating positive displacement pumps for liquids, power-driven, n.e.s.
8421 23	Oil or petrol-filters for internal combustion engines
8421 31	Intake air filters for internal combustion engines

CN code	Description
8425 11	Pulley tackle and hoists other than skip hoists or hoists of a kind used for raising vehicles, powered by electric motor
8428 39	Continuous-action elevators and conveyors, for goods or materials (excluding those for underground use and bucket, belt or pneumatic types)
8429 59	Self-propelled mechanical shovels, excavators and shovel loaders (excluding machinery with a 360° revolving superstructure and front-end shovel loaders)
8431 39	Parts suitable for use solely or principally with the machinery of heading 8428, (excluding parts of lifts, skip hoists or escalators), n.e.s.
8466 20	Work holders for machine tools
8467 29	Electromechanical tools for working in the hand, with self-contained electric motor (excluding saws and drills)
8471 30	Portable automatic data-processing machines, weighing not more than 10 kg, consisting of at least a central processing unit, a keyboard and a display
8471 70	Storage units for automatic data-processing machines
8474 39	Machinery for mixing or kneading solid mineral substances, including those in powder or paste form (excluding concrete and mortar mixers, machines for mixing mineral substances with bitumen and calenders)
8481 20	Valves for oleohydraulic or pneumatic transmission
8482 99	Parts of ball or roller bearings (excluding balls, needles and rollers)
8483 50	Flywheels and pulleys, including pulley blocks
8502 20	Generating sets with spark-ignition internal combustion piston engines
8507 10	Lead-acid accumulators of a kind used for starting piston engines
8511 10	Sparking plugs of a kind used for spark-ignition or compression-ignition internal combustion engines

’;

(5) Annex XVIII is replaced by the following:

‘ANNEX XVIII

List of goods and technologies which could contribute to the enhancement of Belarusian industrial capacities referred to in Article 1bb

CN code	Description
0601	Bulbs, tubers, tuberous roots, corms, crowns and rhizomes, dormant, in growth or in flower, chicory plants and roots other than roots of heading 1212
0602 30	Rhododendrons and azaleas, grafted or not
0602 40	Roses, grafted or not
0602 90	Other live plants (including their roots), cuttings and slips; mushroom spawn – Other
0604 20	Foliage, branches and other parts of plants, without flowers or flower buds, and grasses, mosses and lichens, being goods of a kind suitable for bouquets or for ornamental purposes, fresh, dried, dyed, bleached, impregnated or otherwise prepared – Fresh
2508	Clays, andalusite, kyanite and sillimanite, whether or not calcined; mullite; chamotte or dinas earths (excl. kaolin and other kaolinic clays, and expanded clay)
2509	Chalk
2512	Siliceous fossil meals (for example, kieselguhr, tripolite and diatomite) and similar siliceous earths, whether or not calcined, of an apparent specific gravity of 1 or less
2515	Marble, travertine, ecaussine and other calcareous monumental or building stone of an apparent specific gravity of ≥ 2,5, and alabaster, whether or not roughly trimmed or merely cut, by sawing or otherwise, into blocks or slabs of a square or rectangular shape
2518	Dolomite, whether or not calcined or sintered, including dolomite roughly trimmed or merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape
2519	Natural magnesium carbonate (magnesite); fused magnesia; dead-burned “sintered” magnesia, whether or not containing small quantities of other oxides added before sintering; other magnesium oxide, whether or not pure

CN code	Description
2520	Gypsum; anhydrite; plasters (consisting of calcined gypsum or calcium sulphate), whether or not coloured, with or without small quantities of accelerators or retarders
2521	Limestone flux; limestone and other calcareous stone, of a kind used for the manufacture of lime or cement
2522	Quicklime, slaked lime and hydraulic lime other than calcium oxide and hydroxide of heading 2825
2525	Mica, whether or not rifted into sheets or splittings; mica waste
2526	Natural steatite, whether or not roughly trimmed or merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape; talc
2530 20	Kieserite, epsomite (natural magnesium sulphates)
2602	Manganese ores
2615	Niobium, tantalum, vanadium or zirconium ores and concentrates
2701	Coal; briquettes, ovoids and similar solid fuels manufactured from coal
2702	Lignite, whether or not agglomerated, excluding jet
2703	Peat (including peat litter), whether or not agglomerated
2704	Coke and semi-coke of coal, of lignite or of peat, whether or not agglomerated; retort carbon
2707 30	Xylol (xylenes)
2708	Pitch and Pitch coke, obtained from coal tar or from other mineral tars
2710	Petroleum oils and oils obtained from bituminous minerals (excl. crude); preparations containing ≥ 70 % by weight of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations, n.e.s.; waste oils containing mainly petroleum or bituminous minerals
2712	Petroleum jelly, paraffin wax, micro-crystalline petroleum wax, slack wax, ozokerite, lignite wax, peat wax, other mineral waxes, and similar products obtained by synthesis or by other processes, whether or not coloured

CN code	Description
2715	Bituminous mastics, cut-backs and other bituminous mixtures based on natural asphalt, on natural bitumen, on petroleum bitumen, on mineral tar or on mineral tar pitch – Other
Ex 2804	Hydrogen and other non-metals (excluding rare gases)
2806	Hydrogen chloride “hydrochloric acid”; chlorosulphuric acid
2811	Other inorganic acids and other inorganic oxygen compounds of non-metals
2813	Sulphides of non-metals; commercial phosphorus trisulphide
2814	Ammonia, anhydrous or in aqueous solution
2815	Sodium hydroxide “caustic soda”, potassium hydroxide “caustic potash”; peroxides of sodium or potassium
2818 30	Aluminium hydroxide
2819	Chromium oxides and hydroxides
2820	Manganese oxides
2825	Hydrazine and hydroxylamine and their inorganic salts; inorganic bases, metal oxides, hydroxides and peroxides, n.e.s.
2827	Chlorides, chloride oxides and chloride hydroxides; bromides and bromide oxides; iodides and iodide oxides
2828	Hypochlorites; commercial calcium hypochlorite; chlorites; hypobromites
2829	Chlorates and perchlorates; bromates and perbromates; iodates and periodates
2832 20	Sulphites (excluding sodium)
2833	Sulphates; alums; peroxosulphates “persulphates”
2834	Nitrites; nitrates
2836	Carbonates; peroxocarbonates “percarbonates”; commercial ammonium carbonate containing ammonium carbamate
2839	Silicates; commercial alkali metal silicates

CN code	Description
2840 30	Peroxoborates (perborates)
2841	Salts of oxometallic or peroxometallic acids
2843	Colloidal precious metals; inorganic or organic compounds of precious metals, whether or not chemically defined; amalgams of precious metals
2846	Compounds, inorganic or organic, of rare-earth metals, of yttrium or of scandium or of mixtures of these metals
2847	Hydrogen peroxide, whether or not solidified with urea
2901	Acyclic hydrocarbons
2902	Cyclic hydrocarbons
2903	Halogenated derivatives of hydrocarbons
2904	Sulphonated, nitrated or nitrosated derivatives of hydrocarbons, whether or not halogenated
2905	Acyclic alcohols and their halogenated, sulphonated, nitrated or nitrosated derivatives
2906	Cyclic alcohols and their halogenated, sulphonated, nitrated or nitrosated derivatives
2907	Phenols; phenol-alcohols
2909	Ethers, ether-alcohols, ether-phenols, ether-alcohol-phenols, alcohol peroxides, ether peroxide, ketone peroxides, whether or not chemically defined, and their halogenated, sulphonated, nitrated or nitrosated derivatives
2910	Epoxides, epoxyalcohols, epoxyphenols and epoxyethers, with a three-membered ring, and their halogenated, sulphonated, nitrated or nitrosated derivatives
2911	Acetals and hemiacetals, whether or not with other oxygen function, and their halogenated, sulphonated, nitrated or nitrosated derivatives
2912	Aldehydes, whether or not with other oxygen function; cyclic polymers of aldehydes; paraformaldehyde

