

United States Munitions List (USML)

Category XIV Chemicals and Biologicals Listing

- **Chemical agents**, as follows:
 - Nerve agents, as follows:
 - O-Alkyl (equal to or less than C₁₀, including cycloalkyl) alkyl (Methyl, Ethyl, n-Propyl or Isopropyl) phosphonofluoridates, such as: Sarin (GB): O-Isopropyl methylphosphonofluoridate (CAS 107-44-8) (CWC Schedule 1A); and Soman (GD): O-Pinacolyl methylphosphonofluoridate (CAS 96-64-0) (CWC Schedule 1A);
 - O-Alkyl (equal to or less than C₁₀, 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) (CWC Schedule 1A); or
 - O-Alkyl (H or equal to or less than C₁₀, 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) (CWC Schedule 1A);
 - Amiton: O,O-Diethyl S-[2(diethylamino)ethyl] phosphorothiolate and corresponding alkylated or protonated salts (CAS 78-53-5) (CWC Schedule 2A);
 - Vesicant agents, as follows:
 - Sulfur mustards, such as: 2-Chloroethylchloromethylsulfide (CAS 2625-76-5) (CWC Schedule 1A); Bis(2-chloroethyl)sulfide (HD) (CAS 505-60-2) (CWC Schedule 1A); Bis(2-chloroethylthio)methane (CAS 63839-13-6) (CWC Schedule 1A); 1,2-bis (2-chloroethylthio)ethane (CAS 3563-36-8) (CWC Schedule 1A); 1,3-bis (2-chloroethylthio)-n-propane (CAS 63905-10-2) (CWC Schedule 1A); 1,4-bis (2-chloroethylthio)-n-butane (CWC Schedule 1A); 1,5-bis (2-chloroethylthio)-n-pentane (CWC Schedule 1A); Bis (2-chloroethylthiomethyl)ether (CWC Schedule 1A); Bis (2-chloroethylthioethyl)ether (CAS 63918-89-8) (CWC Schedule 1A);
 - Lewisites, such as: 2-chlorovinyl dichloroarsine (CAS 541-25-3) (CWC Schedule 1A); Tris (2-chlorovinyl) arsine (CAS 40334-70-1) (CWC Schedule 1A); Bis (2-chlorovinyl) chloroarsine (CAS 40334-69-8) (CWC Schedule 1A);
 - Nitrogen mustards, or their protonated salts, as follows:
 - HN1: Bis (2-chloroethyl) ethylamine (CAS 538-07-8) (CWC Schedule 1A);
 - HN2: Bis (2-chloroethyl) methylamine (CAS 51-75-2) (CWC Schedule 1A);
 - HN3: Tris (2-chloroethyl) amine (CAS 555-77-1) (CWC Schedule 1A); or
 - Other nitrogen mustards, or their salts, having a propyl, isopropyl, butyl, isobutyl, or tertiary butyl group on the bis(2-chloroethyl) amine base;
 - Ethyldichloroarsine (ED) (CAS 598-14-1); or
 - Methyl dichloroarsine (MD) (CAS 593-89-5);
 - Incapacitating agents, such as:
 - 3-Quinuclidinyl benzilate (BZ) (CAS 6581-06-2) (CWC Schedule 2A);
 - Diphenylchloroarsine (DA) (CAS 712-48-1); or
 - Diphenylcyanoarsine (DC) (CAS 23525-22-6);
 - Chemical warfare agents not enumerated above adapted for use in war to produce casualties in humans or animals, degrade equipment, or damage crops or the environment.
- **Biological agents** and biologically derived substances and genetic elements thereof as follows:
 - Genetically modified biological agents:
 - Having non-naturally occurring genetic modifications that are known to or are reasonably expected to result in an increase in any of the following:

United States Munitions List (USML) Category XIV Chemicals and Biologicals Listing

- Persistence in a field environment (i.e., resistance to oxygen, UV damage, temperature extremes, arid conditions, or decontamination processes); or
 - The ability to defeat or overcome standard detection methods, personnel protection, natural or acquired host immunity, host immune response, or response to standard medical countermeasures; and
- Being any micro-organisms/toxins or their non-naturally occurring genetic elements as listed below:
 - Bacillus anthracis;
 - Botulinum neurotoxin producing species of Clostridium;
 - Burkholderia mallei;
 - Burkholderia pseudomallei;
 - Ebola virus;
 - Foot-and-mouth disease virus;
 - Francisella tularensis;
 - Marburg virus;
 - Variola major virus (Smallpox virus);
 - Variola minor virus (Alastrim);
 - Yersinia pestis; or
 - Rinderpest virus.
- Biological agent or biologically derived substances controlled in ECCNs 1C351, 1C353, or 1C354:
 - Physically modified, formulated, or produced as any of the following:
 - 1-10 micron particle size;
 - Particle-absorbed or combined with nano-particles;
 - Having coatings/surfactants, or
 - By microencapsulation; and
 - Meeting the criteria of paragraph (b)(2)(i) of this category in a manner that is known to or is reasonably expected to result in an increase in any of the following:
 - Persistence in a field environment (i.e., resistant to oxygen, UV damage, temperature extremes, arid conditions, or decontamination processes);
 - Dispersal characteristics (e.g., reduced susceptibility to shear forces, optimized electrostatic charges); or
 - The ability to defeat or overcome: standard detection methods, personnel protection, natural or acquired host immunity, or response to standard medical countermeasures.
- **Chemical agent binary precursors and key precursors**, as follows:
 - Alkyl (Methyl, Ethyl, n-Propyl or Isopropyl) phosphonyl difluorides, such as: DF: Methyl Phosphonyldifluoride (CAS 676-99-3) (CWC Schedule 1B); Methylphosphinyldifluoride (CAS 753-59-3) (CWC Schedule 2B);
 - 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) (CWC Schedule 1B);

