BERR | Department for Business Enterprise & Regulatory Reform

# UK MILITARY LIST

## The UK military list of items that require export authorisation.

JANUARY 2009

# SCHEDULE 1

**Schedule referred to in Articles 3 and 6 of the Export of Goods, Transfer of Technology and Provision of Technical Assistance (Control) Order 2003**

**PROHIBITED GOODS, SOFTWARE AND TECHNOLOGY**

*Note: In this Schedule, defined terms are printed in quotation marks.*

**Definitions**

In this Schedule:

"adapted for use in war" means any modification or selection (e.g., 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;

"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 for specific chemical or biochemical reactions and other biological compounds which bind to and accelerate the degradation of chemical warfare (CW) agents;

"biopolymer" means the following biological macromolecules:

a. enzymes for specific chemical or biochemical reactions;

b. 'monoclonal antibodies', 'polyclonal antibodies' or 'anti-idiotypic antibodies';

c. specially designed or specially processed 'receptors';

*Technical Note:*

*'Monoclonal antibodies' means proteins which bind to a specific antigenic site and are produced by a single clone of cells;*

*'Polyclonal antibodies' means a mixture of proteins which bind to a specific antigen and are produced by more than one clone of cells;*

*'Anti-idiotypic antibodies' means antibodies which bind to the specific antigen binding sites of other antibodies;*

*'Receptors' means biological macromolecular structures capable of binding ligands, the binding of which affects physiological functions.*

"development" means all stages prior to "production" (e.g., design, design research, design analyses, design concepts, assembly and testing of prototypes, pilot production schemes, design data, process of transforming design data into "goods" or "software", configuration design, integration design, layouts);

"end-effectors" means grippers, active tooling units (i.e., devices for applying motive power, process energy or sensing to the workpiece) and any other tooling that is attached to the baseplate on the end of a "robot" manipulator arm;

"energetic materials" means substances or mixtures that react chemically to release energy required for their intended application; "explosives", "pyrotechnics" and "propellants" are sub-classes of energetic materials;

"explosive signatures" are features which are characteristic of explosives in any form prior to their initiation, as detected using technology including, but not limited to, ion mobility spectrometry, chemiluminescence, fluorescence, nuclear, acoustic or electromagnetic techniques;

"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 applications, are required to detonate;

"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;

"lighter-than-air vehicles" means balloons and airships that rely on hot air or on lighter-than-air gases such as helium or hydrogen for their lift;

"nuclear reactor" means the "goods" 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;

"production" means all production stages (e.g., product engineering, manufacture, integration, assembly (mounting), inspection, testing, quality assurance);

"propellants" means substances or mixtures that react chemically to produce large volumes of hot gases at controlled rates to perform mechanical work;

"pyrotechnic(s)" 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;

"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 under the expected conditions of use for riot control purposes, produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure;

*Technical Note:*
*Tear gases are a subset of "riot control agents".*

"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;

*Note: This definition does not include:*

*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 (such as 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.*

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

"superconductive" in relation to materials (e.g., 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 characterised 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;

*Technical Note:*
*'Critical temperature' (also known 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.*

"technology" means specific 'information' necessary for the "development", "production" or "use" of "goods" or "software";

*Technical Note:*

*'Information' may take forms including, but not limited to: blueprints, plans, diagrams, models, formulae, tables, 'source code', engineering designs and specifications, manuals and instructions written or recorded on other media or devices (e.g., disk, tape, read-only memories);*

*'source code' (or source language) is a convenient expression of one or more processes which may be turned by a programming system into equipment executable form.*

"use" means operation, installation (e.g., 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 writing or interconnections; or

b. The setting of function controls including entry of parameters.

# PART I

## MILITARY, SECURITY AND PARA-MILITARY GOODS, SOFTWARE AND TECHNOLOGY AND ARMS, AMMUNITION AND RELATED MATERIEL

**ML1** Smooth-bore weapons with a calibre of less than 20 mm, other firearms 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;

c. Weapons using caseless ammunition;

d. Silencers, "special gun-mountings", weapon sights, clips and flash suppressers for firearms specified in ML1.a., ML1.b. or ML1.c.

