

## SCHEDULE 1

### PART III OF SCHEDULE 1 TO THE EXPORT OF GOODS (CONTROL) ORDER 1994

## PART III

Note: The goods in this Part are for convenience specified by reference to the classification system used by the Department of Trade and Industry for export control purposes. For convenience only, defined terms are printed in “quotation marks”.

### MILITARY, SECURITY AND PARA-MILITARY GOODS AND ARMS, AMMUNITION AND RELATED MATERIAL

#### **General Technology Note**

1. Subject to paragraph 2 below, the export of “technology” specified in this Part of this Schedule is prohibited by Article 2 of this Order if it is capable of being “required” for the “development”, “production” or “use” of “goods” specified in this Part of this Schedule, whether or not the “technology” being exported in the particular case is intended to be applied in respect of such “goods”.

2. The prohibition in Article 2 does not apply to that “technology” which is the minimum necessary for the installation, operation, maintenance (checking) and repair of “goods” not specified in this Part of this Schedule, to “technology” “in the public domain”, to “basic scientific research” or to the minimum necessary information for patent applications.

#### **Definitions**

In this Part:

“adapted for use in war” means any modification or selection (such as altering purity, shelf life, virulence, dissemination characteristics, or resistance to ultra violet (UV) radiation) designed to increase the effectiveness in producing casualties in humans or animals, degrading equipment or damaging crops or the environment;

“additives” means substances used in explosive formulations to improve their properties;

“anti-idiotypic antibodies” means antibodies which bind to the specific antigen binding sites of other antibodies;

“basic scientific research” means experimental or theoretical work undertaken principally to acquire new knowledge of the fundamental principles of phenomena or observable facts, not primarily directed towards a specific practical aim or objective;

“biocatalyst” means enzymes and other biological compounds which bind to and accelerate the degradation of chemical warfare (CW) agents;

“biopolymer” means the following biological macromolecules:

- a. “enzymes”;
- b. antibodies, monoclonal, polyclonal or “anti-idiotypic”;
- c. specially designed or specially processed “receptors”;

“critical temperature” (sometimes referred to as the transition temperature) of a specific superconductive material means the temperature at which the specific material loses all resistance to the flow of direct electrical current;

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“development” is related to all stages prior to serial production, such as: design, design research, design analyses, design concepts, assembly and testing of prototypes, pilot production schemes, design data, process of transforming design data into a product, configuration design, integration design, layouts;

“enzymes” means “biocatalysts” for specific chemical or biochemical reactions;

“end-effectors” include grippers, active tooling units and any other tooling that is attached to the baseplate on the end of a “robot” manipulator arm;

*Technical Note:*

Active tooling unit means a device for applying motive power, process energy or sensing to the workpiece;

“expression vectors” means carriers (e.g., plasmid or virus) used to introduce genetic material into host cells;

“first generation image intensifier tubes” mean electrostatically focused tubes, employing input and output fibre optic or glass face plates, multi-alkali photocathodes (S-20 or S-25), but not microchannel plate amplifiers;

“improvised explosive devices” means devices fabricated or intended to be placed in an improvised manner incorporating destructive, lethal, noxious, pyrotechnic or incendiary chemicals, designed to destroy, disfigure or harass; they may incorporate military stores, but are normally devised from non-military components;

“laser” means an assembly of components which produce both spatially and temporally coherent light which is amplified by stimulated emission of radiation;

“microprogramme” means a sequence of elementary instructions, maintained in a special storage, the execution of which is initiated by the introduction of a reference instruction into an instruction register;

“military explosives” means solid, liquid or gaseous substances or mixtures of substances which, in their application as primary, booster, or main charges in warheads, demolition and other military applications, are required to detonate;

“military pyrotechnics” means mixtures of solid or liquid fuels and oxidisers which, when ignited, undergo an energetic chemical reaction at a controlled rate intended to produce specific time delays, or quantities of heat, noise, smoke, visible light or infrared radiation; pyrophorics are a subclass of pyrotechnics, which contain no oxidisers but ignite spontaneously on contact with air;

“monoclonal antibodies” means proteins which bind to one antigenic site and are produced by a single clone of cells;

“nuclear reactor” means the items within or attached directly to the reactor vessel, the equipment which controls the level of power in the core, and the components which normally contain, come into direct contact with or control the primary coolant of the reactor core;

“polyclonal antibodies” means a mixture of proteins which bind to the specific antigen and are produced by more than one clone of cells;

“production” means all production stages, such as: product engineering, manufacture, integration, assembly (mounting), inspection, testing, quality assurance;

“programme” means a sequence of instructions to carry out a process in, or convertible into, a form executable by an electronic computer;

“receptors” means biological macromolecular structure capable of binding ligands, the binding of which affects physiological functions;

“required” as applied to “technology”, refers to only that portion of “technology” which is peculiarly responsible for achieving or exceeding the controlled performance levels, characteristics or functions. Such “required” “technology” may be shared by different “goods”;

“riot control agents” means substances which produce temporary, irritating or disabling physical effects which disappear within minutes of removal from exposure. There is no significant risk of permanent injury and medical treatment is rarely required;

“robot” means a manipulation mechanism, which may be of the continuous path or of the point-to-point variety, may use sensors, and which:

- a. Is multifunctional;
- b. Is capable of positioning or orienting material, parts, tools or special devices through variable movements in three dimensional space;
- c. Incorporates three or more closed or open loop servo-devices which may include stepping motors; and
- d. Has “user-accessible programmability” by means of the teach/playback method or by means of an electronic computer which may be a programmable logic controller, i.e., without mechanical intervention;

except:

- a. Manipulation mechanisms which are only manually/teleoperator controllable;
- b. Fixed sequence manipulation mechanisms, which are automated moving devices, operating according to programmes where the motions are limited by fixed stops, such as pins or cams and the sequence of motions and the selection of paths or angles are not variable or changeable by mechanical, electronic or electrical means;
- c. Mechanically controlled variable sequence manipulation mechanisms, which are automated moving devices, operating according to programmes where the motions are limited by fixed, but adjustable stops, such as pins or cams and the sequence of motions and the selection of paths or angles are variable within the fixed programme pattern; variations or modifications of the programme pattern (e.g., changes of pins or exchanges of cams) in one or more motion axes are accomplished only through mechanical operations;
- d. Non-servo-controlled variable sequence manipulation mechanisms, which are automated moving devices, operating according to mechanically fixed programmed motions; the programme is variable but the sequence proceeds only by the binary signal from mechanically fixed electrical binary devices or adjustable stops;
- e. Stacker cranes defined as Cartesian coordinate manipulator systems manufactured as an integral part of a vertical array of storage bins and designed to access the contents of those bins for storage or retrieval;

“software” means one or more “programmes” or “microprogrammes” fixed in any tangible medium of expression;

“special gun-mounting” means any fixture designed to mount a gun;

“superconductive” in relation to materials (i.e., metals, alloys or compounds) means those which can lose all electrical resistance (i.e., which can attain infinite electrical conductivity and carry very large electrical currents without Joule heating); the superconductive state of a material is individually characterized by a “critical temperature”, a critical magnetic field, which is a function of temperature, and a critical current density which is a function of both magnetic field and temperature;

“tear gases” means gases which produce temporary irritating or disabling effects which disappear within minutes of removal of exposure;

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“technology” means specific information necessary for the “development”, “production” or “use” of a product. The information may take forms such as blueprints, plans, diagrams, models, formulae, tables, engineering designs and specifications, manuals and instructions written or recorded on other media or devices such as disk, tape, read-only memories;

“use” means operation, installation (which includes on-site installation), maintenance, checking, repair, overhaul and refurbishing;

“user-accessible programmability” means the facility allowing a user to insert, modify or replace “programmes” by means other than:

- a. A physical change in wiring or interconnections; or
- b. The setting of function controls including entry of parameters.

### **Controlled Goods**

**ML1** Arms and automatic weapons with a calibre of 12.7 mm (calibre 0.50 inches) or less and accessories, as follows, and specially designed components therefor:

- (a) Rifles, carbines, revolvers, pistols, machine pistols and machine guns;
- (b) Smooth-bore weapons specially designed for military use;
- (c) Weapons using caseless ammunition;
- (d) Silencers, “special gun-mountings”, clips and flash suppressers for arms specified in entry ML1.a., ML1.b. or ML1.c.

except:

- (a) Air weapons (other than those declared by the Firearms (Dangerous Air Weapons) Rules 1969(1) to be specially dangerous);
- (b) Firearms specially designed for dummy ammunition and which are incapable of firing any ammunition specified in this Part of this Schedule.
- (c) Weapons using non-centre fire cased ammunition and which are not of the fully automatic firing type;
- (d) Firearms which have been de-activated by a registered UK Proof House as being incapable of firing any ammunition specified in this Part of this Schedule;
- (e) Bayonets.

#### *Technical Note:*

Smooth-bore weapons specially designed for military use as specified in entry ML1.b. are those which:

- (a) Are proof tested at pressures above 1,300 bars;
- (b) Operate normally and safely at pressures above 1,000 bars; and
- (c) Are capable of accepting ammunition above 76.2 mm in length (e.g., commercial 12-gauge magnum shot gun shells).

**PL5002** Telescopic sights for goods specified in entry ML1 and PL5018, other than those specified in entry ML5(2).

**PL5018** Smooth-bore weapons, other than those specified in entry ML1.b. and ML2, and specially designed components therefor;

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(1) S.I.1969/47, amended by S.I. 1993/1490.

(2) See also article 3(e).

except:

- (a) Air weapons (other than those declared by the Firearms (Dangerous Air Weapons) Rules 1969 to be specially dangerous);
- (b) Air (pneumatic) or cartridge (explosive) powered guns or pistols designed as:
  - (1) Industrial tools; or
  - (2) Humane stunning devices employed specifically for animal slaughter;
- (c) Signal pistols.

**PL5021** Ammunition or cartridges, including projectiles, and specially designed components therefor, for the “goods” specified in entry PL5018;

except:

- (a) Lead or lead alloy pellet ammunition specially designed for air weapons;
- (b) Ammunition crimped without a projectile (blank star) and dummy ammunition with a pierced powder chamber.

