Attachment 9

CLASS 5--OXIDIZING MATERIALS AND ORGANIC PEROXIDES

A9.1. General Requirements. For military members, failure to obey the mandatory provisions from paragraphs A9.3. through A9.10. and any provisions of mandatory subparagraph(s) hereunder is a violation of Article 92, Uniform Code of Military Justice (UCMJ). Civilian employees who fail to obey the provisions from paragraph A9.3. through A9.10. and any provisions of mandatory subparagraph(s) hereunder are subject to administrative disciplinary action without regard to otherwise applicable criminal or civil sanctions. Personnel shall not deviate from these provisions and fully comply with the inner/receptacle and outer container selections as specified in each packaging paragraph. **(T-0)**. Not all packaging paragraphs are inclusive and packaging selection is based on the type of oxidizing materials and organic peroxides shipped. This attachment contains information concerning the packaging and general handling instructions for Class 5.1 (oxidizing material) and Class 5.2 (organic peroxides). See Attachment 3 for other details concerning Class 5 material.

A9.2. Organic Peroxides Table. The Organic Peroxides Table (refer to 49 CFR Section 173.225) specifies, by technical name, the organic peroxides authorized for transportation. Ensure an organic peroxide identified by technical name in the organic peroxide table complies with all of the applicable provisions of the table. An organic peroxide not identified in the organic peroxide table by technical name or a new formulation of identified organic peroxides requires written approval from the DOT according to 49 CFR Section 173.128 before transportation.

A9.3. Package Class 5.2 Organic Peroxides as follows: Containers meeting PG II performance tests and UN performance markings are required. Corrosion resistant metal packagings or with protection against corrosion for substances with a Class 8 subsidary risk are required. Packagings for UN3103 and UN3105 are limited to a net quantity of 1 L per inner packaging and 10 L per outer packaging. UN3107 and UN3109 are limited to a net quantity of 2.5 L per inner packaging and 25 L per outer packaging. Packagings for UN3104 and UN3106 are limited to a net quantity of 1 kg per inner packaging and 10 kg per outer packaging. UN3108 and UN3110 are limited to a net quantity of 2.5 kg per inner packaging and 25 kg per outer packaging.

A9.3.1. Package in drums, jerricans, or boxes as follows:

Inner packaging	**Outer packaging**
Receptacles: plastic	**Drums:** plywood (1D), fiber (1G) or plastic drum (1H1 or 1H2) ***or*** **Jerricans:** plastic (3H1 or 3H2) ***or*** **Boxes:** natural wood (4C1 or 4C2), plywood (4D), or reconstituted wood (4F), fiberboard (4G), plastic (4H1or 4H2) or other metal (4N)

A9.4. Package Samples of Organic Peroxides as follows: Samples of new organic peroxides or new formulations of identified organic peroxides for which complete test data is not available, and which are being transported for testing and evaluation, may be transported and assigned a PSN for organic peroxide, Type C. Data available to the person offering the material for transportation must indicate that the sample would pose a threat no greater than that of an organic peroxide, Type B, and that the control temperature, if any, is sufficiently low to prevent any dangerous decomposition and sufficiently high to prevent any dangerous phase separation. **(T-0)**. Packaging requirements are as follows:

A9.4.1. Package the sample following the requirements of UN3103 or UN3104 as appropriate and the inner packages are limited to 0.5 L or 0.5 kg as appropriate.

A9.4.2. Use the PSN organic peroxide type C, liquid or organic peroxide type C, as applicable.

A9.5. Package Class 5.1 Liquids as follows: See also A3.3.5.

A9.5.1. Package in combination packagings with outer drums, barrels, jerricans, or boxes as follows:

Inner packaging	Outer packaging
Receptacles: Glass or earthenware, plastic or metal **Note:** For PG I material inner packagings packed in a rigid and leakproof receptacle or intermediate packaging containing sufficient absorbent material to absorb the entire contents of all inner packagings before packing the inner packaging(s) in the outer package. **Note:** Ensure inner packaging or receptacle closures of combination packages containing liquids are held securely, tightly and effectively in place by secondary means. See A20.3.	**Drums:** steel (1A1 or 1A2), aluminum (1B1 or 1B2), plywood (1D), fiber (1G), plastic (1H1 or 1H2), or other metal (1N1 or 1N2) ***or*** **Barrel:** wood (2C2) **Note:** Wood barrel (2C2) not authorized for PG I material. ***or*** **Jerricans:** steel (3A1 or 3A2) aluminum (3B1 or 3B2), or plastic (3H1 or 3H2) ***or*** **Boxes:** steel (4A), aluminum (4B), natural wood (4C1 or 4C2), plywood (4D), or reconstituted wood (4F), fiberboard (4G), plastic (4H1 or 4H2), or other metal (4N)