*Note: ML1 does not control:*

*a. Air weapons (other than those declared by the Firearms (Dangerous Air Weapons) Rules 1969[a] to be specially dangerous);*

*b. Firearms specially designed for dummy ammunition and which are incapable of firing any ammunition in this Part of this Schedule;*

*c. Firearms certified by a registered UK Proof House as having been rendered incapable of firing any ammunition in this Part of this Schedule;*

*d. Bayonets;*

*e. Air (pneumatic) or cartridge (explosive) powered guns or pistols designed as:*

*1. Industrial tools; or*

*2. Humane stunning devices employed specifically for animal slaughter;*

*f. Signal pistols;*

*g. Optical weapon sights without electronic image processing (e.g., using only lenses to view target), with a magnification of 4 times or less, provided they are not specially designed or modified for military use.*

**ML2** Smooth-bore weapons with a calibre of 20 mm or more, other 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, rifles, recoilless rifles, smooth-bore weapons, and signature reduction devices therefor;

b. Military smoke, gas and "pyrotechnic" projectors or generators;

c. Weapons sights for firearms specified in ML2.a. or ML2.b.

*Note 1: ML2 does not control signal pistols.*

*Note 2: ML2.a. does not apply to hand-held projectile launchers specially designed to launch tethered projectiles, having no high explosive charge or communication link, to a range of 500m or less.*

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[a] S.I. 1969/47, amended by S.I. 1993/1490

**ML3** Ammunition and fuze setting devices, as follows, and specially designed components therefor:

a. Ammunition for weapons specified in ML1, ML2 or ML12;

*Note: ML3.a. does not control:*

*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;*

*c. Cartridges specially designed for signalling, bird scaring or lighting of gas flares at oil wells.*

b. Fuze setting devices specially designed for ammunition specified in ML3.a.

**ML4** [N*] Bombs, torpedoes, rockets, missiles, other explosive devices and charges, and related equipment and accessories, as follows, and specially designed components therefor:

*N.B.1: Electronic guidance and navigation equipment is controlled in ML11.a.*
*N.B.2: Aircraft missile protection systems are controlled in ML4.c.*

[M-[b]] a. Bombs, torpedoes, grenades, smoke canisters, rockets, mines, missiles, depth charges, demolition-charges, demolition-devices, demolition-kits, devices that contain "pyrotechnics", cartridges and simulators (i.e., equipment simulating the characteristics of any of these "goods"), specially designed for military use;

[M-[c]] b. Equipment that is both specially designed for military use and specially designed for the handling, controlling, activating, powering with one-time operational output, launching, laying, sweeping, discharging, decoying, jamming, detonating, disrupting or detecting of any of the following:

1. "goods" specified in ML4.a.; or
2. "improvised explosive devices";

*Note: ML4.b. does not control hand held devices limited by design solely to the detection of metal objects and incapable of distinguishing between mines and other metal objects.*

c. Aircraft Missile Protection Systems (AMPS).

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b [M1A*], [M2A*], [M3A*], [M9A*], [M10A*], [M11A*], [M12A4*], [M12A5a*], [M13A*], [M14A*], [M17A1*], [M18A*], [M19A*], [M20A*]

c [M2A1f*], [M9*], [M10A1*], [M10A2*], [M11A1*], [M11A2*], [M11A3*], [M11A4*], [M12*]

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

[M2A1f*] a. Weapon sights, bombing computers, gun laying equipment and weapon control systems;

[M11A1/2*] [M12A4/5*] 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 "goods" specified in ML5.a. or ML5.b.;

d. Field test or alignment equipment, specially designed for "goods" specified in ML5.a. or ML5.b.

**ML6** Ground "vehicles" and components as follows:

*N.B.: Electronic guidance and navigation equipment is controlled in ML11.a.*

[M12A1/2*] a. Ground "vehicles" and components therefor, specially designed or modified for military use;

*Technical Note:*
*For the purposes of ML6.a. the term ground "vehicles" includes trailers.*

*Note: In ML6.a. modification of a ground "vehicle" for military use entails a structural, electrical or mechanical change involving one or more specially designed military components.*

b. All-wheel drive "vehicles" capable of off-road use which have been manufactured or fitted with metallic or non-metallic materials to provide ballistic protection, other than those specified in ML6.a.