**ML2** Armament or weapons with a calibre greater than 12.7 mm (calibre 0.50 inches), projectors and accessories, as follows, and specially designed components therefor:

- (a) Guns, howitzers, cannon, mortars, anti-tank weapons, projectile launchers, military flame throwers, recoilless rifles and signature reduction devices therefor;
- (b) Military smoke, gas and pyrotechnic projectors or generators.

except:

Signal pistols.

**ML3** Ammunition, and specially designed components therefor, for the weapons specified in entry ML1, ML2 or ML12;

except:

- (a) Ammunition crimped without a projectile (blank star) and dummy ammunition with a pierced powder chamber;
- (b) Lead or lead alloy pellet ammunition specially designed for air weapons.

**ML4** Bombs, torpedoes, rockets, missiles, and related equipment and accessories, as follows, specially designed for military use, and specially designed components therefor:

- (a) Bombs, torpedoes, grenades, smoke canisters, rockets, mines, missiles, depth charges, demolition-charges, demolition-devices and demolition-kits, “military pyrotechnics”, cartridges and simulators (i.e. equipment simulating the characteristics of any of these items);
- (b) Equipment specially designed for the handling, control, activation, powering with one-time operational output, launching, laying, sweeping, discharging, decoying, jamming, detonation or detection of items specified in entry ML4.a.

**PL5006** Apparatus or devices specially designed for military use, used for the handling, control, discharging, decoying, jamming, detonation, disruption or detection of improvised explosive devices or other explosive devices not specified in entry ML4.a., and specially designed components therefor;

except:

Inspection devices not employing electronic management.

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**PL5030** Bombs and grenades, other than those specified in entry ML4 and specially designed components therefor.

**ML5** Fire control, and related alerting and warning equipment, and related systems and countermeasure equipment, as follows, specially designed for military use, and specially designed components and accessories therefor:

- (a) Weapon sights, bombing computers, gun laying equipment and weapon control systems;
- (b) Target acquisition, designation, range-finding, surveillance or tracking systems; detection, data fusion, recognition or identification equipment; and sensor integration equipment;
- (c) Countermeasure equipment for items specified in entry ML5.a. and ML5.b.

**ML6** Ground vehicles and components therefor specially designed or modified for military use.

*Technical Note:*

For the purposes of entry ML6 the term ground vehicles includes trailers.

Note: Modification of a ground vehicle for military use entails a structural, electrical or mechanical change involving one or more specially designed military components.

**PL5031** Ground vehicles and related equipment, other than those specified elsewhere in this Part of this Schedule, as follows:

- (a) All wheel drive utility vehicles capable of off road use which have been manufactured or fitted with metallic or non-metallic materials to provide ballistic protection;
- (b) Containers for mounting on vehicles, specially designed or modified for military use and components therefor specially designed or modified for military use.

**ML7** In this entry, references in square brackets to Chemical Abstract Service (“CAS”) numbers are included for convenience only. Goods of which the description in this entry includes a CAS reference are specified in this entry whether or not they fall within that reference.

Toxicological agents, “tear gases”, related equipment, components, materials and “technology” as follows:

- (a) Biological agents and radioactive materials “adapted for use in war” to produce casualties in humans or animals, degrade equipment or damage crops or the environment, and chemical warfare (CW) agents;
- (b) CW binary precursors and key precursors, as follows:
  - (1) Alkyl (Methyl, Ethyl, n-Propyl or Isopropyl Phosphonyl Difluorides, such as: DF: Methyl Phosphonyldifluoride [CAS 676-99-3];
  - (2) O-Alkyl (H or equal to or less than C10, including cycloalkyl) O-2-dialkyl (Methyl, Ethyl, n-Propyl or Isopropyl) aminoethyl alkyl (Methyl, Ethyl, n-Propyl or Isopropyl) phosphonite and corresponding alkylated and protonated salts, such as: QL: O-Ethyl-2-di-isopropylaminoethyl methylphosphonite [CAS 57856-11-8];
  - (3) Chlorosarin: O-Isopropyl methylphosphonochloridate [CAS 1445-76-7];
  - (4) Chlorosoman: O-Pinakolyl methylphosphonochloridate [CAS 7040-57-5];
- (c) “Tear gases” and “riot control agents” including:
  - (1) Bromobenzyl cyanide (CA) [CAS 5798-79-8];
  - (2) o-Chlorobenzylidenemalononitrile (o-Chlorobenzalmalononitrile) (CS) [CAS 2698-41-1];
  - (3) Phenylacetyl chloride (w-chloroacetophenone) (CN) [CAS 532-27-4];
  - (4) Dibenz-(b,f)-1,4-oxazepine (CR) [CAS 257-07-8];

except:

Tear gases or riot control agents individually packaged for personal self defence purposes.

- (d) Equipment specially designed or modified for the dissemination of the materials or agents specified in entry ML7.a. and specially designed components therefor;

Note: Entry ML7.d. does not include equipment not specially designed or modified for military purposes.

- (e) “Goods” specially designed for defence against materials specified in entry ML7.a. and specially designed components therefor;

Note: Entry ML7.e. does not include “goods” not specially designed or modified for military purposes.

- (f) “Goods” specially designed for the detection or identification of materials specified in ML7.a. and specially designed components therefor;

except:

Personal radiation monitoring dosimeters.

