

hydrate must be packed wet with at least 20 percent by weight of water in a Specification 5 or 5B (§§ 178.80, 178.82 of this subchapter) metal barrel or drum, or a Spec. 17H (§ 178.118 of this subchapter) metal drum (single-trip), lined with a heavy, close-fitting jute bag closed by secure sewing. The lead styphnate (lead trinitroresorcinate) or barium styphnate, monohydrate shall be placed in an inside bag made of rubber or rubberized cloth. This bag should be divided into a number of smaller packages. Inside the bag and over the lead styphnate, (lead trinitroresorcinate) or barium styphnate, monohydrate there must be placed a cap of the same fabric and of the same diameter as the bag. The bag and contents must be packed in the center of the metal barrel or drum, and must be entirely surrounded by at least three inches of well-packed sawdust saturated with water. The barrel or drum must be inspected carefully and be determined free of leaks. The dry weight of lead styphnate (lead trinitroresorcinate) or barium styphnate, monohydrate in one outside container may not exceed 150 pounds.

(c) If lead styphnate (lead trinitroresorcinate) or barium styphnate, monohydrate is to be transported during freezing weather it must be wet with a mixture of denatured ethyl alcohol and water so that it does not freeze.

(d) Each barrel or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE."

[Amdt. 173-81, 39 FR 17315, May 15, 1974, and Amdt. 173-187, 50 FR 11702, Mar. 25, 1985]

§ 173.75 Nitro mannite.

(a) The offering of nitro mannite in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonator, blasting caps, and exploders.

(b) Nitro mannite must be packed wet with not less than 40 percent by weight of water in a specification container 5 or 5B (§§ 178.80, 178.82 of this subchapter) metal barrel or drum, with inside container which must be

bags made of at least 10-ounce cotton duck, rubber or rubberized cloth. Each bag must be securely closed. These bags containing the nitro mannite must then be placed in a rubber bag, rubberized cloth bag, or bag made of suitable watertight material and then placed in the barrel or drum. Any empty space in the outside bag must be filled with water and this bag securely closed. The dry weight of nitro mannite in one outside container must not exceed 100 pounds.

(1) Spec. 21C (§ 178.224 of this subchapter). Fiber drums not over 30 gallons capacity of at least nine-ply construction having, in addition, a sheet of steel having a minimum base box of 75 pounds, not less than 0.008 inch thick, wound between the fifth and sixth plies. The inside ply of kraft paper shall be laminated on each side with polyethylene to form a water-proof lining. The bottom head shall be of fiber, metal covered on the outside. Nitro mannite must be packed wet with not less than 40 percent by weight of water and shall be contained in at least two tightly sealed polyethylene bags of at least 0.004 inch thickness and this unit shall then be placed in a tightly closed polyethylene bag of at least 0.004 inch thickness and this assembly shall be placed within a 0.006 inch thickness polyethylene or other suitable plastic bag, completely filled with water and tightly closed. The 0.006 inch plastic bag shall be of such size as to completely fill the outside shipping container. The dry weight of nitro mannite in one outside container must not exceed 100 pounds.

(c) Sufficient outage in outside container must be allowed to prevent rupturing of container in freezing weather, or a mixture of denatured ethyl alcohol and water may be used to prevent freezing in transit.

(d) Each barrel or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5808, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17316, May 15, 1974; Amdt. 173-94, 41 FR 16065, Apr. 15, 1976]

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§ 173.76 Nitrosoguanidine.

(a) The offering of nitrosoguanidine in a dry condition for transportation is forbidden except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

(b) Nitrosoguanidine must be packed wet with not less than 10 percent by weight of water in a specification container 5 or 5B (§§ 178.80, 178.82 of this subchapter) metal barrel or drum, 17H (§ 178.118 of this subchapter) metal drum (single-trip) with an inside container which must be a bag made of strong cloth, which must in turn be placed in the barrel or drum. The dry weight of nitrosoguanidine in one outside container must not exceed 75 pounds.

(c) Each barrel or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17316, May 15, 1974; Amdt. 173-94, 41 FR 16066, Apr. 15, 1976]

§ 173.77 Pentaerythrite tetranitrate.

(a) The offering of pentaerythrite tetranitrate in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

(b) Pentaerythrite tetranitrate must be packed wet with not less than 40 percent by weight of water in a specification container 5 or 5B (§§ 178.80, 178.82 of this subchapter) metal barrel or drum, 17H (§ 178.118 of this subchapter) metal drum (single-trip) with inside containers which must be bags made of at least 10-ounce cotton duck, rubber, or rubberized cloth. Each bag must be securely closed. These bags containing pentaerythrite tetranitrate must then be placed in a rubber bag, rubberized cloth bag, or bag made of suitable watertight material and then placed in the barrel or drum. Any empty space in the outside bag must be filled with water and this bag securely closed. The dry weight of pentaerythrite tetranitrate in one outside container must not exceed 300 pounds.

(c) Sufficient outage in outside container must be allowed to prevent rupturing of container in freezing weather, or a mixture of denatured ethyl alcohol or other suitable anti-freeze and water may be used to prevent freezing in transit.

(d) Each barrel or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17316, May 15, 1974; Amdt. 173-94, 41 FR 16066, Apr. 15, 1976]

§ 173.78 Tetrazene.