*Note 1: ML6.b. does not control "vehicles" designed or fitted out for the transportation of valuables or funds.*

*Note 2: ML6.b. does not control "vehicles" fitted with, or designed or modified to be fitted with, a plough, flail or tiller for the purpose of land mine clearance.*

**PL5035** Components that are both specially designed to provide ballistic protection and specially designed or modified for "vehicles" specified in ML6.b.

*N.B.: See also ML13.a. for armoured plate.*

**ML7** Chemical or biological toxic agents, toxic chemicals and mixtures containing such agents or chemicals, "riot control agents", radioactive materials, related equipment, components and materials as follows:

*Note: Chemicals are listed by name and Chemical Abstract Service (CAS) number. Chemicals of the same structural formula (e.g., hydrates) are controlled regardless of name or CAS number. CAS numbers are shown to assist in identifying whether a particular chemical or mixture is controlled, irrespective of nomenclature. CAS numbers cannot be used as unique identifiers because some forms of the listed chemical have different CAS numbers, and mixtures containing a listed chemical may also have different CAS numbers.*

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;

[C1] b. Chemical warfare (CW) agents including, but not limited to, the following:

1. CW nerve agents:

a. O-Alkyl (equal to or less than $C_{10}$, including cycloalkyl) alkyl (Methyl, Ethyl, n-Propyl or Isopropyl) - phosphonofluoridates, such as:
Sarin (GB):O-Isopropyl methylphosphonofluoridate (CAS 107-44-8);
and
Soman (GD):O-Pinacolyl methylphosphonofluoridate (CAS 96-64-0);

b. O-Alkyl (equal to or less than $C_{10}$, including cycloalkyl) N,N-dialkyl (Methyl, Ethyl, n-Propyl or Isopropyl) phosphoramidocyanidates, such as:
Tabun (GA):O-Ethyl N,N-dimethylphosphoramidocyanidate
(CAS 77–81-6);

c. O-Alkyl (H or equal to or less than $C_{10}$, including cycloalkyl) S-2-dialkyl (Methyl, Ethyl, n-Propyl or Isopropyl)-aminoethyl alkyl (Methyl, Ethyl, n-Propyl or Isopropyl) phosphonothiolates and corresponding alkylated and protonated salts, such as:
VX: O-Ethyl S-2-diisopropylaminoethyl methyl phosphonothiolate
(CAS 50782-69-9);

2. CW vesicant agents:

a. Sulphur mustards, such as:
1. 2-Chloroethylchloromethylsulphide (CAS 2625-76-5);
2. Bis(2-chloroethyl) sulphide (CAS 505-60-2);
3. Bis(2-chloroethylthio) methane (CAS 63869-13-6);
4. 1,2-bis (2-chloroethylthio) ethane (CAS 3563-36-8);
5. 1,3-bis (2-chloroethylthio) -n-propane (CAS 63905-10-2);
6. 1,4-bis (2-chloroethylthio) -n-butane (CAS 142868-93-7);
7. 1,5-bis (2-chloroethylthio) -n-pentane (CAS 142868-94-8);
8. Bis (2-chloroethylthiomethyl) ether (CAS 63918-90-1);
9. Bis (2-chloroethylthioethyl) ether (CAS 63918-89-8);

b. Lewisites, such as:
1. 2-chlorovinyldichloroarsine (CAS 541-25-3);
2. Tris (2-chlorovinyl) arsine (CAS 40334-70-1);
3. Bis (2-chlorovinyl) chloroarsine (CAS 40334-69-8);

c. Nitrogen mustards, such as:
1. HN1: bis (2-chloroethyl) ethylamine (CAS 538-07-8);
2. HN2: bis (2-chloroethyl) methylamine (CAS 51-75-2);
3. HN3: tris (2-chloroethyl) amine (CAS 555-77-1);