Note: Entry ML7.f. does not include “goods” not specially designed or modified for military purposes.

- (g) “Biopolymers” specially designed or processed for the detection or identification of CW agents specified in entry ML7.a., and the cultures of specific cells used to produce them;

- (h) “Biocatalysts” for the decontamination or degradation of CW agents, and biological systems therefor, as follows:

- (1) “Biocatalysts” specially designed for the decontamination or degradation of CW agents specified in entry ML7.a. resulting from directed laboratory selection or genetic manipulation of biological systems;

- (2) Biological systems, as follows: “expression vectors”, viruses or cultures of cells containing the genetic information specific to the production of “biocatalysts” specified in entry ML7.h.1.;

- (i) “Technology” as follows:

- (1) “Technology” for the “development”, “production” or “use” of toxicological agents, related equipment or components specified in entry ML7.a. to ML7.f.;

- (2) “Technology” for the “development”, “production” or “use” of “biopolymers” or cultures of specific cells specified in entry ML7.g.;

- (3) “Technology” exclusively for the incorporation of “biocatalysts”, specified in entry ML7.h.1., into military carrier substances or military material.

Notes: 1. ML7.a. and ML7.c. do not include:

- (a) Cyanogen chloride;
- (b) Hydrocyanic acid;
- (c) Chlorine;
- (d) Carbonyl chloride (phosgene);
- (e) Diposgene (trichloromethyl-chloroformate);
- (f) Ethyl bromoacetate;
- (g) Xylyl bromide;
- (h) Benzyl bromide;
- (i) Benzyl iodide;

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- (j) Bromo acetone;
- (k) Cyanogen bromide;
- (l) Bromo methylethylketone;
- (m) Chloro acetone;
- (n) Ethyl iodoacetate;
- (o) Iodo acetone;
- (p) Chloropicrin.

(2) The “technology”, cultures of cells and biological systems listed in entries ML7.g., ML7.h.2. and ML7.i.3. are exclusive and do not include “technology”, cells or biological systems for civil purposes, such as agricultural, pharmaceutical, medical, veterinary, environmental, waste management, or in the food industry.

**ML8** In this entry, references in square brackets to Chemical Abstract Service (“CAS”) numbers are included for convenience only. Goods of which the description in this entry includes a CAS reference are specified in this entry whether or not they fall within that reference.

“Military explosives” and fuels, including propellants, and related substances, as follows:

- (a) Substances, as follows, and mixtures thereof:
  - (1) Spherical aluminium powder [CAS 7429-90-5] with a particle size of 60 µm or less, manufactured from material with an aluminium content of 99% or more;
  - (2) Metal fuels in particle form whether spherical, atomized, spheroidal, flaked or ground, manufactured from material consisting of 99% or more of any of the following:
    - (a) Metals and mixtures thereof:
      - (1) Beryllium [CAS 7440-41-7] in particle sizes of less than 60 µm;
      - (2) Iron powder [CAS 7439-89-6] with particle size of 3 µm or less produced by reduction of iron oxide with hydrogen;
    - (b) Mixtures, which contain any of the following:
      - (1) Zirconium [CAS 7440-67-7], magnesium [CAS 7439-95-4] and alloys of these in particle sizes of less than 60 µm;
      - (2) Boron [CAS 7440-42-8] or boron carbide [CAS 12069-32-8] fuels of 85% purity or higher and particle sizes of less than 60 µm;
  - (3) Perchlorates, chlorates and chromates composited with powdered metal or other high energy fuel components;
  - (4) Nitroguanidine (NQ) [CAS 556-88-7];
  - (5) Compounds composed of fluorine and any of the following: other halogens, oxygen, nitrogen;
  - (6) Carboranes; decaborane [CAS 17702-41-9]; pentaborane and derivatives thereof;
  - (7) Cyclotetramethylenetetranitramine [CAS 2691-41-0] (HMX); octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazine; 1,3,5,7-tetranitro-1,3,5,7-tetraza-cyclooctane; (octogen, octogene);
  - (8) Hexanitrostilbene (HNS) [CAS 20062-22-0];
  - (9) Diaminotrinitrobenzene (DATB) [CAS 1630-08-6];