(a) The offering of tetrazene (guanyl nitrosamino guanyl tetrazene) in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

(b) Tetrazene (guanyl nitrosamino guanyl tetrazene) must be packed wet with not less than 30 percent by weight of water in a specification container 5 or 5B (§§ 178.80, 178.82 of this subchapter) metal barrel or drum, 17H (§ 178.118 of this subchapter) metal drum (single-trip) with an inside container which must be a bag made of 4-ounce duck. Inside the bag and over the tetrazene, there must be placed a cap of the same fabric and of the same diameter as the bag. The bag must be securely tied and placed in a strong grain bag. This grain bag must also be securely tied. The bag and contents must be packed in the center of the metal barrel or drum, and must be entirely surrounded by not less than three inches of well-packed sawdust saturated with water. The metal barrel or drum must be lined with a heavy, close-fitting, jute bag closed by secure sewing to prevent escape of sawdust. The barrel or drum must be inspected carefully and all leaks stopped. The dry weight of tetrazene in one outside container must not exceed 75 pounds.

(c) If the shipment of tetrazene is to take place at a time that freezing weather is to be anticipated, it must be wet with a mixture of denatured ethyl

alcohol and water of such proportions that freezing will not occur in transit.

(d) Each barrel or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17316, May 15, 1974; Amdt. 173-94, 41 FR 16066, Apr. 15, 1976]

§ 173.79 Jet thrust units (jato), Class A explosives; rocket motors, Class A explosives; igniters, jet thrust (jato), Class A explosives; and igniters, rocket motor, Class A explosives.

(a) Jet thrust units (jato), rocket motors, jet thrust (jato) igniters, and rocket motor igniters, which are Class A explosives must be packaged as follows:

(1) Specification 14, 15A, 15E, 16A, or 19B (§§ 178.165, 178.168, 178.172, 178.185, 178.191 of this subchapter). Wooden boxes, or wooden boxes, fiberboard lined.

(2) Wooden boxes, wooden crates, or other packagings of approved military specifications which comply with § 173.7(a).

(b) Jet thrust units, class A explosives or rocket motors, class A explosives, must not be shipped with igniters assembled therein unless shipped by, for, or to the Department of the Army, the Department of the Navy, or the Department of the Air Force.

(c) Jet thrust units Class A explosives or rocket motors, Class A explosives, may be packaged in the same outside packaging with their separately packaged igniters (or igniter components), Class A, B, or C explosives only when shipped by or for the Department of Defense (DOD) and in accordance with established practices and procedures specified by DOD.

(d) Each package must be plainly marked "JET THRUST UNITS, CLASS A EXPLOSIVES", "ROCKET MOTORS, CLASS A EXPLOSIVES", "IGNITERS, JET THRUST, CLASS A EXPLOSIVES", or "IGNITERS, ROCKET MOTOR, CLASS A EXPLOSIVES", as appropriate.

[Amdt. 173-6, 34 FR 7160, May 1, 1969, as amended by Amdt. 173-94, 41 FR 16066, Apr. 15, 1976; Amdt. 173-138, 45 FR 32694,

May 19, 1980; Amdt. 173-149, 46 FR 49892, Oct. 8, 1981]

§ 173.80 Charged well casing jet perforating guns.

(a) Charged well casing jet perforating guns may be transported only by highway and only by private carriers engaged in well operations. These guns may be transported as Class C explosives if the total weight of the explosive contents of the shaped charges assembled to the guns does not exceed 20 pounds. See § 173.110.

(b) Charged well casing jet perforating guns of the steel tube type must be packed without blasting caps, electric blasting caps, or other firing devices affixed to or installed in the guns and transported in specifically constructed bodies of motor vehicles operated by private carriers engaged in well operations whose motor vehicles transporting such guns must have specially built racks or carrying cases designed and constructed so that the guns are held securely in place during transportation and are not subject to damage by contact, one to the other or other articles or materials carried on the vehicle. Shaped charges assembled in the steel tubes must be of the type described in § 173.53(h)(1), except that each shaped charge shall contain not over 4 ounces of high explosive and each shaped charge if not completely enclosed in glass or metal must be fully protected by a metal cover after installation in the gun.

(c) Charged well casing jet perforating guns of the metallic strip or tubular framework type must be packed without blasting caps, electric blasting caps, or other firing devices affixed to or installed in the guns and transported in specially constructed bodies of motor vehicles operated by private carriers engaged in well operations whose motor vehicles transporting such guns must have specially built racks or carrying cases designed and constructed so that the guns are held securely in place during transportation and are not subject to damage by contact, one to the other or other articles or materials carried on the vehicle. Shaped charges assembled in the metallic strips or tubular framework must be of the type described in

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§ 173.53(h)(1), except that each shaped charge shall contain not over 4 ounces of high explosive and each shaped charge if not completely enclosed in glass or metal must be fully protected by a metal cover after installation in the gun.

(d) The charged well casing jet perforating guns described in paragraphs (b) and (c) of this section and the bodies of motor vehicles transporting such guns must be so designed and constructed so that the guns are held securely in place during transportation and are not subject to damage by contact, one to the other or other articles or materials carried on the vehicle. The assembled gun or guns packed as required by paragraph (b) or (c) of this section must not extend beyond the body of the vehicle and must be secured in the body of the motor vehicle in a fixed position so as to prevent movement relative to each other or in the body of the motor vehicle.

(e) Blasting caps, electric blasting caps, or other firing devices transported on any motor vehicle operated by private carriers engaged in well operations transporting charged well casing jet perforating guns shall be segregated; each kind from every other kind, and from jet perforating guns, tools or other supplies. Blasting caps, electric blasting caps, or other firing devices shall be carried in a container having individual pockets for each such device or in a fully enclosed steel container lined with nonsparking material. No more than two blasting caps, electric blasting caps, or other firing devices per gun shall be transported on the same motor vehicle transporting well casing jet perforating guns.