**ML7** b. continued

3. CW incapacitating agents, such as:
   a. 3-Quinuclidinyl benzilate (BZ) (CAS 6581-06-2);
4. CW defoliants, such as:
   a. Butyl 2-chloro-4-fluorophenoxyacetate (LNF);
   b. 2,4,5-trichlorophenoxyacetic acid mixed with 2,4-dichlorophenoxyacetic acid (Agent Orange);

[A*] [C1] c. CW binary precursors and key precursors, as follows, and chemical mixtures containing one or more of these precursors:

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 $C_{10}$, 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-Pinacolyl methylphosphonochloridate (CAS 7040-57-5);

d. "Riot control agents", active constituent chemicals and combinations thereof including:

1. α-Bromobenzeneacetonitrile, (Bromobenzyl cyanide) (CA) (CAS 5798-79-8);
2. [(2-chlorophenyl) methylene] propanedinitrile, (o-Chlorobenzylidenemalononitrile) (CS) (CAS 2698-41-1);
3. 2-Chloro-1-phenylethanone, Phenylacyl chloride (ω-chloroacetophenone) (CN) (CAS 532-27-4);
4. Dibenz-(b,f)-1,4-oxazephine (CR) (CAS 257-07-8);
5. 10-Chloro-5,10-dihydrophenarsazine, (Phenarsazine chloride), (Adamsite), (DM) (CAS 578-94-9) ;
6. N-Nonanoylmorpholine, (MPA) (CAS 5299-64-9) ;

*Note 1: ML7.d. does not control "riot control agents" individually packaged for personal self-defence purposes.*

*Note 2: ML7.d. does not control active constituent chemicals and combinations thereof identified and packaged for food production or medical purposes.*

e. Equipment specially designed or modified for military use, designed or modified for the dissemination of any of the following, and specially designed components therefor:

1. Materials or agents specified in ML7.a., ML7.b. or ML7.d.;
2. CW agents made up of precursors specified in ML7.c.;

**ML7** continued

f. Protective and decontamination "goods", specially designed or modified for military use, components and chemical mixtures as follows:

1. "Goods" designed or modified for defence against materials specified in ML7.a., ML7.b. or ML7.d. and specially designed components therefor;

*N.B.: See also 1A of Annex I to "the Regulation".*

2. "Goods" designed or modified for decontamination of "goods" contaminated with materials specified in ML7.a. or ML7.b. and specially designed components therefor;

3. Chemical mixtures specially developed or formulated for the decontamination of "goods" contaminated with materials specified in ML7.a. or ML7.b.;

g. "Goods" specially designed or modified for military use, designed or modified for the detection or identification of materials specified in ML7.a., ML7.b. or ML7.d. and specially designed components therefor;

*N.B.: See also 1A in Annex I to "the Regulation".*

*Note: ML7.g. does not control personal radiation monitoring dosimeters.*

h. "Biopolymers" specially designed or processed for the detection or identification of CW agents specified in ML7.b., and the cultures of specific cells used to produce them;

i. "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 ML7.b. 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 ML7.i.1.

*Note 1: ML7.b. and ML7.d. do not control:*

*a. Cyanogen chloride (CAS 506-77-4);*

*N.B.:See 1C of Annex I to "the Regulation".*

*b. Hydrocyanic acid (CAS 74-90-8);*

*c. Chlorine (CAS 7782-50-5);*

*d. Carbonyl chloride (phosgene) (CAS 75-44-5);*

*N.B.:See 1C of Annex I to "the Regulation".*

*e. Diphosgene (trichloromethyl-1-chloroformate) (CAS 503-38-8);*

*f. Not used;*

*g. Xylyl bromide: ortho: (CAS 89-92-9), meta: (CAS 620-13-3), para: (CAS 104-81-4);*