- (10) Triaminotrinitrobenzene (TATB) [CAS 3058-38-6];
  - (11) Triaminoguanidinenitrate (TAGN) [CAS 4000-16-2];
  - (12) Titanium subhydride of stoichiometry TiH 0.65-1.68;
  - (13) Dinitroglycoluril (DNGU, DINGU) [CAS 55510-04-8]; tetranitroglycoluril (TNGU, SORGUYL) [CAS 55510-03-7];
  - (14) Tetranitrobenzotriazolobenzotriazole (TACOT) [CAS 25243-36-1];
  - (15) Diaminohexanitrobiphenyl (DIPAM) [CAS 17215-44-0];
  - (16) Picrylamminodinitropyridine (PYX) [CAS 38082-89-2];
  - (17) 3-nitro-1,2,4-triazol-5-one (NTO or ONTA) [CAS 932-64-9];
  - (18) Hydrazine [CAS 302-01-2] in concentrations of 70% or more; hydrazine nitrate [CAS 37836-27-4]; hydrazine perchlorate [CAS 27978-54-7]; unsymmetrical dimethyl hydrazine [CAS 57-14-7]; monomethyl [CAS 60-34-4] hydrazine; symmetrical dimethyl hydrazine [CAS 540-73-8];
  - (19) Ammonium perchlorate [CAS 7790-98-9];
  - (20) Cyclotrimethylenetrinitramine (RDX) [CAS 121-82-4]; cyclonite; T4; hexahydro-1,3,5-trinitro-1,3,5-triazine; 1,3,5-trinitro-1,3,5-triaza-cyclohexane (hexogen, hexogene);
  - (21) Hydroxylammonium nitrate (HAN) [CAS 13465-08-2]; hydroxylammonium perchlorate (HAP) [CAS 15588-62-2];
  - (22) 2-(5-cyanotetrazolato) penta amine-cobalt (III) perchlorate (or CP) [CAS 70247-32-4];
  - (23) cis-bis (5-nitrotetrazolato) tetra amine-cobalt (III) perchlorate (or BNCP);
  - (24) 7-Amino-4,6-dinitrobenzofurazane-1-oxide (ADNBF) [CAS 97096-78-1]; amino dinitrobenzofuroxan;
  - (25) 5,7-diamino-4,6-dinitrobenzofurazane-1-oxide (CAS 117907-74-1), (CL-14 or diamino dinitrobenzofuroxan);
  - (26) 2,4,6-trinitro-2,4,6-triazacyclohexanone (K-6 or Keto-RDX) [CAS 115029-35-1];
  - (27) 2,4,6,8-tetranitro-2,4,6,8-tetraazabicyclo [3,3,0]-octanone-3 [CAS 130256-72-3] (tetranitrosemiglycouril, K-55 or keto-bicyclic HMX);
  - (28) 1,1,3-trinitroazetidine (TNAZ) [CAS 97645-24-4];
  - (29) 1,4,5,8-tetranitro-1,4,5,8-tetraazadecalin (TNAD) [CAS 135877-16-6];
  - (30) Hexanitrohexaazaisowurtzitane [CAS 135285-90-4] (CL-20 or HNIW); and chlathrates of CL-20;
  - (31) Polynitrocubanes with more than four nitro groups;
  - (32) Ammonium dinitramide (ADN or SR 12) [CAS 140456-78-6];
  - (33) Trinitrophenylmethylnitramine (tetryl) [CAS 479-45-8];
- (b) Explosives and propellants that meet the following performance parameters:
- (1) Any explosive with a detonation velocity exceeding 8,700 m/s or a detonation pressure exceeding 34 GPa (340 kbar);
  - (2) Other organic explosives not listed in ML8. yielding detonation pressures of 25 GPa (250 kbar) or more that will remain stable at temperatures of 523 K (250°C) or higher for periods of 5 minutes or longer;

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- (3) Any other United Nations (UN) Class 1.1 solid propellant not listed in ML8. with a theoretical specific impulse (under standard conditions) of more than 250 s for non-metallised, or more than 270 s for aluminised compositions;
  - (4) Any UN Class 1.3 solid propellant with a theoretical specific impulse of more than 230 s for non-halogenised, 250 s for non-metallised and 266 s for metallised compositions;
  - (5) Any other gun propellants not listed in ML8. having a force constant of more than 1,200 kJ/kg;
  - (6) Any other explosive, propellant or pyrotechnic not listed in ML8. that can sustain a steady-state burning rate of more than 38 mm/s under standard conditions of 6.89 MPa (68.9 bar) pressure and 294 K (21°C); or
  - (7) Elastomer modified cast double based propellants (EMCDB) with extensibility at maximum stress of more than 5% at 233 K (– 40°C);
- (c) “Military pyrotechnics”;
- (d) Other substances as follows:
- (1) Aircraft fuels specially formulated for military purposes;
  - (2) Military materials containing thickeners for hydrocarbon fuels specially formulated for use in flamethrowers or incendiary munitions, such as metal stearates or palmates (also known as octal) [CAS 637-12-7] and M1, M2, M3 thickeners;
  - (3) Liquid oxidisers comprised of or containing inhibited red fuming nitric acid (IRFNA) [CAS 8007-58-7] or oxygen difluoride;
- (e) “Additives” and “precursors”, as follows:
- (1) Azidomethylmethyloxetane (AMMO) and its polymers;
  - (2) Basic copper salicylate [CAS 62320-94-9]; lead salicylate [CAS 15748-73-9];
  - (3) Bis (2,2-dinitropropyl) formal [CAS 5917-61-3] or Bis (2,2-dinitropropyl) acetal [CAS 5108-69-0];
  - (4) Bis-(2-fluoro-2,2-dinitroethyl) formal (FEFO) [CAS 17003-79-1];
  - (5) Bis-(2-hydroxyethyl) glycolamide (BHEGA) [CAS 17409-41-5];
  - (6) Bis(2-methyl aziridiny) methylamino phosphine oxide (Methyl BAPO) [CAS 85068-72-0];
  - (7) Bisazidomethyloxetane and its polymers [CAS 17607-20-4];
  - (8) Bischloromethyloxetane (BCMO) [CAS 142173-26-0];
  - (9) Butadienenitrileoxide (BNO);
  - (10) Butanetrioltrinitrate (BTTN) [CAS 6659-60-5];
  - (11) Catocene [CAS 37206-42-1] (2,2-Bis-ethylferrocenyl propane); ferrocene carboxylic acids; N-butyl-ferrocene [CAS 319904-29-7]; Butacene [CAS 125856-62-4] and other adducted polymer ferrocene derivatives;
  - (12) Dinitroazetidine-t-butyl salt;
  - (13) Energetic monomers, plasticisers and polymers containing nitro, azido, nitrate, nitraza or difluoroamino groups;
  - (14) Poly-2,2,3,3,4,4-hexafluoropentane-1,5-diol formal (FPF-1);
  - (15) Poly-2,4,4,5,5,6,6-heptafluoro-2-tri-fluoromethyl-3-oxaheptane-1,7-diol formal (FPF-3);
  - (16) Glycidylazide Polymer (GAP) [CAS 143178-24-9] and its derivatives;