A9.5.2. Package in single packagings of drums, barrels, or jerricans as follows:

Inner packaging	Outer packaging
Not required	**Drums:** steel (1A1 or 1A2), aluminum (1B1 or 1B2), metal other than steel or aluminum (1N1 or 1N2), or plastic drum (1H1 or 1H2) ***or*** **Barrel:** wood (2C1) **Note:** Wood barrel (2C1) not authorized for PG I material. ***or*** **Jerricans:** steel (3A1 or 3A2), aluminum (3B1 or 3B2), or plastic (3H1 or 3H2)

A9.5.3. Package in the following composite packagings with plastic inner receptacles:

Inner receptacle	Outer packaging
Plastic	**Drums:** steel, aluminum, fiber, plastic, or plywood (6HA1, 6HB1, 6HG1, 6HH, or 6HD1) **Note:** Plywood drums not authorized for PG I material. ***or*** **Box:** steel, aluminum, wooden, plywood, or fiberboard box (6HA2, 6HB2, 6HC, 6HD2, or 6HG2)

A9.5.4. Package in the following composite packagings with glass porcelain or stoneware inner receptacles:

Inner receptacle	Outer packaging
Glass, porcelain, or stoneware	**Drums:** steel, aluminum, or fiber (6PA1, 6PB1, or 6PG1) ***or*** **Boxes:** steel, aluminum, wooden, or fiberboard (6PA2, 6PB2, 6PC, or 6PG2) ***or*** solid or expanded plastic packaging (6PH1 or 6PH2) ***or*** plywood drum or wickerwork hamper (6PD1 or 6PD2) Note: Plywood drum or wickerwork hamper not authorized for PG I material.

A9.5.5. DOT Cylinders. DOT specification cylinders as prescribed for any compressed gas, except acetylene (DOT 8, 8AL) and DOT 3HT.

A9.6. Package Class 5.1 Solids as follows: See A3.3.5. for additional packaging requirements.

A9.6.1. Package in combination packagings with outer drums, barrels, jerricans, or boxes as follows:

Inner packaging	**Outer packaging**
Receptacles: Glass or earthenware, plastic or metal	**Drums:** steel (1A1 or 1A2), aluminum (1B1 or 1B2), plywood (1D), fiber (1G), plastic (1H1 or 1H2), or metal other than steel or aluminum (1N1 or 1N2) ***or*** **Barrel:** wood (2C2) ***or*** **Jerricans:** steel (3A1 or 3A2), aluminum (3B1 or 3B2) or plastic (3H1 or 3H2) ***or*** **Boxes:** steel (4A), aluminum (4B), natural wood (4C1 or 4C2), plywood (4D), or reconstituted wood (4F), fiberboard (4G), solid plastic (4H2), or other metal (4N)

A9.6.2. Package in single packagings of drums, barrels, jerricans, boxes, or bags as follows:

Inner packaging	Outer packaging
Not required	**Drums:** steel (1A1 or 1A2), aluminum (1B1 or 1B2), plywood (1D), fiber (1G), plastic (1H1 or 1H2) or metal other than steel or aluminum (1N1 or 1N2) **Note:** Plywood drum not authorized for PG I material. ***or*** **Barrel:** wood (2C1 or 2C2) **Note:** Wood barrels not authorized for PG I material. ***or*** **Jerrican:** steel (3A1 or 3A2), aluminum (3B1 or 3B2), or plastic (3H1 or 3H2) ***or*** **Boxes:** steel (4A), steel with liner (4A), aluminum (4B), aluminum with liner (4B), natural wood (4C1 or 4C2), plywood (4D), reconstituted wood (4F), fiberboard (4G), plastic (4H1 or 4H2), or other metal (4N) **Note:** Steel (4A), aluminum (4B), plywood (4D), reconstituted wood (4F), natural wood (4C1) or fiberboard (4G) boxes not authorized for PG I material. ***or*** **Bags:** woven plastic (5H1, 5H2, or 5H3); plastic film (5H4); textile (5L1, 5L2, or 5L3); paper, multiwall, water-resistant (5M2) **Note:** Bags not authorized for PG I material.