*h. Benzyl bromide (CAS 100-39-01);*

*i. Benzyl iodide (CAS 620-05-3);*

*j. Bromo acetone (CAS 598-31-2);*

*k. Cyanogen bromide (CAS 506-68-3);*

*l. Bromo methylethylketone (CAS 816-40-0);*

*m. Chloro acetone (CAS 78-95-5);*

**ML7** *Note 1* continued

*n. Ethyl iodoacetate (CAS 623-48-3);*

*o. Iodo acetone (CAS 3019-04-3);*

*p. Chloropicrin (CAS 76-06-2);*

*N.B.:See 1C of Annex I to "the Regulation".*

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

*N.B.: See 3.2. of Annex III to "the 2005 Regulation".*

*r. Oleoresin capsicum (OC)(CAS 8023-77-6).*

*N.B.: See 3.3. of Annex III to "the 2005 Regulation".*

*Note 2: The cultures of cells and biological systems specified in ML7.h. and ML7.i.2. are exclusive and ML7.h. and ML7.i.2 do not include cells or biological systems for civil purposes, (e.g., agricultural, pharmaceutical, medical, veterinary, environmental, waste management, or in the food industry).*

**ML8** "Energetic materials", and related substances, as follows:

*Note: Chemicals are listed by name and Chemical Abstract Service (CAS) number. Chemicals of the same structural formula (e.g., hydrates) are controlled regardless of name or CAS number. CAS numbers are shown to assist in identifying whether a particular chemical or mixture is controlled, irrespective of nomenclature. CAS numbers cannot be used as unique identifiers because some forms of the listed chemical have different CAS numbers, and mixtures containing a listed chemical may also have different CAS numbers.*

*Technical Note:*
*A 'mixture' refers to a composition of two or more substances with at least one substance being controlled in ML8.*

a. "Explosives", as follows, and 'mixtures' thereof:

1. ADNBF (aminodinitrobenzofuroxan or 7-amino-4,6-dinitrobenzofurazane-1-oxide) (CAS 97096-78-1);
2. BNCP (cis-bis (5-nitrotetrazolato) tetra amine-cobalt (III) perchlorate) (CAS 117412-28-9);
3. CL-14 (diamino dinitrobenzofuroxan or 5,7-diamino-4,6-dinitrobenzofurazane-1-oxide) (CAS 117907-74-1);

[M4C4b5]

4. CL-20 (HNIW or Hexanitrohexaazaisowurtzitane) (CAS 135285-90-4); chlathrates of CL-20;
5. CP (2-(5-cyanotetrazolato) penta amine-cobalt (III) perchlorate) (CAS 70247-32-4);
6. DADE (1,1-diamino-2,2-dinitroethylene, FOX7);
7. DATB (diaminotrinitrobenzene) (CAS 1630-08-6);
8. DDFP (1,4-dinitrodifurazanopiperazine);
9. DDPO (2,6-diamino-3,5-dinitropyrazine-1-oxide, PZO) (CAS 194486-77-6);
10. DIPAM (3,3′-diamino-2,2′,4,4′,6,6′-hexanitrobiphenyl or dipicramide) (CAS 17215-44-0);
11. DNGU (DINGU or dinitroglycoluril) (CAS 55510-04-8);
12. Furazans as follows:
    a. DAAOF (diaminoazoxyfurazan);
    b. DAAzF (diaminoazofurazan) (CAS 78644-90-3);
13. HMX and derivatives as follows:

[M4C4b3]
[N6C1.a]

    a. HMX (Cyclotetramethylenetetranitramine, octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazine, 1,3,5,7-tetranitro-1,3,5,7-tetraza-cyclooctane, octogen or octogene) (CAS 2691-41-0);
    b. difluoroaminated analogs of HMX;
    c. K-55 (2,4,6,8-tetranitro-2,4,6,8-tetraazabicyclo-[3,3,0]-octanone-3, tetranitrosemiglycouril or keto-bicyclic HMX) (CAS 130256-72- 3);
14. HNAD (hexanitroadamantane) (CAS 143850-71-9);

[N6C1.d]