- (17) Hexabenzylhexaazaisowurtzitane (HBIW) [CAS 124782-15-6];
- (18) Hydroxyl terminated polybutadiene (HTPB) with a hydroxyl functionality equal to or greater than 2.2 and less than or equal to 2.4, a hydroxyl value of less than 0.77 meq/g, and a viscosity at 30°C of less than 47 poise [CAS 69102-90-5];
- (19) Superfine iron oxide (Fe<sub>2</sub>O<sub>3</sub> hematite) with a specific surface area more than 250 m<sup>2</sup>/g and an average particle size of 0.003 µm or less [CAS 1309-37-1];
- (20) Lead beta-resorcyate [CAS 20936-32-7];
- (21) Lead stannate [CAS 12036-31-6], lead maleate [CAS 19136-34-6], lead citrate [CAS 14450-60-3];
- (22) Lead-copper chelates of beta-resorcyate or salicylates [CAS 68411-07-4];
- (23) Nitratomethylmethyloxetane or poly (3-Nitratomethyl, 3-methyl oxetane); (Poly-NIMMO) (NMMO) [CAS 84051-81-0];
- (24) 3-Nitrazo-1,5-pentane diisocyanate [CAS 7406-61-9];
- (25) N-Methyl-p-Nitroaniline [CAS 100-15-2];
- (26) Organo-metallic coupling agents, specifically:
  - (a) Neopentyl [diallyl] oxy, tri [dioctyl] phosphato titanate [CAS 103850-22-2]; also known as titanium IV, 2,2[bis 2-propenolato-methyl, butanolato, tris (dioctyl) phosphato] [CAS 110438-25-0]; or LICA 12 [CAS 103850-22-2];
  - (b) Titanium IV, [(2-propenolato-1) methyl, n-propanolatomethyl] butanolato-1, tris[dioctyl]pyrophosphate; or KR3538;
  - (c) Titanium IV, [(2-propenolato-1)methyl, n-propanolatomethyl] butanolato-1, tris(dioctyl)phosphate;
- (27) Polycyanodifluoroaminoethyleneoxide (PCDE);
- (28) Polyfunctional aziridine amides with isophthalic, trimesic (BITA or butylene imine trimesamide), isocyanuric or trimethyladipic backbone structures and 2-methyl or 2-ethyl substitutions on the aziridine ring;
- (29) Polyglycidynitrate or poly (nitratomethyl oxirane); (Poly-GLYN) (PGN) [CAS 27814-48-8];
- (30) Polynitroorthocarbonates;
- (31) Propyleneimine, 2-methylaziridine [CAS 75-55-8];
- (32) Tetraacetyldibenzylhexaazaisowurtzitane (TAIW);
- (33) Tetraethylenepentaamineacrylonitrile (TEPAN) [CAS 68412-45-3]; cyanoethylated polyamine and its salts;
- (34) Tetraethylenepentaamineacrylonitrileglycido 1 (TEPANOL) [CAS 68412-46-4]; cyanoethylated polyamine adducted with glycidol and its salts;
- (35) Triphenyl bismuth (TPB) [CAS 603-33-8];
- (36) Tris-1-(2-methyl)aziridinyl phosphine oxide (MAPO) [CAS 57-39-6]; bis(2-methyl aziridinyl) 2-(2-hydroxypropanoxy) propylamino phosphine oxide (BOBBA 8); and other MAPO derivatives;
- (37) 1,2,3-Tris[1,2-bis(difluoroamino)ethoxy] propane [CAS 53159-39-0]; tris vinoxyl propane adduct (TVOPA);
- (38) 1,3,5-trichlorobenzene [CAS 10 8-70-3];
- (39) 1,2,4 trihydroxybutane (1,2,4 butanetriol);
- (40) 1,3,5,7 tetraacetyl-1,3,5,7,-tetraaza cyclo-octane (TAT) [CAS 41378-98-7];

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- (41) 1,4,5,8 Tetraazadecalin [CAS 5409-42-7];
- (42) Low (less than 10,000) molecular weight, alcohol-functionalised, poly(epichlorohydrin); poly(epichlorohydrindiol) and triol.

except:

Boron and boron carbide enriched with boron-10 (20% or more of total boron-10 content).