A9.6.3. Package in the following composite packagings with plastic inner receptacles:

Inner receptacle	Outer packaging
Plastic	**Drums:** steel, aluminum, plywood, fiber, or plastic (6HA1, 6HB1, 6HD1, 6HG1, or 6HH1) ***or*** **Boxes:** steel, aluminum, wood, plywood, or fiberboard (6HA2, 6HB2, 6HC, 6HD2, or 6HG2)

A9.6.4. Package in the following composite packagings with glass porcelain or stoneware inner receptacles:

Inner receptacle	Outer packaging
Glass, porcelain, or stoneware	**Drums:** steel, aluminum, plywood, or fiber (6PA1, 6PB1, 6PD1, or 6PG1) ***or*** **Boxes:** steel, aluminum, wooden, or fiberboard (6PA2, 6PB2, 6PC, or 6PG2) ***or*** expanded or solid plastic (6PH1 or 6PH2)

A9.6.5. DOT Cylinders. DOT specification cylinders as prescribed for any compressed gas, except acetylene (DOT 8, 8AL) and DOT 3HT.

A9.7. Package Iodine Pentafluoride as follows: Package in any DOT specification cylinder, except those specified for acetylene.

A9.8. Package Oxidizing Substances, Solid, Self-Heating, N.O.S.; Oxidizing Substances, Solid, Flammable, N.O.S.; Oxidizing Substances, Solid, Water Reactive, N.O.S. as follows: Ship according to a competent authority approval (CAA). See paragraph 2.5. for more information on CAAs.

A9.9. Package Bromine Pentafluoride or Bromine Trifluoride as follows:

A9.9.1. Handling Instructions. These items are extremely dangerous. Make approved chemical safety mask and clothing available when handling this material, and wear when handling leaking packages.

A9.9.2. Packaging Requirements. Package bromine pentafluoride or bromine trifluoride in specification cylinders, 3A150, 3AA150, 3B240, 3BN150, 3E1800, 4B240, 4BA240, or 4BW240. Seal each valve outlet by a threaded cap or a threaded plug. No cylinder may be equipped with any pressure relief device. Overpack specification 3E1800 cylinders in a strong wooden box.

A9.10. Oxygen Generators, Chemical. An oxygen generator, chemical may be transported only under the following conditions:

A9.10.1. Approval. A chemical oxygen generator that is shipped with an explosive or non-explosive means of initiation attached must be classed and approved by the Associate Administrator in accordance with the procedures specified in 49 CFR Section 173.56. **(T-0)**.

A9.10.2. Impact resistance. Ensure a chemical oxygen generator, without any packaging, is capable of withstanding a 1.8 meter drop onto a rigid, non-resilient, flat and horizontal surface, in the position most likely to cause actuation or loss of contents.

A9.10.3. Protection against inadvertent actuation. A chemical oxygen generator must incorporate one of the following means of preventing inadvertent actuation:

A9.10.3.1. A chemical oxygen generator that is not installed in protective breathing equipment (PBE):

A9.10.3.1.1. Mechanically actuated devices must have two pins, installed so that each is independently capable of preventing the actuator from striking the primer; one pin and one retaining ring, each installed so that each is independently capable of preventing the actuator from striking the primer; or a cover securely installed over the primer and a pin installed so as to prevent the actuator from striking the primer and cover.

A9.10.3.1.2. Electrically actuated devices must have the electrical leads mechanically shorted and the mechanical short must be shielded in metal foil.

A9.10.3.1.3. Devices with a primer but no actuator must have a protective cover over the primer to prevent actuation from external impact.

A9.10.3.2. A chemical oxygen generator installed in a PBE must contain a pin installed so as to prevent the actuator from striking the primer, and be placed in a protective bag, pouch, case or cover such that the protective breathing equipment is fully enclosed in such a manner that the protective bag, pouch, case or cover prevents unintentional actuation of the oxygen generator. **(T-0)**.

A9.10.4. Packaging. Place a chemical oxygen generator and a chemical oxygen generator installed in equipment, (e.g., a PBE) in a rigid outer packaging that conforms to the requirements of either 49 CFR Part 178, Subparts L and M, at the Packing Group I or II performance level; or the performance criteria in Air Transport Association (ATA) Specification No. 300 for a Category I Shipping Container. In addition, with its contents, is capable of meeting the following additional requirements:

A9.10.4.1. The Flame Penetration Resistance Test specified in 49 CFR Part 178, Appendix E.

A9.10.4.2. The Thermal Resistance Test specified in 49 CFR Part 178, Appendix D.

A9.10.5. A chemical oxygen generator is forbidden for transportation by both passenger-carrying and cargo-only aircraft after the manufacturer's expiration date; or after the contents of the generator have been expended.