15. HNS (hexanitrostilbene) (CAS 20062-22-0);

**ML8** a. continued

16. Imidazoles as follows:
    a. BNNII (Octahydro-2,5-bis(nitroimino)imidazo [4,5-d]imidazole);
    b. DNI (2,4-dinitroimidazole) (CAS 5213-49-0);
    c. FDIA (1-fluoro-2,4-dinitroimidazole);
    d. NTDNIA (N-(2-nitrotriazolo)-2,4-dinitroimidazole);
    e. PTIA (1-picryl-2,4,5-trinitroimidazole);
17. NTNMH (1-(2-nitrotriazolo)-2-dinitromethylene hydrazine);
18. NTO (ONTA or 3-nitro-1,2,4-triazol-5-one) (CAS 932-64-9);
19. Polynitrocubanes with more than four nitro groups;
20. PYX (2,6-bis(picrylamino)-3,5-dinitropyridine) (CAS 38082-89-2);

[M4C4b3] 21. RDX and derivatives as follows:

[N6C1.b]
    a. RDX (cyclotrimethylenetrinitramine, cyclonite, T4, hexahydro-1,3,5-trinitro-1,3,5-triazine, 1,3,5-trinitro-1,3,5-triaza-cyclohexane, hexogen or hexogene) (CAS 121-82-4);
    b. Keto-RDX (K-6 or 2,4,6-trinitro-2,4,6-triazacyclohexanone) (CAS 115029-35-1);

22. TAGN (triaminoguanidinenitrate) (CAS 4000-16-2);

[N6C1.c] 23. TATB (triaminotrinitrobenzene) (CAS 3058-38-6);

24. TEDDZ (3,3,7,7-tetrabis(difluoroamine) octahydro-1,5-dinitro-1,5-diazocine);
25. Tetrazoles as follows:
    a. NTAT (nitrotriazol aminotetrazole);
    b. NTNT (1-N-(2-nitrotriazolo)-4-nitrotetrazole);
26. Tetryl (trinitrophenylmethylnitramine) (CAS 479-45-8);
27. TNAD (1,4,5,8-tetranitro-1,4,5,8-tetraazadecalin) (CAS 135877-16-6);
28. TNAZ (1,3,3-trinitroazetidine) (CAS 97645-24-4);
29. TNGU (SORGUYL or tetranitroglycoluril) (CAS 55510-03-7);
30. TNP (1,4,5,8-tetranitro-pyridazino[4,5-d]pyridazine) (CAS 229176-04-9);
31. Triazines as follows:
    a. DNAM (2-oxy-4,6-dinitroamino-s-triazine) (CAS 19899-80-0);
    b. NNHT (2-nitroimino-5-nitro-hexahydro-1,3,5-triazine) (CAS 130400-13-4);
32. Triazoles as follows:
    a. 5-azido-2-nitrotriazole;
    b. ADHTDN (4-amino-3,5-dihydrazino-1,2,4-triazole dinitramide) (CAS 1614-08-0);
    c. ADNT (1-amino-3,5-dinitro-1,2,4-triazole);
    d. BDNTA ([bis-dinitrotriazole]amine);
    e. DBT (3,3′-dinitro-5,5-bi-1,2,4-triazole) (CAS 30003-46-4);
    f. DNBT (dinitrobistriazole) (CAS 70890-46-9);
    g. NTDNA (2-nitrotriazole-5-dinitramide) (CAS 75393-84-9);
    h NTDNT (1-N-(2-nitrotriazolo)-3,5-dinitrotriazole);
    i. PDNT (1-picryl-3,5-dinitrotriazole);
    j. TACOT (tetranitrobenzotriazolobenzotriazole) (CAS 25243-36-1);

**ML8** a. continued

[N6C1.e*] 33. "Explosives" not listed elsewhere in ML8.a. having a detonation velocity exceeding 8,700 m/s at maximum density or a detonation pressure exceeding 34 GPa (340 kbar);

34. Organic "explosives" not listed elsewhere in ML8.a. 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;

b. "Propellants" as follows:

1. Any United Nations (UN) Class 1.1 solid "propellant" with a theoretical specific impulse (under standard conditions) of more than 250 seconds for non-metallised, or more than 270 seconds for aluminised compositions;

2. Any UN Class 1.3 solid "propellant" with a theoretical specific impulse (under standard conditions) of more than 230 seconds for non-halogenised, 250 seconds for non-metallised compositions and 266 seconds for metallised compositions;

3. "Propellants" having a force constant of more than 1,200 kJ/kg;