**ML9** Combatant vessels and vessels (surface or underwater) specially designed or modified for offensive or defensive action, whether or not converted to non-military use, regardless of current state of repair or operating condition, and whether or not they contain weapon delivery systems or armour, and components therefor specially designed or modified for military use.

**ML10** “Aircraft”, unmanned airborne vehicles, aero engines and “aircraft” equipment, related “goods” and components, specially designed or modified for military use, as follows:

- (a) Combat “aircraft” and specially designed components therefor;
- (b) Other “aircraft” specially designed or modified for military use, including military reconnaissance, assault, military training, transporting and airdropping troops or military equipment, logistics support, and specially designed components therefor;
- (c) Aero-engines specially designed or modified for military use, and specially designed components therefor;
- (d) Unmanned airborne vehicles, including remotely piloted air vehicles (RPVs), and autonomous, programmable vehicles specially designed or modified for military use and their launchers, ground support and related equipment for command and control;
- (e) Airborne equipment, including airborne refuelling equipment, specially designed for use with the “aircraft” specified in entry ML10.a. or ML10.b. or the aero-engines specified in entry ML10.c., and specially designed components therefor;
- (f) Pressure refuellers, pressure refuelling equipment, equipment specially designed to facilitate operations in confined areas and ground equipment, developed specially for “aircraft” specified in entry ML10.a. or ML10.b., or for aero-engines specified in entry ML10.c.;
- (g) Pressurised breathing equipment and partial pressure suits for use in “aircraft”, anti-g suits, military crash helmets and protective masks, liquid oxygen converters used for “aircraft” or missiles, and catapults and cartridge actuated devices for emergency escape of personnel from “aircraft”;
- (h) Parachutes used for combat personnel, cargo dropping or “aircraft” deceleration, as follows:
  - (1) Parachutes for:
    - (a) Pin point dropping of military personnel;
    - (b) Dropping of paratroopers;
  - (2) Cargo parachutes;
  - (3) Paragliders, drag parachutes, drogue parachutes for stabilisation and attitude control of dropping bodies, (e.g. recovery capsules, ejection seats, bombs);
  - (4) Drogue parachutes for use with ejection seat systems for deployment and inflation sequence regulation of emergency parachutes;
  - (5) Recovery parachutes for guided missiles, drones or space vehicles;
  - (6) Approach parachutes and landing deceleration parachutes;
  - (7) Other military parachutes;

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- (i) Automatic piloting systems for parachuted loads; equipment specially designed or modified for military use for controlled opening jumps at any height, including oxygen equipment.

Note: Entries ML10.b. and ML10.c. on specially designed components and related equipment for non-military “aircraft” or aero-engines modified for military use include only those military components and to military related equipment required for the modification to military use.

**ML11** Electronic equipment, not controlled elsewhere in this Part of this Schedule, specially designed for military use and specially designed components therefor.

**ML12** High velocity kinetic energy weapon systems and related equipment, as follows, and specially designed components therefor:

- (a) Kinetic energy weapon systems specially designed for destruction or effecting mission abort of a target;
- (b) Specially designed test and evaluation facilities and test models, including diagnostic instrumentation and targets, for dynamic testing of kinetic energy projectiles and systems.

N.B.: For weapon systems using sub-calibre ammunition or employing solely chemical propulsion, and ammunition therefor, see entries ML1 to ML4.

**ML13** Armoured or protective equipment and constructions and components, as follows:

- (a) Armoured plate as follows:
  - (1) Manufactured to comply with a military standard or specification; or
  - (2) Suitable for military use;
- (b) Constructions of metallic or non-metallic materials or combinations thereof specially designed to provide ballistic protection for military systems;
- (c) Military helmets(3);

except:

- (a) Conventional steel helmets, neither modified or designed to accept, nor equipped with any type of accessory device;
- (b) Helmets manufactured before 1945.
- (d) Body armour and flak suits manufactured according to military standards or specifications, or equivalent, and specially designed components therefor.

except:

Individual suits of body armour for personal protection and accessories therefor when accompanying their users.

**PL5014** Specially designed components for the “goods” specified in entries ML13.a., ML13.b. and ML13.c.

**ML14** Specialised equipment for military training or for simulating military scenarios and specially designed components and accessories therefor.

**ML15** Imaging or countermeasure equipment, as follows, specially designed for military use, and specially designed components and accessories therefor:

- (a) Recorders and image processing equipment;
- (b) Cameras, photographic equipment and film processing equipment;
- (c) Image intensifier equipment;

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(3) See also ML10.g.

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- (d) Infrared or thermal imaging equipment;
- (e) Imaging radar sensor equipment;
- (f) Countermeasure or counter-countermeasure equipment for the equipment specified in entries ML15.a. to ML15.e.

except:

“First generation image intensifier tubes”.

**ML16** Forgings, castings and other unfinished products the use of which in a controlled product is identifiable by material composition, geometry or function, and which are specially designed for any of the “goods” specified in entries ML1 to ML4, ML6, ML9, ML10, ML12 and ML19.

**PL5020** Forgings, castings and semi-finished products specially designed for “goods” specified in entry PL5006 or PL5018.