CN code	Description
2914	Ketones and quinones, whether or not with other oxygen function, and their halogenated, sulphonated, nitrated or nitrosated derivatives
2915	Saturated acyclic monocarboxylic acids and their anhydrides, halides, peroxides and peroxyacids; their halogenated, sulphonated, nitrated or nitrosated derivatives
2916	Unsaturated acyclic monocarboxylic acids, cyclic monocarboxylic acids, their anhydrides, halides, peroxides and peroxyacids; their halogenated, sulphonated, nitrated or nitrosated derivatives
2917	Polycarboxylic acids, their anhydrides, halides, peroxides and peroxyacids; their halogenated, sulphonated, nitrated or nitrosated derivatives
2920	Esters of inorganic acids of non-metals and their salts; their halogenated, sulphonated, nitrated or nitrosated derivatives
2921 22	Hexamethylenediamine and its salts
2921 41	Aniline and its salts
2922 11	Monoethanolamine and its salts
2922 43	Anthranilic acid and its salts
2923 20	Lecithins and other phosphoaminolipids
2924	Carboxyamide-function compounds; amide-function compounds of carbonic acid
2925	Carboxyimide-function compounds, incl. saccharin and its salts, and imine-function compounds
2926	Nitrile-function compounds
2930	Organo-sulphur compounds
2933 29	Heterocyclic compounds with nitrogen hetero-atom[s] only, containing an unfused imidazole ring, whether or not hydrogenated, in the structure (excl. hydantoin and its derivatives, and products of subheading 3002 10)
2933 54	Other derivatives of malonylurea (barbituric acid); salts thereof
2933 71	6-Hexanelactam (epsilon-caprolactam)

CN code	Description
2933 79	Lactams (excl. 6-hexanelactam “epsilon-caprolactam”, clobazam (inn), methyprylon (inn), and inorganic or organic compounds of mercury)
2933 99	Heterocyclic compounds with nitrogen hetero-atom[s] only (excl. those containing an unfused pyrazole, imidazole, pyridine or triazine ring, whether or not hydrogenated, a quinoline or isoquinoline ring-system, not further fused, whether or not hydrogenated, a pyrimidine ring, whether or not hydrogenated, or piperazine ring in the structure, and lactams, alprazolam (inn), camazepam (inn), chlordiazepoxide (inn), clonazepam (inn), clorazepate, delorazepam (inn), diazepam (inn), estazolam (inn), ethyl loflazepate (inn), fludiazepam (inn), flunitrazepam (inn), flurazepam (inn), halazepam (inn), lorazepam (inn), lormetazepam (inn), mazindol (inn), medazepam (inn), midazolam (inn), nimetazepam (inn), nitrazepam (inn), nordazepam (inn), oxazepam (inn), pinazepam (inn), prazepam (inn), pyrovalerone (inn), temazepam (inn), tetrazepam (inn) and triazolam (inn), salts thereof and azinphos-methyl (iso))
3201	Tanning extracts of vegetable origin; tannins and their salts, ethers, esters and other derivatives
3202	Synthetic organic tanning substances; inorganic tanning substances; tanning preparations, whether or not containing natural tanning substances; enzymatic preparations for pre-tanning
3203	Colouring matter of vegetable or animal origin, incl. dye extracts (excl. animal black), whether or not chemically defined; preparations based on colouring matter of vegetable or animal origin of a kind used to dye fabrics or produce colorant preparations (excl. preparations of heading 3207, 3208, 3209, 3210, 3213 and 3215) – Other
3204 90	Synthetic organic colouring matter, whether or not chemically defined; preparations as specified in note 3 to this Chapter based on synthetic organic colouring matter; synthetic organic products of a kind used as fluorescent brightening agents or as luminophores, whether or not chemically defined
3205	Colour lakes (other than chinese or japanese lacquer and paints); preparations based on colour lakes of a kind used to dye fabrics or produce colorant preparations (excl. preparations of heading 3207, 3208, 3209, 3210, 3213 and 3215)

CN code	Description
3206 41	Ultramarine and preparations based thereon of a kind used for colouring any material or produce colorant preparations (excl. preparations of heading 3207, 3208, 3209, 3210, 3213 and 3215)
3206 49	Inorganic or mineral colouring matter, n.e.s.; preparations based on inorganic or mineral colouring matter of a kind used for colouring any material or produce colorant preparations, n.e.s. (excl. preparations of heading 3207, 3208, 3209, 3210, 3213 and 3215 and inorganic products of a kind used as liminophores) – Other
3207	Prepared pigments, prepared opacifiers and prepared colours, vitrifiable enamels and glazes, engobes, liquid lustres and similar preparations of a kind used in the ceramic, enamelling or glass industry; glass frit and other glass in the form of powder, granules or flakes
3208	Paints and varnishes, incl. enamels and lacquers, based on synthetic polymers or chemically modified natural polymers, dispersed or dissolved in a non-aqueous medium; solutions of products of headings 3901 to 3913 in volatile organic solvents, containing > 50 % solvent by weight (excl. solutions of collodion)
3209	Paints and varnishes, incl. enamels and lacquers, based on synthetic polymers or chemically modified natural polymers, dispersed or dissolved in an aqueous medium
3210	Other paints and varnishes (including enamels, lacquers and distempers); prepared water pigments of a kind used for finishing leather
3212 90	Pigments (including metallic powders and flakes) dispersed in non-aqueous media, in liquid or paste form, of a kind used in the manufacture of paints (including enamels); stamping foils; dyes and other colouring matter put up in forms or packings for retail sale – Other
3214	Glaziers' putty, grafting putty, resin cements, caulking compounds and other mastics; painters' fillings; non-refractory surfacing preparations for façades, indoor walls, floors, ceilings or the like
3215 11	Printing ink – Black
3215 19	Printing ink – Other

CN code	Description
3403	Lubricant preparations, incl. cutting-oil preparations, bolt or nut release preparations, anti-rust or anti-corrosion preparations and mould-release preparations based on lubricants; textile lubricant preparations and preparations of a kind used for the oil or grease treatment of textile materials, leather, furskins or other materials (excl. preparations containing, as basic constituents, ≥ 70 % petroleum oil or bituminous mineral oil by weight)
3505 10	Dextrins and other modified starches
3506 99	Prepared glues and other prepared adhesives, not elsewhere specified or included; products suitable for use as glues or adhesives, put up for retail sale as glues or adhesives, not exceeding a net weight of 1 kg – Other
3604	Fireworks, signalling flares, rain rockets, fog signals and other pyrotechnic articles
3605	Matches, other than pyrotechnic articles of heading 3604
3606	Ferro-cerium and other pyrophoric alloys in all forms; articles of combustible materials as specified in note 2 to Chapter 36
3701 20	Instant print film
3701 91	For colour photography (polychrome)
3702	Photographic film in rolls, sensitised, unexposed, of any material other than paper, paperboard or textiles; instant print film in rolls, sensitised, unexposed
3703	Photographic paper, paperboard and textiles, sensitised, unexposed
3705	Photographic plates and film, exposed and developed (excl. products made of paper, paperboard or textiles, cinematographic film and ready-to-use printing plates)
3706	Cinematographic film, exposed and developed, whether or not incorporating soundtrack or consisting only of soundtrack
3801 20	Colloidal or semi-colloidal graphite
3806 20	Salts of rosin, of resin acids or of derivatives of rosin or resin acids (excl. salts of rosin adducts)