4. "Propellants" that can sustain a steady-state linear burning rate of more than 38 mm/s under standard conditions (as measured in the form of an inhibited single strand) of 6.89 MPa (68.9 bar) pressure and 294 K (21°C);

5. Elastomer Modified Cast Double Base (EMCDB) "propellants" with extensibility at maximum stress of more than 5% at 233 K (-40°C);

6. Any "propellant" containing substances specified in ML8.a.;

c. "Pyrotechnics", fuels and related substances, as follows, and 'mixtures' thereof:

1. Aircraft fuels specially formulated for military purposes;

*Note: Aircraft fuels in ML8.c.1. are finished "goods", not their constituents.*

2. Alane (aluminium hydride) (CAS 7784-21-6);

[M4C6c1] 3. Carboranes; decaborane (CAS 17702-41-9); pentaboranes (CAS 19624-22-7 and 18433-84-6) and their derivatives;

4. Hydrazine and derivatives as follows (see also ML8.d.8. and ML8.d.9. for oxidising hydrazine derivatives):

[M4C2a] a. Hydrazine (CAS 302-01-2) in concentrations of 70% or more;

*Note: ML8.c.4.a. does not control hydrazine 'mixtures' specially formulated for corrosion control.*

[M4C2b1] b. Monomethyl hydrazine (CAS 60-34-4);

c. Symmetrical dimethyl hydrazine (CAS 540-73-8);

[M4C2b2] d. Unsymmetrical dimethyl hydrazine (CAS 57-14-7);

[M4C2d*] 5. Metal fuels in particle form whether spherical, atomised, spheroidal, flaked or ground, manufactured from material consisting of 99% or more of any of the following:

a. Metals as follows 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;

**ML8** c. 5. continued

b. 'Mixtures' containing any of the following:

1. Zirconium (CAS 7440-67-7), magnesium (CAS 7439-95-4) or alloys of these in particle sizes of less than 60 µm;

[M4C2e*&f*] [N2C4]

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;

*Note: ML8.c.5.b.2. does not control boron and boron carbide enriched with boron-10 (20% or more of total boron-10 content).*

*Note: "Explosives" and fuels containing the metals or alloys specified in ML8.c.5. are controlled whether or not the metals or alloys are encapsulated in aluminium, magnesium, zirconium, or beryllium.*

6. Military materiel containing thickeners for hydrocarbon fuels specially formulated for use in flame throwers or incendiary munitions, such as metal stearates or palmates (e.g., octal (CAS 637-12-7)) and M1, M2 and M3 thickeners;

[M4C3] 7. Perchlorates, chlorates and chromates composited with powdered metal or other high energy fuel components;

[M4C2c*] 8. 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;

9. Titanium subhydride ($TiH_n$) of stoichiometry equivalent to n = 0.65 - 1.68;

d. Oxidisers, as follows, and 'mixtures' thereof:

[M4C4b2] 1. ADN (ammonium dinitramide or SR 12) (CAS 140456-78-6);

[M4C4b1] 2. AP (ammonium perchlorate) (CAS 7790-98-9);

[M4C4a6*] 3. Compounds composed of fluorine and any of the following:

a. Other halogens;

b. Oxygen; or

c. Nitrogen;

*[N2C6]*

*Note 1: ML8.d.3. does not control chlorine trifluoride.*

*Note 2: ML8.d.3. does not control nitrogen trifluoride in its gaseous state.*

*N.B.: See also 1C of Annex I to "the Regulation".*

4. DNAD (1,3-dinitro-1,3-diazetidine) (CAS 78246-06-7);

5. HAN (hydroxylammonium nitrate) (CAS 13465-08-2);

6. HAP (hydroxylammonium perchlorate) (CAS 15588-62-2);

[M4C4b4] 7. HNF (hydrazinium nitroformate) (CAS 20773-28-8);

[M4C2b3] 8. Hydrazine nitrate (CAS 37836-27-4);

[MC2b4*] 9. Hydrazine perchlorate (CAS 27978-54-7);

[M4C4a5] 10. Liquid oxidisers comprised of or containing inhibited red fuming nitric acid (IRFNA) (CAS 8007-58-7);