**ML17** Miscellaneous “goods”, materials and libraries, as follows, and specially designed components therefor:

- (a) Self-contained diving and underwater swimming apparatus, as follows:
  - (1) Closed or semi-closed circuit (rebreathing) apparatus specially designed for military use (i.e., specially designed to be non magnetic);
  - (2) Specially designed components for use in the conversion of open-circuit apparatus to military use;
  - (3) Articles designed exclusively for military use with self-contained diving and underwater swimming apparatus;
- (b) Construction equipment specially designed for military use;
- (c) Fittings, coatings and treatments for signature suppression, specially designed for military use;
- (d) Field engineer equipment specially designed for use in a combat zone;
- (e) “Robots”, “robot” controllers and “robot” “end-effectors”, having any of the following characteristics:
  - (1) Specially designed for military use;
  - (2) Incorporating means of protecting hydraulic lines against externally induced punctures caused by ballistic fragments (e.g., incorporating self-sealing lines) and designed to use hydraulic fluids with flash points higher than 839 K (566°C); or
  - (3) Specially designed or rated for operating in an electro-magnetic pulse (EMP) environment;
- (f) Libraries (parametric technical databases) specially designed for military use with equipment specified in this Part of this Schedule;
- (g) Nuclear power generating equipment or propulsion equipment, including “nuclear reactors”, specially designed for military use and components therefor specially designed or modified for military use;
- (h) “Goods” and material, coated or treated for signature suppression, specially designed for military use, other than those controlled elsewhere in this Part of this Schedule;
- (i) Simulators specially designed for military “nuclear reactors”;
- (j) Mobile repair shops specially designed to service military equipment;
- (k) Field generators specially designed for military use; and
- (l) Containers specially designed for military use.

*Technical Note:*

For the purpose of entry ML17, the term “library” (parametric technical database) means a collection of technical information of a military nature, reference to which may enhance the performance of military equipment or systems.

**ML18** Equipment and “technology” for the production (including design, examination, manufacture, testing and checking) of “goods” referred to in this Part of this Schedule, as follows:

- (a) Specially designed or modified production equipment for the production of products specified in this Part of this Schedule, and specially designed components therefor;
- (b) Specially designed environmental test facilities and specially designed equipment therefor, for the certification, qualification or testing of products specified in this Part of this Schedule;
- (c) Specific production “technology”, even if the equipment with which such “technology” is to be used is not controlled;
- (d) “Technology” specific to the design of, the assembly of components into, and the operation, maintenance and repair of complete production installations even if the components themselves are not controlled.

**PL5017** Equipment and test models specially designed or modified for the “development” or use of military “goods” specified in this Part of this Schedule.

**ML19** Directed energy weapon systems (DEW), related or countermeasure equipment and test models, as follows, and specially designed components therefor:

- (a) “Laser” systems specially designed for destruction or effecting mission-abort of a target;
- (b) Particle beam systems capable of destruction or effecting mission-abort of a target;
- (c) High power radio-frequency (RF) systems capable of destruction or effecting mission-abort of a target;
- (d) Equipment specially designed for the detection or identification of, or defence against, systems specified in entries ML19.a. to ML19.c.;
- (e) Physical test models and related test results for the systems, equipment and components specified in this entry.

**ML20** Cryogenic and “superconductive” equipment, as follows, and specially designed components and accessories therefor:

- (a) Equipment specially designed or configured to be installed in a vehicle for military ground, marine, airborne or space applications, capable of operating while in motion and of producing or maintaining temperatures below 103 K (– 170°C);
- (b) “Superconductive” electrical equipment (rotating machinery and transformers) specially designed or configured to be installed in a vehicle for military ground, marine, airborne or space applications, capable of operating while in motion;

except

Direct-current hybrid homopolar generators that have single-pole normal metal armatures which rotate in a magnetic field produced by superconducting windings, provided those windings are the only superconducting component in the generator.

**ML21** “Software”, as follows:

- (a) “Software” specially designed or modified for the “development”, “production” or “use” of equipment or materials specified in this Part of this Schedule;
- (b) Specific “software”, as follows:

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- (1) “Software” specially designed for:
  - (a) Modelling, simulation or evaluation of military weapon systems;
  - (b) “Development”, monitoring, maintenance or up-dating of “software” embedded in military weapon systems;
  - (c) Modelling or simulating military operation scenarios, not specified in ML14;
  - (d) Command, Communications, Control and Intelligence (C<sup>3</sup>I) applications;
- (2) “Software” for determining the effects of conventional, nuclear, chemical or biological warfare weapons.

**PL5001** Other security and para-military police “goods”, as follows:

- (a) Acoustic devices represented by the manufacturers or suppliers thereof as suitable for riot control purposes, and specialised components therefor;
- (b) Anti-riot shields and components therefor;
- (c) Leg-irons, shackles (excluding any pair of handcuffs the maximum dimension of which when locked does not exceed 240 mm) and gangchains, specially designed for restraining human beings;
- (d) Portable anti-riot devices for administering an electric shock or an incapacitating substance, and specialised components therefor;
- (e) Water cannon and components therefor;
- (f) Riot control vehicles which have been specially designed or modified to be electrified to repel boarders.

**ML22** “Technology” according to the General Technology Note for the “development”, “production” or “use” of “goods” specified in this Part of this Schedule, other than “technology” controlled in entries ML7 and ML18.