United States Munitions List (USML)

Category XIV Chemicals and Biologicals Listing

- Chlorosoman: O-Pinacolyl methylphosphonochloridate (CAS 7040-57-5) (CWC Schedule 1B); or
- Methylphosphonyl dichloride (CAS 676-97-1) (CWC Schedule 2B); Methylphosphinyldichloride (CAS 676-83-5) (CWC Schedule 2B).
- **Defoliants**, as follows:
 - 2,4,5-trichlorophenoxyacetic acid (CAS 93-76-5) mixed with 2,4-dichlorophenoxyacetic acid (CAS 94-75-7) (Agent Orange (CAS 39277-47-9)); or
 - Butyl 2-chloro-4-fluorophenoxyacetate (LNF).
- **Parts, components, accessories, attachments, associated equipment, materials, and systems**, as follows:
 - Antibodies, recombinant protective antigens, polynucleotides, biopolymers, or biocatalysts (including their expression vectors, viruses, plasmids, or cultures of specific cells modified to produce them) as follows:
 - When exclusively funded by a Department of Defense contract for detection of the biological agents at paragraph (b)(1)(ii) of this category even if naturally occurring;
 - Joint Biological Agent Identification and Diagnostic System (JBAIDS) Freeze Dried reagents listed by JRPD-ASY-No and Description respectively as follows:
 - JRPD-ASY-0016 Q-Fever IVD Kit;
 - JRPD-ASY-0100 Vaccinia (Orthopox);
 - JRPD-ASY-0106 Brucella melitensis (Brucellosis);
 - JRPD-ASY-0108 Rickettsia prowazekii (Rickettsia);
 - JRPD-ASY-0109 Burkholderia ssp. (Burkholderia);
 - JRPD-ASY-0112 Eastern equine encephalitis (EEE);
 - JRPD-ASY-0113 Western equine encephalitis (WEE);
 - JRPD-ASY-0114 Venezuelan equine encephalitis (VEE);
 - JRPD-ASY-0122 Coxiella burnetii (Coxiella);
 - JRPD-ASY-0136 Influenza A/H5 IVD Detection Kit;
 - JRPD-ASY-0137 Influenza A/B IVD Detection Kit; or
 - JRPD-ASY-0138 Influenza A Subtype IVD Detection Kit;
 - Critical Reagent Polymerase (CRP) Chain Reactions (PCR) assay kits with Catalog-ID and Catalog-ID Product respectively as follows:
 - PCR-BRU-1FB-B-K Brucella Target 1 FastBlock Master Mix Biotinylated;
 - PCR-BRU-1FB-K Brucella Target 1 FastBlock Master Mix;
 - PCR-BRU-1R-K Brucella Target 1 LightCycler/RAPID Master Mix;
 - PCR-BURK-2FB-B-K Burkholderia Target 2 FastBlock Master Mix Biotinylated;
 - PCR-BURK-2FB-K Burkholderia Target 2 FastBlock Master Mix;
 - PCR-BURK-2R-K Burkholderia Target 2 LightCycler/RAPID Master Mix;
 - PCR-BURK-3FB-B-K Burkholderia Target 3 FastBlock Master Mix Biotinylated;
 - PCR-BURK-3FB-K Burkholderia Target 3 FastBlock Master Mix;
 - PCR-BURK-3R-K Burkholderia Target 3 LightCycler/RAPID Master Mix;

United States Munitions List (USML) Category XIV Chemicals and Biologicals Listing