[Amdt. 173-165, 48 FR 28100, June 20, 1983]

§ 173.81 Cord, detonating.

(a) Detonating cord shall be packed in wooden or fiberboard boxes.

(b) Each outside packaging shall be plainly marked "CORD, DETONATING-HANDLE CAREFULLY".

(c) Detonating cord having an explosive content not exceeding 100 grains per linear foot may be offered for transportation and transported as a class C explosive if the gross weight of

all packages of detonating cord does not exceed 100 pounds per—

(1) transport vehicle, freight container or cargo only aircraft.

(2) offshore down hole tool pallet carried on a cargo vessel.

(3) cargo compartment of a cargo vessel.

(4) passenger-carrying aircraft used to transport personnel to remote work sites, such as offshore drilling units.

[Amdt. 173-182, 50 FR 804, Jan. 7, 1985, as amended by Amdt. 173-201, 52 FR 13039, Apr. 20, 1987]

§ 173.86 New explosives definitions; approval and notification.

(a) As used in this section, "new explosive" means an explosive compound, mixture or device, produced by a person who:

(1) Has not previously produced that explosive compound, mixture or device; or

(2) Has previously produced the explosive compound, mixture or device, but has made a change in the formulation, design, process or production equipment. An explosive compound mixture or device will not be considered a "new explosive" if an agency listed in paragraph (b) of this section has determined and confirmed in writing that there are no significant differences in hazard characteristics from the explosive compound, mixture or device previously approved. The written determination must be submitted to and approved by, the Director, OHMT before the explosive is offered for transportation.

(b) No person may offer a new explosive for transportation unless it has been examined and assigned a recommended shipping description and hazard class by the Bureau of Explosives or the Bureau of Mines, U.S. Department of the Interior and classed and approved by the Director, OHMT; or examined, classed, and approved by one of the following agencies:

(1) U.S. Department of Energy (DOE) for new explosives made by, or under the direction or supervision of DOE when tested in accordance with the Explosives Hazardous Classification procedures contained in DOT TB 700-2 (May 19, 1967), or

(2) U.S. Army Material Development and Readiness Command (DRCSF), Naval Sea Systems Command (NAVSEA 06H), or HQUSAF (IGD)/SEV/ for new explosives made by, or under the direction or supervision of the Department of Defense when tested in accordance with Explosives Hazard Classification procedures contained in DOD TB 700-2 (May 19, 1967), (NAVSEAINST 8020.8 AFTO 11A-1-47, DSAR 8220.1).

(c) Each person who offers a new explosive for transportation must file a copy of the approval for the new explosive accompanied by a supporting laboratory report or equivalent data with the Director, OHMT before offering the new explosive for transportation, unless the new explosive is:

(1) Covered under an approval issued by the Director, OHMT;

(2) Being transported under paragraph (d), (e), (f), or (g) of this section; or

(3) A new DOD explosive covered by a security classification.

(d) Notwithstanding paragraph (b) of this section, any person may offer a sample of a new explosive that has not been approved for transportation by railroad, highway, or vessel to a laboratory for examination if:

(1) The new explosive has been assigned a tentative shipping description and class in writing by one of the agencies listed in paragraph (b) of this section;

(2) The sample consists of no more than five pounds of the new explosive;

(3) The new explosive is packaged as required in this part according to the tentative description and class assigned unless otherwise specified in writing by one of the agencies listed in paragraph (b) of this section; and

(4) The package is labeled as required by this subchapter and the following is marked on the package:

(i) The words "SAMPLE FOR LABORATORY EXAMINATION";

(ii) The net weight of the new explosive, and

(iii) The tentative shipping description.

(e) Notwithstanding paragraph (b) of this section, a manufacturer of a new explosive that has not been examined or approved may transport that

new explosive from where it was produced to an explosive testing facility if:

(1) The new explosive is not a forbidden explosive or an initiating explosive according to this subchapter;

(2) The new explosive is a compound or mixture it must be described as high explosive or high explosive, liquid, as appropriate (other than when contained in a device) and packed, marked, labeled, and described on the shipping paper as required by this subchapter;

(3) The new explosive is a device it must be assigned a tentative description and class by the owner and packed, marked, labeled, and described on the shipping paper as required by this subchapter based on its tentative description and class;

(4) The new explosive is transported in a motor vehicle operated by the owner of the explosive, and

(5) The new explosive is accompanied by a person, in addition to the driver of the motor vehicle, who is qualified by training and experience to handle the explosive.

(f) Notwithstanding the provisions of paragraph (b) or (d) of this section, the Director, Office of Hazardous Materials Transportation may approve a new explosive on the basis of an approval issued for the explosive by the competent authority of a foreign government, or, when examination of explosives by the Bureau of Explosives or Bureau of Mines is impracticable, on the basis of reports of tests conducted by disinterested third parties, or may approve the transportation of an explosives sample for the purpose of examination by the Bureau of Explosives, or the Bureau of Mines or other government agency.

(g) Notwithstanding the provisions of paragraph (b) of this section, an explosive may be transported under the provisions of §§ 171.11, 171.12 or § 176.11 without the approval of the Director, Office of Hazardous Materials Transportation provided that the Director, Office of Hazardous Materials Transportation has acknowledged, in writing, the acceptability of an approval issued by the competent authority of a foreign government pursuant to the provisions of the UN Rec-

ommendations, the ICAO Technical Instructions, the IMDG Code or other national or international regulations based on the provisions of the UN Recommendations. In such cases, a copy of the approval of the foreign competent authority, and a copy of the written acknowledgement of its acceptability must accompany each shipment of that explosive.