CN code	Description
3807	Wood tar; wood tar oils; wood creosote; wood naphtha; vegetable pitch; brewer's pitch and similar preparations based on rosin, resin acids or vegetable pitch (excl. burgundy pitch, yellow pitch, stearin pitch, fatty acid pitch, fatty tar and glycerin pitch)
3809	Finishing agents, dye carriers to accelerate the dyeing or fixing of dyestuffs and other products and preparations such as dressings and mordants of a kind used in the textile, paper, leather or like industries, n.e.s.
3810	Pickling preparations for metal surfaces; fluxes and other auxiliary preparations for soldering, brazing or welding; soldering, brazing or welding pastes and powders consisting of metal and other materials; preparations of a kind used as coatings or cores for welding electrodes or rods
3811	Anti-knock preparations, oxidation inhibitors, gum inhibitors, viscosity improvers, anti-corrosive preparations and other prepared additives, for mineral oils, incl. gasoline, or for other liquids used for the same purposes as mineral oils
3812	Prepared rubber accelerators; compound plasticisers for rubber or plastics, not elsewhere specified or included; anti-oxidising preparations and other compound stabilisers for rubber or plastics
3813	Preparations and charges for fire-extinguishers; charged fire-extinguishing grenades (excl. full or empty fire-extinguishing devices, whether or not portable, unmixed chemically undefined products with fire-extinguishing properties in other forms)
3814	Organic composite solvents and thinners, n.e.s.; prepared paint or varnish removers (excl. nail varnish remover)
3815	Reaction initiators, reaction accelerators and catalytic preparations, n.e.s. (excl. rubber accelerators)
3816	Refractory cements, mortars, concretes and similar compositions, including dolomite ramming mix, other than products of heading 3801
3817	Mixed alkylbenzenes and mixed alkylnaphthalenes produced by the alkylation of benzene and naphthalene (excl. mixed isomers of cyclic hydrocarbons)
3819	Hydraulic brake fluids and other prepared liquids for hydraulic transmission not containing petroleum oil or bituminous mineral oil, or containing < 70 % petroleum oil or bituminous mineral oil by weight

CN code	Description
3820	Anti-freezing preparations and prepared de-icing fluids (excl. prepared additives for mineral oils or other liquids used for the same purposes as mineral oils)
3823 13	Tall oil fatty acids, industrial
3824	Prepared binders for foundry moulds or cores; chemical products and preparations for the chemical or allied industries, incl. mixtures of natural products, n.e.s.
3825 90	Residual products of the chemical or allied industries, n.e.s. (excl. waste)
3826	Biodiesel and mixtures thereof, not containing or containing < 70 % by weight of petroleum oils or oils obtained from bituminous minerals
3827 90	Mixtures containing halogenated derivatives of methane, ethane or propane (excl. those of subheadings 3824.71.00 to 3824.78.00)
3901 40	Ethylene-alpha-olefin copolymers, having a specific gravity of < 0,94, in primary forms
3902	Polymers of propylene or of other olefins, in primary forms
3903	Polymers of styrene, in primary forms
3904	Polymers of vinyl chloride or of other halogenated olefins, in primary forms
3905	Polymers of vinyl acetate or of other vinyl esters, in primary forms; other vinyl polymers, in primary forms
3906	Acrylic polymers, in primary forms
3907 29	Polyethers, in primary forms (excl. polyacetals, bis(polyoxythylene) methylphosphonate and goods of 3002)
3907 40	Polycarbonates, in primary forms
3907 70	Poly“lactic acid”, in primary forms
3907 91	Unsaturated polyallyl esters and other polyesters, in primary forms (excl. polycarbonates, alkyd resins, poly“ethylene terephthalate” and poly“lactic acid”)
3908	Polyamides, in primary forms
3909	Amino-resins, phenolic resins and polyurethanes, in primary forms

CN code	Description
3910	Silicones in primary forms
3911	Petroleum resins, coumarone-indene resins, polyterpenes, polysulphides, polysulphones and other polymers and prepolymers produced by chemical synthesis, not else specified, in primary forms
3912	Cellulose and its chemical derivatives, not elsewhere specified or included, in primary forms
3915 20	Waste, parings and scrap, of polymers of styrene
3917	Tubes, pipes and hoses, and fittings therefor (for example joints, elbows, flanges), of plastics
3920	Plates, sheets, film, foil and strip, of non-cellular plastics, not reinforced, laminated, supported or similarly combined with other materials, without backing, unworked or merely surface-worked or merely cut into squares or rectangles
3921	Plates, sheets, film, foil and strip, of plastics, reinforced, laminated, supported or similarly combined with other materials, or of cellular plastic, unworked or merely surface-worked or merely cut into squares or rectangles
3922 90	Bidets, lavatory pans, flushing cisterns and similar sanitary ware, of plastics (excl. baths, shower-baths, sinks, washbasins, lavatory seats and covers)
3925	Builders' ware of plastics, not elsewhere specified or included
4002	Synthetic rubber and factice derived from oils, in primary forms or in plates, sheets or strip; mixtures of natural rubber, balata, gutta-percha, guayule, chicle or similar types of natural rubber with synthetic rubber or factice, in primary forms or in plates, sheets or strip
4005	Compounded rubber, unvulcanised, in primary forms or in plates, sheets or strip
4006 10	"Camel-back" strips of unvulcanised rubber, for retreading rubber tyres
4008 21	Plates, sheets and strip, of non-cellular rubber
4009 12	Tubes, pipes and hoses, of vulcanised rubber (excl. hard rubber), not reinforced or otherwise combined with other materials, with fittings

CN code	Description
4009 41	Tubes, pipes and hoses, of vulcanised rubber (excl. hard rubber), reinforced or otherwise combined with materials other than metal or textile materials, without fittings
4010	Conveyor or transmission belts or belting, of vulcanised rubber
4011 20	New pneumatic tyres, of rubber, of a kind used for buses and lorries
4011 80	New pneumatic tyres, of rubber, of a kind used on construction, mining or industrial handling vehicles and machines
4012	Retreaded or used pneumatic tyres of rubber; solid or cushion tyres, tyre treads and tyre flaps, of rubber
4016 93	Gaskets, washers and other seals, of vulcanised rubber (excl. hard rubber and those of cellular rubber)
4407	Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness of > 6 mm
4408 10	Sheets for veneering, incl. those obtained by slicing laminated wood, for coniferous plywood or for other similar laminated coniferous wood and other coniferous wood, sawn lengthwise, sliced or peeled, whether or not planed, sanded, spliced or end-jointed, of a thickness of ≤ 6 mm
4411 13	Medium density fibreboard "mdf" of wood, of a thickness > 5 mm but ≤ 9 mm
4411 94	Fibreboard of wood or other ligneous materials, whether or not agglomerated with resins or other organic bonding agents, of a density of ≤ 0,5 g/cm^3 (excl. medium density fibreboard "mdf"; particle board, whether or not bonded with one or more sheets of fibreboard; laminated wood with a layer of plywood; cellular wood panels of which both sides are fibreboard; paperboard; identifiable furniture components)
4412	Plywood, veneered panel and similar laminated wood
4416	Casks, barrels, vats, tubs and other coopers' products parts thereof, of wood, incl. staves
4418 40	Wooden shuttering for concrete constructional work (excl. plywood boarding)
4418 60	Posts and beams, of wood
4418 79	Flooring panels, assembled, of wood other than bamboo (excl. multilayer panels and panels for mosaic floors)

CN code	Description
4503	Articles of natural cork
4504	Agglomerated cork (with or without a binding substance) and articles of agglomerated cork
4701	Mechanical wood pulp, not chemically treated
4703	Chemical wood pulp, soda or sulphate (excl. dissolving grades)
4704	Chemical wood pulp, sulphite (excl. dissolving grades)
4705	Wood pulp obtained by a combination of mechanical and chemical pulping processes
4706	Pulps of fibres derived from recovered (waste and scrap) paper or paperboard or of other fibrous cellulosic material
4707	Recovered (waste and scrap) paper or paperboard
4802 20	Paper and paperboard of a kind used as a base for photosensitive, heat-sensitive or electrosensitive paper and paperboard, uncoated, in rolls or in square or rectangular sheets, of any size
4802 40	Wallpaper base, uncoated
4802 58	Uncoated paper and paperboard, of a kind used for writing, printing or other graphic purposes, and non-perforated punchcards and punch-tape paper, in rolls or in square or rectangular sheets, of any size, not containing fibres obtained by a mechanical or chemi-mechanical process or of which ≤ 10 % by weight of the total fibre content consists of such fibres, weighing > 150 g/m^2, n.e.s.
4802 61	Uncoated paper and paperboard, of a kind used for writing, printing or other graphic purposes, and non-perforated punchcards and punch-tape paper, in rolls of any size, of which > 10 % by weight of the total fibre content consists of fibres obtained by a mechanical or chemi-mechanical process, n.e.s.
4804	Uncoated kraft paper and paperboard, in rolls of a width > 36 cm or in square or rectangular sheets with one side > 36 cm and the other side > 15 cm in the unfolded state (excl. goods of heading 4802 or 4803)