- PCR-COX-1FB-B-K Coxiella burnetii Target 1 FastBlock Master Mix Biotinylated;
- PCR-COX-1R-K Coxiella burnetii Target 1 LightCycler/RAPID Master Mix;
- PCR-COX-2R-K Coxiella burnetii Target 2 LightCycler/RAPID Master Mix;
- PCR-OP-1FB-B-K Orthopox Target 1 FastBlock Master Mix Biotinylated;
- PCR-OP-1FB-K Orthopox Target 1 FastBlock Master Mix;
- PCR-OP-1R-K Orthopox Target 1 LightCycler/RAPID Master Mix;
- PCR-OP-2FB-B-K Orthopox Target 2 FastBlock Master Mix Biotinylated;
- PCR-OP-3R-K Orthopox Target 3 LightCycler/RAPID Master Mix;
- PCR-RAZOR-BT-X PCR-RAZOR-BT-X RAZOR CRP BioThreat-X Screening Pouch;
- PCR-RIC-1FB-K Ricin Target 1 FastBlock Master Mix;
- PCR-RIC-1R-K Ricin Target 1 LightCycler/RAPID Master Mix;
- PCR-RIC-2R-K Ricin Target 2 LightCycler/RAPID Master Mix; or
- PCR-VEE-1R-K Venezuelan equine encephalitis Target 1 LightCycler/RAPID Master Mix; or
- Critical Reagent Program Antibodies with Catalog ID and Product respectively as follows:
 - AB-AG-RIC Aff. Goat anti-Ricin;
 - AB-ALVG-MAB Anti-Alphavirus Generic Mab;
 - AB-AR-SEB Aff. Rabbit anti-SEB;
 - AB-BRU-M-MAB1 Anti-Brucella melitensis Mab 1;
 - AB-BRU-M-MAB2 Anti-Brucella melitensis Mab 2;
 - AB-BRU-M-MAB3 Anti-Brucella melitensis Mab 3;
 - AB-BRU-M-MAB4 Anti-Brucella melitensis Mab 4;
 - AB-CHOL-0139-MAB Anti-V.cholerae 0139 Mab;
 - AB-CHOL-01-MAB Anti-V. cholerae 01 Mab;
 - AB-COX-MAB Anti-Coxiella Mab;
 - AB-EEE-MAB Anti-EEE Mab;
 - AB-G-BRU-A Goat anti-Brucella abortus;
 - AB-G-BRU-M Goat anti-Brucella melitensis;
 - AB-G-BRU-S Goat anti-Brucella suis;
 - AB-G-CHOL-01 Goat anti-V.cholerae 0:1;
 - AB-G-COL-139 Goat anti-V.cholerae 0:139;
 - AB-G-DENG Goat anti-Dengue;
 - AB-G-RIC Goat anti-Ricin;
 - AB-G-SAL-T Goat anti-S. typhi;
 - AB-G-SEA Goat anti-SEA;
 - AB-G-SEB Goat anti-SEB;
 - AB-G-SEC Goat anti-SEC;
 - AB-G-SED Goat anti-SED;
 - AB-G-SEE Goat anti-SEE;
 - AB-G-SHIG-D Goat anti-Shigella dysenteriae;
 - AB-R-BA-PA Rabbit anti-Protective Antigen;
 - AB-R-COX Rabbit anti-C. burnetii;
 - AB-RIC-MAB1 Anti-Ricin Mab 1;

United States Munitions List (USML) Category XIV Chemicals and Biologicals Listing

- AB-RIC-MAB2 Anti-Ricin Mab 2;
- AB-RIC-MAB3 Anti-Ricin Mab3;
- AB-R-SEB Rabbit anti-SEB;
- AB-R-VACC Rabbit anti-Vaccinia;
- AB-SEB-MAB Anti-SEB Mab;
- AB-SLT2-MAB Anti-Shigella-like t x2 Mab;
- AB-T2T-MAB1 Anti-T2 Mab 1;
- AB-T2T-MAB2 Anti-T2 Toxin 2;
- AB-VACC-MAB1 Anti-Vaccinia Mab 1;
- AB-VACC-MAB2 Anti-Vaccinia Mab 2;
- AB-VACC-MAB3 Anti-Vaccinia Mab 3;
- AB-VACC-MAB4 Anti-Vaccinia Mab 4;
- AB-VACC-MAB5 Anti-Vaccinia Mab 5;
- AB-VACC-MAB6 Anti-Vaccinia Mab 6;
- AB-VEE-MAB1 Anti-VEE Mab 1;
- AB-VEE-MAB2 Anti-VEE Mab 2;
- AB-VEE-MAB3 Anti-VEE Mab 3;
- AB-VEE-MAB4 Anti-VEE Mab 4;
- AB-VEE-MAB5 Anti-VEE Mab 5;
- AB-VEE-MAB6 Anti-VEE Mab 6; or
- AB-WEE-MAB Anti-WEE Complex Mab.
- Vaccines exclusively funded by a Department of Defense contract, as follows:
 - Recombinant Botulinum ToxinA/B Vaccine;
 - Recombinant Plague Vaccine;
 - Trivalent Filovirus Vaccine; or
 - Vaccines specially designed for the sole purpose of protecting against biological agents and biologically derived substances identified in paragraph (b) of this category.
- Modeling or simulation tools, including software controlled in paragraph (m) of this category, for chemical or biological weapons design, development, or employment developed or produced under a Department of Defense contract or other funding authorization (e.g., the Department of Defense's HPAC, SCIPUFF, and the Joint Effects Model (JEM)).
- Technical data (as defined in § 120.10 of this subchapter) and defense services (as defined in § 120.9 of this subchapter) directly related to the defense articles enumerated in paragraphs (a) through (l) and (n) of this category. (See § 125.4 of this subchapter for exemptions.)
- Developmental countermeasures or sorbents funded by the Department of Defense via contract or other funding authorization;
- Commodities, software, and technology subject to the EAR (see § 120.42 of this subchapter) used in or with defense articles controlled in this category.