(h) The requirements of this section do not apply to small arms ammunition which is:

(1) Not a forbidden explosive under § 173.51;

(2) Ammunition for rifle, pistol, or shotgun;

(3) Ammunition with inert projectile or blank ammunition; and

(4) Ammunition not exceeding 50 caliber for rifle or pistol cartridges or 8 gauge for shotshells.

(i) If experience or other data indicate that the hazard of a material (device) containing an explosive composition is greater or less than indicated according to the definition and criteria specified in §§ 173.53, 173.86, and 173.100 of this Part, the Director, OHMT may, following examination in accordance with paragraph (b) of this section, revise its classification or except the material (device) from the requirements of this subchapter.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-95, 41 FR 15013, Apr. 9, 1976]

EDITORIAL NOTE: For Federal Register citations affecting § 173.86, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.87 Explosives in mixed packaging.

Unless specifically authorized in this subchapter, explosives may not be packaged in the same outside packaging with other articles unless packaged by the DOD in accordance with § 173.7(a). Inside packages of different explosives (except detonators and initiating explosives) may be packed in one outside packaging in accordance with the requirements of this subchapter if the gross weight of each inside package does not exceed 8 ounces and the gross weight of the completed package does not exceed 50 pounds.

[Amdt. 173-134, 44 FR 70731, Dec. 10, 1979, as amended by Amdt. 173-201, 52 FR 13039, Apr. 20, 1987]

CLASS B EXPLOSIVES; DEFINITIONS

§ 173.88 Definition of Class B explosives.

(a) Explosives, Class B, are defined as those explosives which in general function by rapid combustion rather than detonation and include some explosive devices such as special fireworks, flash powders, some pyrotechnic signal devices and liquid or solid propellant explosives which include some smokeless powders. These explosives are further specifically described in paragraphs (b) to (g) of this section.

(b) Ammunition for cannon with empty projectiles, inert-loaded projectiles, solid projectiles or without projectiles, or shell, and catapult charges exceeding 2 inches in diameter, is fixed ammunition assembled in a unit consisting of the cartridge case containing the propelling charge and primer with empty, inert-loaded, or solid projectiles, or without projectiles, which is fired from a cannon, mortar, gun, howitzer or recoilless rifle.

(c) Rocket ammunition is fixed ammunition which is fired from a tube, launcher, rails, trough, or other device as distinguished from cannon ammunition which is fired from a cannon, gun, or mortar. It consists of an igniter, a rocket motor, and empty projectile, inert-loaded projectile, or solid projectile.

(d) Special fireworks are manufactured articles designed primarily for the purpose of producing visible or audible pyrotechnic effects by combustion or explosion. (See § 173.100(r) for common fireworks.) Examples are toy torpedoes, railway torpedoes, some firecrackers and salutes, exhibition display pieces, aeroplane flares, illuminating projectiles, incendiary projectiles, incendiary bombs or incendiary grenades and smoke projectiles or smoke bombs fused or unfused and containing expelling charges but without bursting charges, flash powders in inner units not exceeding 2 ounces each, flash sheets in interior packages, flash powder or spreader cartridges containing not over 72 grains of flash

powder each (see § 173.60 for shipments made as low explosives) and flash cartridges consisting of a paper cartridge shell, small-arms primer, and flash composition, not exceeding 180 grains all assembled in one piece. Fireworks must be in a finished state, exclusive of mere ornamentation, as supplied to the retail trade and must be so constructed and packed that loose pyrotechnic composition will not be present in packages in transportation.

(e) Jet thrust units (jato), Class B explosives; rocket motors, Class B explosives; igniters, jet thrust (jato), Class B explosives; and igniters, rocket motors, Class B explosives:

(1) Jet thrust units (jato), Class B explosives, are metal cylinders containing a mixture of chemicals capable of burning rapidly and producing considerable pressure. Jet thrust units are designed to be ignited by an electric igniter. They are used to assist aeroplanes to take off.

(2) Rocket motor, Class B explosives, is a device containing a propelling charge and consisting of one or more continuous type combustion unit(s), closed at one end (closure may be an igniter with a thrust plate) and with a nozzle(s) at the other end. The propelling charge consists of a mixture of chemicals and/or chemical compounds which when ignited is capable of burning rapidly and producing considerable pressure and which will not sustain a detonation. (The rocket motor carries its own solid oxidizer-fuel combination.) Rocket motors, Class B explosives, should be nonpropulsive in shipment (see paragraphs (e)(2) (i) and (ii) of this section.) Rocket motors, Class B explosives, are designed to be ignited by an electrically actuated device which may be an igniter, or by other means. They are used to propel and/or provide thrust for guided missiles, rockets, or spacecraft.

(i) A rocket motor to be considered "nonpropulsive" must be capable of unrestrained burning and will not move appreciably in any direction when ignited by any means. Blast deflectors, thrust neutralizers or other similar devices must be proven by test prior to authorization for use.

(ii) Rocket motors, Class B explosives, may be shipped in a propulsive

state only under conditions approved by the Department of Defense or the National Aeronautics and Space Administration.

(3) Igniters, jet thrust (jato), Class B explosives, and igniters, rocket motor, Class B explosives, are devices consisting of an electrically operated or remotely controlled ignition element and a fast burning composition which functions by rapid burning rather than detonation, assembled in a unit for use in igniting the propelling charge of jet thrust units, rocket motors, or rocket engines.