CN code	Description
4805	Other paper and paperboard, uncoated, in rolls of a width > 36 cm or in square or rectangular sheets with one side > 36 cm and the other side > 15 cm in the unfolded state, not worked other than as specified in note 3 to this Chapter, n.e.s.
4806	Vegetable parchment, greaseproof papers, tracing papers and glassine and other glazed transparent or translucent papers, in rolls of a width > 36 cm or in square or rectangular sheets with one side > 36 cm and the other side > 15 cm in the unfolded state
4807	Composite paper and paperboard “made by sticking flat layers of paper or paperboard together with an adhesive”, not surface-coated or impregnated, whether or not internally reinforced, in rolls of a width > 36 cm or in square or rectangular sheets with one side > 36 cm and the other side > 15 cm in the unfolded state
4808	Corrugated paper and paperboard “with or without glued flat surface sheets”, creped, crinkled, embossed or perforated, in rolls of a width > 36 cm or in square or rectangular sheets with one side > 36 cm and the other side > 15 cm in the unfolded state (excl. goods of heading 4803)
4809	Carbon paper, self-copy paper and other copying or transfer papers, incl. coated or impregnated paper for duplicator stencils or offset plates, whether or not printed, in rolls of a width > 36 cm or in square or rectangular sheets with one side > 36 cm and the other side > 15 cm in the unfolded state
4810	Paper and paperboard, coated on one or both sides with kaolin “china clay” or other inorganic substances, with or without a binder, and with no other coating, whether or not surface-coloured, surface-decorated or printed, in rolls or in square or rectangular sheets, of any size (excl. all other coated papers and paperboards)
4811	Paper, paperboard, cellulose wadding and webs of cellulose fibres, coated, impregnated, covered, surface-coloured, surface-decorated or printed, in rolls or in square or rectangular sheets, of any size, other than goods of heading 4803, 4809 and 4810
4814 90	Wallpaper and similar wallcoverings of paper, and window transparencies of paper (excl. wallcoverings of paper, consisting of paper coated or covered, on the face side, with a grained, embossed, coloured or design-printed or otherwise decorated layer of plastics)
4819 20	Folding cartons, boxes and cases, of non-corrugated paper or paperboard

CN code	Description
4822	Bobbins, spools, cops and similar supports of paper pulp, paper or paperboard, whether or not perforated or hardened
4823	Paper, paperboard, cellulose wadding and webs of cellulose fibres, in strips or rolls of a width ≤ 36 cm, in rectangular or square sheets of which no side > 36 cm in the unfolded state, or cut to shape other than rectangular or square, and articles of paper pulp, paper, paperboard, cellulose wadding or webs or cellulose fibres, n.e.s.
4906	Plans and drawings for architectural, engineering, industrial, commercial, topographical or similar purposes, being originals drawn by hand; handwritten texts; photographic reproductions on sensitised paper and carbon copies of the foregoing
5105	Wool and fine or coarse animal hair, carded or combed, incl. combed wool in fragments
5106	Carded wool yarn (excl. that put up for retail sale)
5107	Yarn of combed wool (excl. that put up for retail sale)
5112	Woven fabrics of combed wool or of combed fine animal hair (excl. fabrics for technical purposes of heading 5911)
5205	Cotton yarn other than sewing thread, containing ≥ 85 % cotton by weight (excl. that put up for retail sale)
5206 42	Multiple "folded" or cabled cotton yarn containing predominantly, but < 85 % cotton by weight, of combed fibres and with a linear density of 232,56 decitex to < 714,29 decitex "> mn 14 to mn 43" per single yarn (excl. sewing thread and yarn put up for retail sale)
5209 11	Plain woven fabrics of cotton, containing ≥ 85 % cotton by weight and weighing > 200 g/m^2, unbleached
5211	Woven fabrics of cotton, containing predominantly, but < 85 % cotton by weight, mixed principally or solely with man-made fibres and weighing > 200 g/m^2
5308	Yarn of other vegetable textile fibres; paper yarn
5402 63	Multiple "folded" or cabled filament yarn of polypropylene, incl. monofilament of < 67 decitex (excl. sewing thread, yarn put up for retail sale and textured yarn)
5403	Artificial filament yarn, incl. artificial monofilament of < 67 decitex (excl. sewing thread and yarn put up for retail sale)

CN code	Description
5404	Synthetic monofilament of ≥ 67 decitex and with a cross sectional dimension of ≤ 1 mm; strip and the like, e.g. artificial straw, of synthetic textile material, with an apparent width of ≤ 5 mm
5407 30	Woven fabrics of synthetic filament yarn, incl. monofilament of ≥ 67 decitex and with a cross sectional dimension of ≤ 1 mm, consisting of layers of parallel textile yarns superimposed on each other at acute or right angles, the layers being bonded at the intersections of the yarns by an adhesive or by thermal bonding
5501	Synthetic filament tow as specified in note 1 to Chapter 55
5502	Artificial filament tow as specified in note 1 to Chapter 55
5503	Synthetic staple fibres, not carded, combed or otherwise processed for spinning
5504 90	Artificial staple fibres, not carded, combed or otherwise processed for spinning (excl. those of viscose rayon)
5506	Synthetic staple fibres, carded, combed or otherwise processed for spinning
5507	Artificial staple fibres, carded, combed or otherwise processed for spinning
5512 21	Woven fabrics containing ≥ 85 % acrylic or modacrylic staple fibres by weight, unbleached or bleached
5512 99	Woven fabrics containing ≥ 85 % synthetic staple fibres by weight, dyed, made of yarn of different colours or printed (excl. those of acrylic, modacrylic or polyester staple fibres)
5516	Woven fabrics of artificial staple fibres
5601 29	wadding of textile materials and articles thereof (excl. of cotton or man-made fibres; sanitary towels and tampons, napkins and napkin liners for babies and similar sanitary articles, wadding and articles thereof, impregnated or covered with medicated substances or put up for retail for medical, surgical, dental or veterinary purposes, or impregnated, coated or covered with perfumes, make-up, soaps, cleansing agents, etc.)
5601 30	textile flock and dust and mill neps

CN code	Description
5604	Textile-covered rubber thread and cord; textile yarn, strip and the like of heading 5404 and 5405, impregnated, coated, covered or sheathed with rubber or plastics (excl. imitation catgut, thread and cord with fish-hook attachments or otherwise put up as fishing line)
5605	Metallised yarn, whether or not gimped, being textile yarn, or strip or the like of heading 5404 or 5405, of textile fibres, combined with metal in the form of thread, strip or powder or covered with metal (excl. yarns manufactured from a mixture of textile fibres and metal fibres, with anti-static properties; yarns reinforced with metal wire; articles with the character of trimmings)
5607 41	Binder or baler twine, of polyethylene or polypropylene
5801 27	Warp pile fabrics, of cotton (excl. terry towelling and similar woven terry fabrics, tufted textile fabrics and narrow woven fabrics of heading 5806)
5803	Gauze (excl. narrow woven fabrics of heading 5806)
5806 40	Narrow fabrics consisting of warp without weft assembled by means of an adhesive "bolducs", with a width of ≤ 30 cm
5901	Textile fabrics coated with gum or amylaceous substances, of a kind used for the outer covers of books, the manufacture of boxes and articles of cardboard or the like; tracing cloth; prepared painting canvas; buckram and similar stiffened textile fabrics of a kind used for hat foundations (excl. plastic-coated textile fabrics)
5905	Textile wallcoverings
5908	Textile wicks, woven, plaited or knitted, for lamps, stoves, lighters, candles or the like; incandescent gas mantles and tubular knitted gas-mantle fabric for incandescent gas mantles, whether or not impregnated (excl. wax-covered wicks of the taper variety, fuses and detonating fuses, wicks in the form of textile yarn and glass-fibre wicks)
5910	Transmission or conveyor belts or belting, of textile material, whether or not impregnated, coated, covered or laminated with plastics, or reinforced with metal or other material (excl. those of a thickness of < 3 mm and of indeterminate length or cut to length only, and those impregnated, coated, covered or laminated with rubber or made of yarn or cord impregnated or coated with rubber)