(f) *Propellant explosives, Class B.* Propellant explosives, Class B, are solid or liquid chemicals or chemical mixtures which function by combustion. The combustion is controlled by composition, size, form of grain, or other chemical or mechanical means. Any propellant is Class B which fails to detonate in five trials when tested (see Note 2) in the package in which it is offered for shipment. Propellant explosives, Class B, include smokeless powder for small arms (see Note 4), smokeless powder for cannon, liquid monopropellant fuel (see Note 3), smokeless powder, or solid propellant explosives for rockets, jet thrust units, or other devices. Black powder is not included in this classification and is defined specifically in § 173.53.

(g) Explosives power devices, Class B, are devices designed to operate ejecting apparatus or other mechanisms by means of a propellant explosive, Class B, and differ from explosive power devices, Class C, in that they contain larger or more powerful propellants. The devices must not rupture on functioning and must be of a type examined by the Bureau of Explosives and approved by the Director, OHMT, except as otherwise provided in § 173.51(b) and § 173.86(a).

NOTE 1: Fire-extinguisher charges containing not to exceed 50 grains of propellant explosives per unit are exempt from the regulations in Parts 170-189 of this chapter.

NOTE 2: In conducting the test, one propellant container shall be surrounded by inert loaded containers of the same weight, including one inert container placed on top of the propellant container. The propellant shall be ignited by means of a commercial electric squib placed within 4 inches of the

bottom of the container. The presence of a crater and absence of flame shall be considered as evidences of detonation.

NOTE 3: A liquid monopropellant fuel is defined as any propellant in which the fuel and the oxidizer are physically or chemically combined in one form.

NOTE 4: Smokeless powder for small arms in quantities not exceeding 100 pounds net weight in one car or motor vehicle, except shipments by, for, or to the Department of the Army, Navy, or Air Force of the United States Government, shall be classed as a flammable solid for purposes of transportation when packaged in accordance with § 173.197a.

(h) Starter cartridges, jet engine, Class B explosives consist of plastic and/or rubber cases, each containing a pressed cylindrical block of propellant explosive and having in the top of the case a small compartment that incloses an electrical squib, small amounts of black powder, and smokeless powder, which constitutes an igniter. The starter cartridge is used to activate a mechanical starter for jet engines.

(i) Rocket engine (liquid). Class B explosives is a complete, self-contained rocket propulsion unit which contains an oxidizer and a fuel, each separated by an aluminum or stainless steel wall of not less than 0.250 inch thickness. Double walls are permitted. Pressurization of the propellant tanks is by use of a gas generator. The ignition source must be in an unarmed position for shipment. Rocket engines (liquid) are used to propel or provide thrust for rockets, missiles or spacecraft.

[29 FR 18683, Dec. 29, 1964, as amended by Order 72, 31 FR 6424, Apr. 28, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-104, 42 FR 11239, Feb. 28, 1977; Amdt. 173-138, 45 FR 32694, May 19, 1980]

§ 173.89 Ammunition for cannon with empty projectiles, inert-loaded projectiles, solid projectiles, tear gas projectiles or without projectiles.

(a) Ammunition for cannon with empty projectiles, inert-loaded projectiles, solid projectiles, tear gas projectiles, or without projectiles must be well packed and properly secured in strong wooden or metal containers or in plastic containers of approved military specifications complying with § 173.7(a).

(b) Each outside package must be plainly marked "AMMUNITION FOR CANNON WITH EMPTY PROJECTILES", "AMMUNITION FOR CANNON WITH INERT-LOADED PROJECTILES", "AMMUNITION FOR CANNON WITH SOLID PROJECTILES", "AMMUNITION FOR CANNON WITHOUT PROJECTILES", OR "AMMUNITION FOR CANNON WITH TEAR GAS PROJECTILES, CLASS B EXPLOSIVES," as appropriate.

[Amdt. 173-110, 42 FR 57965, Nov. 7, 1977]

§ 173.90 Rocket ammunition with empty, inert-loaded, or solid projectiles.

(a) Rocket ammunition with empty, inert-loaded, or solid projectiles must be well packed and properly secured in strong wooden or metal containers.

(b) Each package must be plainly marked "ROCKET AMMUNITION WITH EMPTY PROJECTILES," "ROCKET AMMUNITION WITH INERT-LOADED PROJECTILES," or "ROCKET AMMUNITION WITH SOLID PROJECTILES," as appropriate.

[Order 72, 31 FR 6424, Apr. 28, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16086, Apr. 15, 1976]

§ 173.91 Special fireworks.

(a) Special fireworks, except as otherwise authorized, must be securely packed in containers complying with the following specifications:

(1) [Reserved]

(2) Specification 15A, 15B, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes. Gross weight not to exceed 500 pounds.

(3) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes. Gross weight not to exceed 65 pounds except as provided in paragraph (a)(5) of this section. Not permitted for illuminating projectiles and aeroplane flares.

(4) Fireworks that can be exploded en masse, by dropping the completed shipping container from a height of six feet or by the impact of a rifle bullet, if found safe for transportation, may be shipped in accordance

with the regulations in this part applying to high explosives.

(5) Ship distress signals when packed in tight inside metal containers of not less than 24 gauge sheet iron or other metal of equal strength, securely closed by positive means (not friction) and of such design and so arranged as to completely fill the outside container, may be packed in Spec. 12B (§ 178.205 of this subchapter) fiberboard boxes. Gross weight not to exceed 95 pounds when boxes are made in accordance with § 178.205-29 of this subchapter.

(6) Illuminating projectiles, incendiary projectiles, and smoke projectiles exceeding 90 pounds each, or of not less than 4½ inches in diameter, may be offered for transportation without being boxed, only by, for, or to the Department of Defense (DOD) of the U.S. Government when securely blocked and braced in accordance with methods prescribed by DOD.

(i) Illuminating projectiles, incendiary projectiles, and smoke projectiles less than 4½ inches in diameter may be offered for transportation without being boxed, when palletized, only by, for, or to the Department of Defense (DOD) of the U.S. Government when securely blocked and braced in accordance with methods prescribed by DOD.

(b) Flash or spreader cartridges not exceeding 72 grains of flash powder each must be packed in containers complying with the following specifications:

(1) Specification 15A, 15B, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes or Spec. 12B (§ 178.205 of this subchapter) fiberboard boxes, with inside containers which must be cartons or tin cans containing not over 6 cartridges and not to exceed 150 cartons or cans to an outer box.

(c) Flash cartridges consisting of a paper cartridge shell, small arms primer, and flash composition, not exceeding 180 grains each, all assembled in one piece ready for firing must be packed in containers complying with the following specifications:

(1) Specification 15A, 15B, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.185, 178.190, 178.191 of this subchapter).

Wooden boxes, or Spec. 12B (§ 178.205 of this subchapter) fiberboard boxes, with inside containers which must be cartons containing not to exceed 12 cartridges each and not more than 12 such cartons in one outside box.

(2) Flash cartridges, in quantity not exceeding 5 pounds, when in small interior wooden boxes, may be packed with nonexplosive, nonflammable or noncorrosive articles.

(d) Flash sheets must be packed in containers complying with the following specifications:

(1) Specification 15A, 15B, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes; or Spec. 12B (§ 178.205 of this subchapter) fiberboard boxes, with inside containers which must be an inner package or envelope containing not more than 6 flash sheets and not more than one dozen inner envelopes or packages inclosed in each inner pasteboard box or carton. Gross weight of wooden box not to exceed 150 pounds. Gross weight of fiberboard box not to exceed 65 pounds.

(2) Flash sheets, in quantity not exceeding 5 pounds, when in small interior or wooden boxes, may be packed with nonexplosive, nonflammable, or noncorrosive articles.

(e) Photographic flash powder must be packed in containers complying with the following specifications:

(1) Specification 15A, 15B, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes, or Spec. 12B (§ 178.205 of this subchapter) fiberboard boxes, with inside containers which must be any inside container sufficiently strong to retain contents not exceeding 2 ounces each. If bottles are used, each bottle must be packed in a securely closed fiber mailing tube having metal ends. Not more than 4 dozen 2-ounce bottles may be packed in an outer wooden box. When packed in units not exceeding 1 ounce each without bottles in similar fiber mailing tubes and outer wooden boxes, the gross weight of one outside box must not exceed 150 pounds. Gross weight of fiberboard box not to exceed 65 pounds.

(2) Photographic flash powder, in quantity not exceeding 5 pounds.

when in small interior wooden boxes, may be packed with nonexplosive, nonflammable, or noncorrosive articles.

(f) Railway torpedoes (track torpedoes) must be packed in containers complying with the following specifications:

(1) Spec. 15A, 15B, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.185, 178.190, or § 178.191 of this subchapter). Wooden boxes. Net weight not to exceed 125 pounds.

(2) Spec. 12H, 23F, or 23H (§ 178.209, § 178.214, or § 178.219 of this subchapter). Fiberboard boxes. Gross weight not to exceed 65 pounds.

(3) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes, with inside containers which must be cartons containing not to exceed one-half gross track torpedoes each. Gross weight of outside fiberboard box not to exceed 65 pounds.

(4) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes without inside containers may be used for not more than 50 track torpedoes provided the smallest dimension of the box is not less than 6 inches.

(g) Toy torpedoes must be securely packed as prescribed in this section in containers complying with the following specifications:

(1) Specification 15A, 15B, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes, or Spec. 12B (§ 178.205 of this subchapter) fiberboard boxes which must be constructed to comply with § 178.205-30 of this subchapter. Not more than 20 one-quarter gross cartons totalling not more than 5 gross of toy torpedoes are authorized per fiberboard box. Gross weight of fiberboard box must not exceed 35 pounds. Gross weight of wooden box must not exceed 65 pounds.

(2) Toy torpedoes of any kind must not be packed with other fireworks.

(3) Toy torpedoes containing a cap must be packed in sawdust, in inside paper or cardboard cartons. The size of the carton must be not less than 4 cubic inches for each grain of explosive.

(4) Toy torpedoes containing a mixture of potassium chlorate, black antimony and sulfur, must be packed in an

inner container, containing not more than one-fourth gross. The capacity of this inner container must be not less than 105 cubic inches, and it must be divided into 12 equal compartments. All vacant space inside the container must then be filled with sawdust or fine shavings.

(5) The gross weight of a container of toy torpedoes must not exceed 65 pounds.

(h) Except as otherwise specified in this section the gross weight of one outside container of special fireworks must not exceed 500 pounds.

(i) *Marking.* Each outside container of special fireworks must be plainly marked in letters not less than $\frac{1}{16}$ inch in height "SPECIAL FIREWORKS—HANDLE CAREFULLY—KEEP FIRE AWAY", except that each outside container of railway torpedoes must be plainly marked in letters not less than $\frac{1}{16}$ inch in height "RAILWAY TORPEDOES—HANDLE CAREFULLY—KEEP FIRE AWAY".

(1) Outside containers of toy torpedoes must in addition be marked "TOY TORPEDOES".