CN code	Description
5911 10	Textile fabrics, felt and felt-lined woven fabrics, coated, covered or laminated with rubber, leather or other material, of a kind used for card clothing, and similar fabrics of a kind used for other technical purposes, incl. narrow fabrics made of velvet impregnated with rubber, for covering weaving spindles "weaving beams"
5911 31	Textile fabrics and felts, endless or fitted with linking devices, of a kind used in papermaking or similar machines, e.g. for paper pulp or asbestos-cement, weighing < 650 g/m^2
5911 32	Textile fabrics and felts, endless or fitted with linking devices, of a kind used in papermaking or similar machines, e.g. for paper pulp or asbestos-cement, weighing ≥ 650 g/m^2
5911 40	Straining cloth of a kind used in oil-presses or for similar technical purposes, incl. that of human hair
6001 99	Pile fabrics, knitted or crocheted (excl. cotton or man-made fibres and "long pile" fabrics)
6003	Knitted or crocheted fabrics, of a width ≤ 30 cm (excl. those containing by weight ≥ 5 % of elastomeric yarn or rubber thread, and pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar articles, and knitted or crocheted fabrics, impregnated, coated, covered or laminated)
6005 36	Unbleached or bleached warp knit fabrics of synthetic fibres "incl. those made on galloon knitting machines", of a width of > 30 cm (excl. those containing by weight ≥ 5 % of elastomeric yarn or rubber thread, and pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar articles, and knitted or crocheted fabrics, impregnated, coated, covered or laminated)
6005 44	Printed warp knit fabrics of artificial fibres "incl. those made on galloon knitting machines", of a width of > 30 cm (excl. those containing by weight ≥ 5 % of elastomeric yarn or rubber thread, and pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar articles, and knitted or crocheted fabrics, impregnated, coated, covered or laminated)

CN code	Description
6006 10	Fabrics, knitted or crocheted, of a width of > 30 cm, of wool or fine animal hair (excl. warp knit fabrics "incl. those made on galloon knitting machines", those containing by weight ≥ 5 % of elastomeric yarn or rubber thread, and pile fabrics, incl. "long pile", looped pile fabrics, labels, badges and similar articles, and knitted or crocheted fabrics, impregnated, coated, covered or laminated)
6309	Worn clothing and clothing accessories, blankets and travelling rugs, household linen and articles for interior furnishing, of all types of textile materials, incl. all types of footwear and headgear, showing signs of appreciable wear and presented in bulk or in bales, sacks or similar packings (excl. carpets, other floor coverings and tapestries)
6802 92	Calcareous stone, in any form (excl. marble, travertine and alabaster, tiles, cubes and similar articles of subheading 6802.10, imitation jewellery, clocks, lamps and lighting fittings and parts thereof, original sculptures and statuary, setts, curbstones and flagstones)
6804 23	Millstones, grindstones, grinding wheels and the like, without frameworks, for sharpening, polishing, trueing or cutting, of natural stone (excl. of agglomerated natural abrasives or ceramics, perfumed pumice stones, hand sharpening or polishing stones, and grinding wheels etc. specifically for dental drill engines)
6806	Slag-wool, rock-wool and similar mineral wools; exfoliated vermiculite, expanded clays, foamed slag and similar expanded mineral materials; mixtures and articles of heat-insulating, sound-insulating or soundabsorbing mineral materials, other than those of heading 6811 or 6812 or of Chapter 69
6807	Articles of asphalt or of similar materials, e.g. petroleum bitumen or coal tar pitch
6809 19	Boards, sheets, panels, tiles and similar articles, of plaster or compositions based on plaster (excl. ornamented, faced or reinforced with paper or paperboard only, and with plaster agglomerated articles for heat-insulation, sound-insulation or sound absorption)
6810 91	Prefabricated structural components for building or civil engineering of cement, concrete or artificial stone, whether or not reinforced
6811	Articles of asbestos-cement, cellulose fibre-cement or the like

CN code	Description
6813	Friction material and articles thereof, e.g., sheets, rolls, strips, segments, discs, washers, pads, not mounted, for brakes, clutches or the like, with a basis of asbestos, other mineral substances or cellulose, whether or not combined with textile or other materials (excl. mounted friction material)
6814	Worked mica and articles of mica, including agglomerated or reconstituted mica, whether or not on a support of paper, paperboard or other materials
6901	Bricks, blocks, tiles and other ceramic goods of siliceous fossil meals, e.g. kieselguhr, tripolite or diatomite, or of similar siliceous earths
6904 10	Building bricks (excl. those of siliceous fossil meals or similar siliceous earths, and refractory bricks of heading 6902)
6905	Roofing tiles, chimney pots, cowls, chimney liners, architectural ornaments and other ceramic constructional goods
6906 00	Ceramic pipes, conduits, guttering and pipe fittings (excl. of siliceous fossil meals or similar siliceous earths, refractory ceramic goods, chimney liners, pipes specifically manufactured for laboratories, insulating tubing and fittings and other piping for electrotechnical purposes)
6907 22	Ceramic flags and paving, hearth or wall tiles, of a water absorption coefficient by weight > 0,5 % but ≤ 10 % (excl. mosaic cubes and finishing ceramics)
6907 40	Finishing ceramics
6909 90	Ceramic troughs, tubs and similar receptacles of a kind used in agriculture; ceramic pots, jars and similar articles of a kind used for the conveyance or packing of goods (excl. general-purpose storage vessels for laboratories, containers for shops and household articles)
7002	Glass in balls (other than microspheres of heading 7018), rods or tubes, unworked
7003	Cast glass and rolled glass, in sheets or profiles, whether or not having an absorbent, reflecting or non-reflecting layer, but not otherwise worked
7004	Sheets of glass, drawn or blown, whether or not having an absorbent, reflecting or non-reflecting layer, but not otherwise worked

CN code	Description
7005	Float glass and surface ground or polished glass, in sheets, whether or not having an absorbent, reflecting or non-reflecting layer, but not otherwise worked
7007	Safety glass, consisting of toughened (tempered), or laminated glass
7011 10	Glass envelopes, incl. bulbs and tubes, open, and glass parts thereof, without fittings, for electric lighting
72	Iron and steel
7301	Sheet piling of iron or steel, whether or not drilled, punched or made from assembled elements; welded angles, shapes and sections, of iron or steel
7302	Railway or tramway track construction material of iron or steel, the following: rails, check-rails and rack rails, switch blades, crossing frogs, point rods and other crossing pieces, sleepers “cross-ties”, fish-plates, chairs, chair wedges, sole plates “base plates”, rail clips, bedplates, ties and other material specialised for jointing or fixing rails
7303	Tubes, pipes and hollow profiles, of cast iron
7304	Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel
7305	Tubes and pipes, n.e.s. (for example, welded, riveted or similarly closed), having circular cross-sections, the external diameter of which exceeds 406,4 mm, of iron or steel
7306	Tubes, pipes and hollow profiles n.e.s. (for example, open seam or welded, riveted or similarly closed), of iron or steel
7307	Tube or pipe fittings (for example couplings, elbows, sleeves), of iron or steel
7308	Structures and parts of structures (for example bridges and bridge-sections, lock-gates, towers, lattice masts, roofs, roofing frameworks, doors and windows and their frames and thresholds for doors, shutters, balustrades, pillars and columns), of iron or steel; plates, rods, angles, shapes, sections, tubes and the like, prepared for use in structures, of iron or steel (excl. prefabricated buildings of heading 9406
7309	Reservoirs, tanks, vats and similar containers for any material (other than compressed or liquefied gas), of iron or steel, of a capacity exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment

CN code	Description
7310	Tanks, casks, drums, cans, boxes and similar containers, of iron or steel, for any material "other than compressed or liquefied gas", of a capacity of ≤ 300 l, not fitted with mechanical or thermal equipment, whether or not lined or heat-insulated, n.e.s.
7311	Containers of iron or steel, for compressed or liquefied gas (excl. containers specifically constructed or equipped for one or more types of transport)
7314 12	Endless bands of stainless steel wire, for machinery
7318 24	Cotters and cotter pins, of iron or steel
7320	Springs and leaves for spring, of iron or steel
7322 90	Air heaters and hot-air distributors, incl. distributors which can also distribute fresh or conditioned air, non-electrically heated, incorporating a motor-driven fan or blower, and parts thereof, of iron or steel
7324 29	Baths of steel sheet
7407	Copper bars, rods and profiles
7408	Copper wire
7409	Copper plates, sheets and strip, of a thickness exceeding 0,15 mm
7411	Copper tubes and pipes
7412	Copper tube or pipe fittings (for example couplings, elbows, sleeves)
7413	Stranded wire, cables, plaited bands and the like, of copper (not electrically insulated)
7415 21	Washers, "incl. spring washers and spring lock washers", of copper
7505	Nickel bars, rods, profiles and wire
7506	Nickel plates, sheets, strip and foil
7507	Tubes, pipes and tube or pipe fittings "e.g., couplings, elbows, sleeves", of nickel
7508	Other articles of nickel
7605	Aluminium wire
7606	Aluminium plates, sheets and strip, of a thickness exceeding 0,2 mm

CN code	Description
7607 20	Aluminium foil, backed, of a thickness (excl. any backing) of ≤ 0,2 mm (excl. stamping foils of heading 3212, and foil made up as christmas tree decorating material)
7608	Aluminium tubes and pipes
7609	Aluminium tube or pipe fittings (for example couplings, elbows, sleeves)
7610	Structures and parts of structures "e.g., bridges and bridge-sections, towers, lattice masts, pillars and columns, roofs, roofing frameworks, doors and windows and their frames and thresholds for doors, shutters, balustrades", of aluminium (excl. prefabricated buildings of heading 9406); plates, rods, profiles, tubes and the like, prepared for use in structures, of aluminium
7611	Reservoirs, tanks, vats and similar containers, of aluminium, for any material (other than compressed or liquefied gas), of a capacity of > 300 l, not fitted with mechanical or thermal equipment, whether or not lined or heat-insulated (excl. containers specifically constructed or equipped for one or more types of transport)
7612	Casks, drums, cans, boxes and similar containers, incl. rigid or collapsible tubular containers, of aluminium, for any material (other than compressed or liquefied gas), of a capacity of ≤ 300 l, not fitted with mechanical or thermal equipment, whether or not lined or heat-insulated, n.e.s.
7613	Aluminium containers for compressed or liquefied gas
7616 10	Nails, tacks, staples (other than those of heading 8305), screws, bolts, nuts, screw hooks, rivets, cotters, cotter pins, washers and similar articles
7804	Lead plates, sheets, strip and foil; lead powders and flakes
7905	Zinc plates, sheets, strip and foil
8001	Unwrought tin
8003	Tin bars, rods, profiles and wire
8007	Articles of tin
8101 10	Tungsten powders
8102	Molybdenum and articles thereof, including waste and scrap

CN code	Description
8105 90	Articles of cobalt
8109	Zirconium and articles thereof, including waste and scrap
8111	Manganese and articles thereof, including waste and scrap
8202 20	Bandsaw blades of base metal
8207	Interchangeable tools, for hand tools, whether or not power-operated, or for machine tools (for example for pressing, stamping, punching, tapping, threading, drilling, boring, broaching, milling, turning or screw driving), including dies for drawing or extruding metal, and rock-drilling or earth-boring tools
8208 10	Knives and cutting blades, for machines or for mechanical appliances – for metalworking
8208 20	Knives and cutting blades, for machines or for mechanical appliances – for wood-working
8208 30	Knives and cutting blades, for machines or for mechanical appliances – used by the food industry
8208 90	Knives and cutting blades, for machines or for mechanical appliances – other
8301 20	Locks used for motor vehicles, of base metal
8301 70	Keys presented separately
8302 30	Other mountings, fittings and similar articles suitable for motor vehicles
8307	Flexible tubing of base metal, with or without fittings
8309	Stoppers, caps and lids, incl. crown corks, screw caps and pouring stoppers, capsules for bottles, threaded bungs, bung covers, seals and other packing accessories, of base metal
8414 10	Vacuum pumps
8414 90	Air or vacuum pumps, air or other gas compressors and fans; ventilating or recycling hoods incorporating a fan, whether or not fitted with filters; gas-tight biological safety cabinets, whether or not fitted with filters – Parts
8417	Industrial or laboratory furnaces and ovens, including incinerators, non-electric

CN code	Description
8419 40	Distilling or rectifying plant
8419 50	Heat-exchange units (excl. those used with boilers)
8419 60	Machinery for liquefying air or other gases
8419 89	Machinery, plant or laboratory equipment, whether or not electrically heated, for the treatment of materials by a process involving a change of temperature such as heating, cooking, roasting, sterilising, pasteurising, steaming, evaporating, vaporising, condensing or cooling, n.e.s. (excl. machinery used for domestic purposes and furnaces, ovens and other equipment of heading 8514)
8419 90	Parts of machinery, plant and laboratory equipment, whether or not electrically heated, for the treatment of materials by a process involving a change of temperature, and of non-electric instantaneous and storage water heaters, n.e.s.
8451 10	Dry-cleaning machines
8451 29	Drying machines – Other
8451 30	Ironing machines and presses (including fusing presses)
8451 90	Machinery (other than machines of heading 8450) for washing, cleaning, wringing, drying, ironing, pressing (including fusing presses), bleaching, dyeing, dressing, finishing, coating or impregnating textile yarns, fabrics or made-up textile articles and machines for applying the paste to the base fabric or other support used in the manufacture of floor coverings such as linoleum; machines for reeling, unreeling, folding, cutting or pinking textile fabrics – Parts
8456	Machine tools for working any material by removal of material, by laser or other light or photon beam, ultrasonic, electro-discharge, electro-chemical, electron beam, ionic-beam or plasma arc processes; water-jet cutting machines
8459	Machine tools, incl. way-type unit head machines, for drilling, boring, milling, threading or tapping (excl. lathes and turning centres of heading 8458, gear cutting machines of heading 8461 and hand-operated machines)

CN code	Description
8460	Machine tools for deburring, sharpening, grinding, honing, lapping, polishing or otherwise finishing metal or cermets by means of grinding stones, abrasives or polishing products (excl. gear cutting, gear grinding or gear finishing machines of heading 8461 and machines for working in the hand)
8461	Machine tools for planing, shaping, slotting, broaching, gear cutting, gear grinding or gear finishing, sawing, cutting-off and other machine tools working by removing metal, or cermets, not elsewhere specified or included
8462	Machine tools (including presses) for working metal by forging, hammering or die forging (excluding rolling mills); machine tools (including presses, slitting lines and cut-to-length lines) for working metal by bending, folding, straightening, flattening, shearing, punching, notching or nibbling (excluding draw-benches); presses for working metal or metal carbides, not specified in previous headings
8463	Machine tools for working metal, sintered metal carbides or cermets, without removing material (excl. forging, bending, folding, straightening and flattening presses, shearing machines, punching or notching machines, presses and machines for working in the hand)
8464	Machine tools for working stone, ceramics, concrete, asbestos-cement or like mineral materials or for cold-working glass (excl. machines for working in the hand)
8465	Machine tools (including machines for nailing, stapling, glueing or otherwise assembling) for working wood, cork, bone, hard rubber, hard plastics or similar hard materials
8470	Calculating machines and pocket-size data-recording, reproducing and displaying machines with calculating functions; accounting machines, postage-franking machines, ticket-issuing machines and similar machines, incorporating a calculating device, cash registers
8472	Other office machines (for example, hectograph or stencil duplicating machines, addressing machines, automatic banknote dispensers, coin-sorting machines, coin -counting or -wrapping machines, sharpening machines, perforating or stapling machines)