[29 FR 18683, Dec. 29, 1964, as amended by Order 71, 31 FR 9070, July 1, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.91, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.92 Jet thrust units (jato), Class B explosives; rocket motors, Class B explosives; igniters, jet thrust (jato), Class B explosives; igniters, rocket motors, Class B explosives; and starter cartridges, jet engine, Class B explosives.

(a) Class B explosives covered by this section must be packaged in outside packagings complying with the following specifications:

(1) Specification 14, 15A, 15E, 16A, or 19B (§§ 178.165, 178.168, 178.172, 178.185, 178.191 of this subchapter). Wooden boxes, or wooden boxes, fiberboard lined.

(2) Specification 15B (§ 178.169 of this subchapter) wooden boxes. Authorized only for igniters, jet thrust, Class B explosives, or igniters, rocket motors, Class B explosives.

(3) Specification 23F (§ 178.214 of this subchapter) fiberboard boxes. Authorized only for igniters, jet thrust, Class B explosives; igniters, rocket motor, Class B explosives; or starter cartridges, jet engine, Class B explosives. Items must be packaged in tightly closed inside fiberboard boxes (at least 200-pound test (Mullen or Cady)) or metal containers. Starter cartridges, jet engine, must have igniter wires short-circuited when packed for shipment.

(4) Wooden boxes, wooden crates, or other packagings of approved military specification which comply with § 173.7(a).

(b) Jet thrust units, Class B explosives, or rocket motors, Class B explosives, must not be shipped with igniters assembled therein unless shipped by, for, or to the Department of Defense or the National Aeronautics and Space Administration.

(c) Jet thrust units, Class B explosives, or rocket motors, Class B explosives, may be packaged in the same outside packaging with their separately packaged igniters (or igniter components), Class A, B, or C explosives, only when shipped by or for the Department of Defense (DOD) and in accordance with established practices and procedures specified by DOD.

(d) Each package must be plainly marked "JET THRUST UNITS, CLASS B EXPLOSIVES", "ROCKET MOTORS, CLASS B EXPLOSIVES", "IGNITERS, JET THRUST, CLASS B EXPLOSIVES", "IGNITERS, ROCKET MOTORS, CLASS B EXPLOSIVES", or "STARTER CARTRIDGES, JET ENGINE, CLASS B EXPLOSIVES" as appropriate.

[Amdt. 173-6, 34 FR 7160, May 1, 1969, as amended by Amdt. 173-70, 38 FR 6308, Feb. 27, 1973; Amdt. 173-94, 41 FR 16066, Apr. 15, 1976; Amdt. 173-104, 42 FR 11239, Feb. 28, 1977; Amdt. 173-138, 45 FR 32694, May 19, 1980; Amdt. 173-149, 46 FR 49893, Oct. 8, 1981]

§ 173.93 Propellant explosives (solid) for cannon, small arms, rockets, guided missiles, or other devices, and propellant explosives (liquid).

(a) Propellant explosives (solid) for cannon, small arms, rockets, guided missiles, or other devices, and propel-

lant explosives (liquid) when offered for transportation by carriers by rail freight, highway, or water, must be packed in containers complying with the following specifications (see paragraph (g)(1) of this section for shipments by cargo aircraft only);

(1) Specification 12H, 23G, or 23H (§ 178.209, 178.218, 178.219 of this subchapter) fiberboard boxes with inside securely closed polyethylene bags having a minimum wall thickness of 0.006-inch.

(2) Smokeless powder for small arms may be shipped as Class B explosives in packagings approved in accordance with § 173.197a.

(3) [Reserved]

(4) Tight metal cases in tight wooden boxes, not over 200 pounds gross weight; or tight metal containers not over 200 pounds gross weight.

(5) Specification 14, 15A, or 19B (§§ 178.165, 178.168, 178.191 of this subchapter). Wooden boxes, metal-lined, Spec. 2F (§ 178.25 of this subchapter). Gross weight not to exceed 200 pounds.

(6) Specification 14, 15A, or 19B (§§ 178.165, 178.168, 178.191 of this subchapter). Wooden boxes, or Spec. 23F or 23H (§§ 178.214, 178.219 of this subchapter) fiberboard boxes, with inside cloth or paper bags, not exceeding 25 pounds net weight each and capable of withstanding at least two drops on end from a height of 4 feet, without breakage or sifting of contents. Outside container not to exceed 50 pounds net weight.

(7) [Reserved]

(8) Specification 14, 15A, 15B, 15C, or 19B (§§ 178.165, 178.168, 178.169, 178.170, 178.191 of this subchapter). Wooden boxes, or Spec. 12H, 23F, or 23H (§§ 178.209, 178.214, 178.219 of this subchapter) fiberboard boxes, with inside fiber or metal containers not exceeding 1½ pounds capacity each. Gross weight not to exceed 200 pounds in wooden boxes or 65 pounds in fiberboard boxes.

(9) Specification 14, 15A, 15B, 15C, or 19B (§§ 178.165, 178.168, 178.169, 178.170, 178.191 of this subchapter). Wooden boxes, or Spec. 23F or 23H (§§ 178.214, 178.219 of this subchapter) fiberboard boxes, with not more than four strong inside tight metal contain-

ers of not more than 25 pounds each. The gross weight in fiberboard boxes may not exceed 65 pounds.

(10) Specification 21C (§ 178.224 of this subchapter). Fiber drum. Drums having a wooden head must contain a strong, sift-proof liner. Net weight may not exceed 265 pounds. Shipment by rail freight is prohibited except in trailer-on-flat-car service.

(11) Specification 14, 15A, 16A or 19B (§§ 178.165, 178.168, 178.185, 178.191 of this subchapter). Wooden boxes, not lined, authorized only for grains not less than 1-inch in diameter or 3 inches in length, provided such grains are tightly packed and are coated with a protective material. Gross weight not to exceed 200 pounds.