CN code	Description
8473	Parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with machines of headings 8470 to 8472
8478	Machinery for preparing or making up tobacco, not specified or included elsewhere in this Chapter
8485	Machines for additive manufacturing
8486	Machines and apparatus of a kind used solely or principally for the manufacture of semiconductor boules or wafers, semiconductor devices, electronic integrated circuits or flat panel displays; machines and apparatus specified in note 11(C) to Chapter 84; parts and accessories, n.e.s.
8487	Machinery parts, not containing electrical connectors, insulators, coils, contacts or other electrical features, not specified or included elsewhere in Chapter 84
8506	Primary cells and primary batteries; parts thereof
8512	Electrical lighting or signalling equipment (excl. lamps of heading 8539), windscreen wipers, defrosters and demisters, of a kind used for cycles or motor vehicles; parts thereof
8513	Portable electric lamps designed to function by their own source of energy, e.g. dry batteries, accumulators and magnetos; parts thereof
8515	Electric (including electrically heated gas), laser or other light or photon beam, ultrasonic, electron beam, magnetic pulse or plasma arc soldering, brazing or welding machines and apparatus, whether or not capable of cutting; electric machines and apparatus for hot spraying of metals, or cermets; parts thereof
8517	Telephone sets, including smartphones and other telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network (such as a local or wide area network), other than transmission or reception apparatus of heading 8443, 8525, 8527 or 8528
8518	Microphones and stands therefor; loudspeakers, whether or not mounted in their enclosures; headphones and earphones, whether or not combined with a microphone, and sets consisting of a microphone and one or more loudspeakers; audio-frequency electric amplifiers; electric sound amplifier sets

CN code	Description
8519	Sound recording or sound reproducing apparatus
8521	Video recording or reproducing apparatus, whether or not incorporating a video tuner
8522	Parts and accessories suitable for use solely or principally with the apparatus of heading 8519 or 8521
8523	Discs, tapes, solid-state non-volatile storage devices, "smart cards" and other media for the recording of sound or of other phenomena, whether or not recorded, including matrices and masters for the production of discs, but excluding products of Chapter 37
8524	Flat panel display modules, whether or not incorporating touch-sensitive screens
8525	Transmission apparatus for radio-broadcasting or television, whether or not incorporating reception apparatus or sound recording or reproducing apparatus; television cameras, digital cameras and video camera recorders
8526	Radar apparatus, radio navigational aid apparatus and radio remote control apparatus
8527	Reception apparatus for radio-broadcasting, whether or not combined, in the same housing, with sound recording or reproducing apparatus or a clock
8528	Monitors and projectors, not incorporating television reception apparatus; reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus
8530	Electrical signalling, safety or traffic control equipment for railways, tramways, roads, inland waterways, parking facilities, port installations or airfields (excl. mechanical or electromechanical equipment of heading 8608); parts thereof
8531	Electric sound or visual signalling apparatus (for example, bells, sirens, indicator panels, burglar or fire alarms), other than those of heading 8512 or 8530
8532	Electrical capacitors, fixed, variable or adjustable (pre-set)
8533	Electrical resistors (including rheostats and potentiometers), other than heating resistors
8534	Printed circuits

CN code	Description
8536	Electrical apparatus for switching or protecting electrical circuits, or for making connections to or in electrical circuits (for example, switches, relays, fuses, surge suppressors, plugs, sockets, lamp holders and other connectors, junction boxes), for a voltage not exceeding 1000 V; connectors for optical fibres, optical fibre bundles or cables
8540	Thermionic, cold cathode or photo-cathode valves and tubes, e.g. vacuum or vapour or gas filled valves and tubes, mercury arc rectifying valves and tubes, cathode ray tubes and television camera tubes; parts thereof
8541	Semiconductor devices (for example, diodes, transistors, semiconductor-based transducers); photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light-emitting diodes (LED), whether or not assembled with other light-emitting diodes (LED); mounted piezo-electric crystals
8543	Electrical machines and apparatus, having individual functions, not specified or included elsewhere in this Chapter
8546	Electrical insulators of any material
8549	Electrical and electronic waste and scrap
8602	Rail locomotives (excl. those powered from an external source of electricity or by accumulators); locomotive tenders
8604	Railway or tramway maintenance or service vehicles, whether or not self-propelled (for example, workshops, cranes, ballast tampers, trackliners, testing coaches and track inspection vehicles)
8606	Railway or tramway goods vans and wagons (excluding self-propelled and luggage vans and post office coaches)
8607	Parts of railway or tramway locomotives or rolling stock
8608	Railway or tramway track fixtures and fittings (excl. sleepers of wood, concrete or steel, sections of track and other track fixtures not yet assembled and railway or tramway track construction material); mechanical, incl. electromechanical, signalling, safety or traffic control equipment for railways, tramways, roads, inland waterways, parking facilities, port installations or airfields; parts of the foregoing

CN code	Description
8609	Containers, incl. containers for the transport of fluids, specially designed and equipped for carriage by one or more modes of transport
8701 21	Road tractors for semi-trailers – With only compression-ignition internal combustion piston engine (diesel or semi-diesel)
8701 22	Road tractors for semi-trailers – With both compression-ignition internal combustion piston engine (diesel or semi-diesel) and electric motor as motors for propulsion
8701 23	Road tractors for semi-trailers – With both spark-ignition internal combustion piston engine and electric motor as motors for propulsion
8701 24	Road tractors for semi-trailers – With only electric motor for propulsion
8701 29	Road tractors for semi-trailers – With only spark-ignition internal combustion piston engine as motors for propulsion
8701 30	Track-laying tractors (excluding pedestrian-controlled)
8703 10	Vehicles for the transport of < 10 persons on snow; golf cars and similar vehicles
Ex 8703 23	Motor cars and other motor vehicles principally designed for the transport of < 10 persons, incl. station wagons and racing cars, with only spark-ignition internal combustion reciprocating piston engine of a cylinder capacity > 1900 cm^3 but ≤ 3000 cm^3, having a vertical distance between the underside of a car chassis and the road ("ground clearance") equal to or above 165 mm (excluding ambulances)
Ex 8703 24	Motor cars and other motor vehicles principally designed for the transport of < 10 persons, incl. station wagons and racing cars, with only spark-ignition internal combustion reciprocating piston engine of a cylinder capacity > 3000 cm^3, having a vertical distance between the underside of a car chassis and the road ("ground clearance") equal to or above 165 mm (excluding ambulances)
Ex 8703 32	Motor cars and other motor vehicles principally designed for the transport of < 10 persons, incl. station wagons and racing cars, with only diesel engine of a cylinder capacity > 1900 cm^3 but ≤ 2500 cm^3, having a vertical distance between the underside of a car chassis and the road ("ground clearance") equal to or above 165 mm (excluding ambulances)

CN code	Description
Ex 8703 33	Motor cars and other motor vehicles principally designed for the transport of < 10 persons, incl. station wagons and racing cars, with only diesel engine of a cylinder capacity > 2500 cm^3, having a vertical distance between the underside of a car chassis and the road (“ground clearance”) equal to or above 165 mm (excluding ambulances)
Ex 8703 40	Motor cars and other motor vehicles principally designed for the transport of < 10 persons, incl. station wagons and racing cars, with both spark-ignition internal combustion reciprocating piston engine and electric motor as motors for propulsion, having a vertical distance between the underside of a car chassis and the road (“ground clearance”) equal to or above 165 mm (excl. plug-in hybrids)
Ex 8703 50	Motor cars and other motor vehicles principally designed for the transport of < 10 persons, incl. station wagons and racing cars, with both diesel engine and electric motor as motors for propulsion, having a vertical distance between the underside of a car chassis and the road (“ground clearance”) equal to or above 165 mm (excl. plug-in hybrids)
Ex 8703 60	Motor cars and other motor vehicles principally designed for the transport of < 10 persons, incl. station wagons and racing cars, with both spark-ignition internal combustion reciprocating piston engine and electric motor as motors for propulsion, capable of being charged by plugging to external source of electric power, having a vertical distance between the underside of a car chassis and the road (“ground clearance”) equal to or above 165 mm
Ex 8703 70	Motor cars and other motor vehicles principally designed for the transport of < 10 persons, incl. station wagons and racing cars, with both diesel engine and electric motor as motors for propulsion, capable of being charged by plugging to external source of electric power, having a vertical distance between the underside of a car chassis and the road (“ground clearance”) equal to or above 165 mm
Ex 8703 80	Motor cars and other motor vehicles principally designed for the transport of < 10 persons, incl. station wagons and racing cars, with only electric motor for propulsion, having a vertical distance between the underside of a car chassis and the road (“ground clearance”) equal to or above 165 mm
8703 90	Motor cars and other vehicles principally designed for the transport of < 10 persons, incl. station wagons and racing cars, with engines other than internal combustion piston engine or electric motor

CN code	Description
Ex 8704	Motor vehicles for the transport of goods, incl. chassis with engine and cab, excluding vehicles of CN codes 8704 21 91 and 8704 21 99 with engines of a cylinder capacity not exceeding 1900 cm^3
8705	Special purpose motor vehicles (other than those principally designed for the transport of persons or goods), e.g. breakdown lorries, crane lorries, fire fighting vehicles, concrete-mixer lorries, road sweeper lorries, spraying lorries, mobile workshops and mobile radiological units
8708 99	Parts and accessories, for tractors, motor vehicles for the transport of ten or more persons, motor cars and other motor vehicles principally designed for the transport of persons, motor vehicles for the transport of goods and special purpose motor vehicles, n.e.s.
8709	Works trucks, self-propelled, not fitted with lifting or handling equipment, of the type used in factories, warehouses, dock areas or airports for short distance transport of goods; tractors of the type used on railway station platforms; parts of the foregoing vehicles, n.e.s.
8716	Trailers and semi-trailers; other vehicles, not mechanically propelled (excl. railway and tramway vehicles); parts thereof, n.e.s.
8903	Yachts and other vessels for pleasure or sports; rowing boats and canoes
8904	Tugs and pusher craft
8905	Light-vessels, fire-floats, dredgers, floating cranes, and other vessels the navigability of which is subsidiary to their main function; floating docks, floating or submersible drilling or production platforms
9001 10	Optical fibres, optical fibre bundles and cables (excl. made up of individually sheathed fibres of heading 8544)
9002 11	Objective lenses for cameras, projectors or photographic enlargers or reducers
9002 19	Objective lenses (excl. for cameras, projectors or photographic enlargers or reducers)
9005	Binoculars, monoculars, other optical telescopes, and mountings therefor; other astronomical instruments and mountings therefor (excl. instruments for radio-astronomy and other instruments or apparatus specified elsewhere)

CN code	Description
9007	Cinematographic cameras and projectors, whether or not incorporating sound recording or reproducing apparatus (excl. video equipment)
9010	Apparatus and equipment for photographic or cinematographic laboratories, not elsewhere specified in Chapter 90; negatoscopes; projection screens
9013	Lasers, other than laser diodes; other optical appliances and instruments, not specified or included elsewhere in Chapter 90
9014	Direction finding compasses; other navigational instruments and appliances (excl. radio navigational equipment); parts thereof
9015	Surveying, incl. photogrammetrical surveying, hydrographic, oceanographic, hydrological, meteorological or geophysical instruments and appliances (excl. compasses); rangefinders
9024	Machines and appliances for testing the hardness, strength, compressibility, elasticity or other mechanical properties of materials (for example, metals, wood, textiles, paper, plastics); parts thereof
9025 90	Parts and accessories for hydrometers, areometers and similar floating instruments, thermometers, pyrometers, barometers, hygrometers and psychrometers, n.e.s.
9026	Instruments and apparatus for measuring or checking the flow, level, pressure or other variables of liquids or gases (for example, flow meters, level gauges, manometers, heat meters), excluding instruments and apparatus of heading 9014, 9015, 9028 or 9032
9027	Instruments and apparatus for physical or chemical analysis, (for example polarimeters, refractometers, spectrometers, gas or smoke analysis apparatus); instruments and apparatus for measuring or checking viscosity, porosity, expansion, surface tension or the like; instruments and apparatus for measuring or checking quantities of heat, sound or light, (including exposure meters); microtomes
9029	Revolution counters, production counters, taximeters, milometers, pedometers and the like (excl. gas, liquid and electricity meters); speed indicators and tachometers (excl. those of heading 9014 and 9015); stroboscopes

CN code	Description
9030	Oscilloscopes, spectrum analysers and other instruments and apparatus for measuring or checking electrical quantities (excluding meters of heading 9028); instruments and apparatus for measuring or detecting alpha, beta, gamma, x-ray, cosmic or other ionising radiations
9031	Measuring or checking instruments, appliances and machines not elsewhere specified in Chapter 90; profile projectors
9032 81	Other automatic regulating or controlling instruments and apparatus – Hydraulic or pneumatic – Other
9401 10	Seats for aircraft
9401 20	Seats for motor vehicles
9403 30	Wooden furniture of a kind used in offices
9406	Prefabricated buildings
9606	Buttons, press-fasteners, snap-fasteners and press studs, button moulds and other parts of these articles; button blanks (excl. cuff links)
9608 91	Pen nibs and nib points
9612	Typewriter or similar ribbons, inked or otherwise prepared for giving impressions, whether or not on spools or in cartridges; ink-pads, whether or not inked, with or without boxes
Ex 98	Complete industrial plants, except plants for the production of food and drinks, pharmaceuticals, medicines and medical devices

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(6) Annex XIX is replaced by the following:

‘ANNEX XIX

List of goods and technology as referred to in Article 1bb(2)

on the prohibition of transit via Belarus

CN code	Description
2710 19 21	Jet fuel, kerosene type
2710 19 29	Medium oils and preparations, of petroleum or bituminous minerals
3811	Anti-knock preparations, oxidation inhibitors, gum inhibitors, viscosity improvers, anti-corrosive preparations and other prepared additives, for mineral oils, incl. gasoline, or for other liquids used for the same purposes as mineral oils
3815 12	Supported catalysts with precious metal or a precious-metal compound as the active substance, not else specified
7219 21	Flat-rolled products of stainless steel, of a width of 600 mm or more, not further worked than hot-rolled, not in coils, of a thickness of exceeding 10 mm
7225 40	Flat-rolled products of other alloy steel other than stainless, of a width of 600 mm or more, not further worked than hot-rolled, not in coils (excluding products of silicon-electrical steel)
7304 29	Casing and tubing, seamless, of iron or steel, of a kind used in drilling for oil or gas (excluding products of cast iron)
7311 00	Containers of iron or steel, for compressed or liquefied gas (excluding containers specifically constructed or equipped for one or more types of transport)
8456 30	Machine tools for working any material by removal of material, operated by electro-discharge processes
8460	Machine tools for deburring, sharpening, grinding, honing, lapping, polishing or otherwise finishing metal or cermets by means of grinding stones, abrasives or polishing products, other than gear cutting, gear grinding or gear finishing machines of heading 8461

CN code	Description
8515 19	Brazing or soldering machines (excluding soldering irons and guns)
8543 30	Machines and apparatus for electroplating, electrolysis or electrophoresis
8705 10	Crane lorries
8708 99	Parts and accessories of the motor vehicles of headings 8701 to 8705 (tractors, motor vehicles for the transport of ten or more persons, motor cars and other motor vehicles principally designed for the transport of persons, motor vehicles for the transport of goods and special purpose motor vehicles), not else specified
9024	Machines and appliances for testing the hardness, strength, compressibility, elasticity or other mechanical properties of materials, for example metals, wood, textiles, paper or plastics

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(7) in Annex XXVII, the following code is inserted between CN code 7408 and CN code 7604:

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CN code	Name of the good
7601	Unwrought aluminium

’;

(8) in Annex XXX, the heading is replaced by the following:

‘List of common high priority goods and technology referred to in Articles 1e, 1f, 8g and 8ga’;

(9) the following annexes are added:

‘ANNEX XXXI

List of goods referred to in Article 8ga

CN code	Description
8502 20	Generating sets with spark-ignition internal combustion piston engines
8536 50	Other switches

ANNEX XXXII

List of software referred to in Article 1gd

"Software" used in oil and gas exploration, namely:

– "Software" for reservoir exploration and calculation

– "Software" for calculation, processing and analysis of seismic data

– "Software" for geological visual inspections as well as for respective characterisation/modelling/visualisation/calculation

– Drilling "software", planning "software" for drilling processes, "software" for trajectory of drilling processes

– "Software" for inertial navigation systems for drilling

– Real-time well monitoring "software"

– Observation and safeguarding "software" in oil and gas production.'.