(b) Propellant explosives (smokeless powder for cannon or small-arms) in water when offered for transportation by carriers by rail freight, highway, or water must be packed in containers complying with the following specifications:

(1) Specification 5, 5A, 5B, 6B, or 6C (§§ 178.80, 178.81, 178.82, 178.98, or 178.99 of this subchapter). Metal barrels or drums.

(2) Specification 17H (§ 178.118 of this subchapter). Steel drums (single-trip) not over 30-gallon capacity each.

(3) Specification 15A or 19B (§§ 178.168, 178.191 of this subchapter). Wooden boxes, metal-lined, Specification 2F (§ 178.25 of this subchapter).

(c) Igniters composed of black powder may be included in shipments of propellant explosives.

(d) Propellant explosives (unstable, condemned, or deteriorated smokeless powder for cannon or small arms) must be packed submerged in water in containers complying with the following specifications:

(1) Specification 5, 5A, 5B, 6B, or 6C (§§ 178.80, 178.81, 178.82, 178.98, or 178.99 of this subchapter). Metal barrels or drums.

(2) [Reserved]

(3) Specification 15A or 19B (§§ 178.168, 178.191 of this subchapter). Wooden boxes, metal-lined, Specification 2F (§ 178.25 of this subchapter).

(4) Spec. 103, 103-W, or 111A100-W-1 (§§ 179.200, 179.201 of this subchapter). Tank cars.

(5) Propellant explosives (unstable, condemned, or deteriorated smokeless powder for cannon or small arms) may not be offered for transportation by cargo aircraft only.

(e) Propellant explosives (liquid), when offered for transportation by rail freight, highway, or water, must be packed in containers complying with the following specifications (see § 173.93(g) for shipments by rail express):

(1) Specification 15A, 15B, 15E, or 19B (§§ 178.168, 178.169, 178.172, 178.191 of this subchapter). Wooden box or wooden box fiberboard lined, with inside polyethylene bottles having taped screw-cap closures, not over 1 gallon capacity each. Each bottle must be entirely contained within a polyethylene or other suitable plastic bag formed of material not less than 0.004 inch thickness, with ends securely closed. Each bottle in the plastic bag shall be enclosed in a tight metal container and be surrounded on all sides with at least 2 inches of incombustible cushioning material, cans in the outside box must likewise be cushioned from each other and sides, top, and bottom of the container.

(2) Specification 5B, 6B, 6C, 6D; also 17C or 17H (single-trip) containers (§§ 178.82, 178.98, 178.99, 178.102, 178.115, 178.118 of this subchapter). Metal barrel, drum, or cylindrical steel overpack, with inside Specification 2S (§ 178.35 of this subchapter) polyethylene container, packed inside a strong, tight metal drum. Inside steel drum must be surrounded on all sides with at least 2 inches of incombustible absorbent cushioning material uniformly distributed. Polyethylene containers are authorized only for liquids that will not react dangerously with the plastic or result in container failure.

(3) Outage requirements. Containers must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers due to the expansion of the contents from increase of temperature during transit.

(f) Each outside container must be plainly marked "PROPELLANT EXPLOSIVES (LIQUID), CLASS B," "PROPELLANT EXPLOSIVES (SOLID), CLASS B," or "PROPELLANT EXPLOSIVES (SOLID), CLASS B, in WATER," as the case may be. There may be added such additional marking as "Smokeless Powder for Cannon" or "Smokeless Powder for Small Arms," as the case may be.

(g) Propellant explosives, except as provided in paragraph (d)(5) of this section, when offered for transportation by cargo aircraft only must be packaged as follows (also authorized for transportation by carriers by rail freight, highway, or water):

(1) Solids in tightly closed metal cans or fiber containers, not exceeding 1 pound each, or in inside metal cans or fiber containers containing not more than one grain of propellant, not exceeding 5 pounds each, and liquids in polyethylene bottles compatible with contained liquid, with screw-cap closures taped, not exceeding 1-pound or 16 fluid ounces capacity each, packed in an outside wooden box, Spec. 15A, 15B, 15C, or 19B (§§ 178.168, 178.169, 178.170, 178.191 of this subchapter); or outside fiberboard box Spec. 12B, 23F, or 23H (§§ 178.205, 178.214, 178.219 of this subchapter). Not more than 1,000 small-arms primers packed in inside containers as prescribed by § 173.107 may be included in one outside shipping container with solid propellant explosives. Inside containers must be packed so as to prevent movement within the outside container. Not more than 10 pounds of propellant explosives may be shipped in one outside container. Each outside container must be plainly marked "PROPELLANT EXPLOSIVES (LIQUID), CLASS B," or "PROPELLANT EXPLOSIVES (SOLID), CLASS B," or "PROPELLANT EXPLOSIVES, CLASS B, and SMALL-ARMS PRIMERS," as the case may be.

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5408, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.93, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.94 Explosive power devices, Class B.

(a) Explosive power devices, Class B may not be shipped with igniters assembled therein unless shipped by or for the Department of Defense (DOD) and in accordance with established practices and procedures specified by DOD. Explosive power devices, Class B, must be packed in outside containers complying with the following specifications:

(1) Specification 14, 15A, 15E, 16A, or 19B (§§ 178.165, 178.168, 178.172, 178.185, 178.191 of this subchapter). Wooden boxes or wooden boxes, fiberboard lined.

(2) Strong wooden or metal boxes or containers. Authorized only for shipments made by, for, or to the Departments of the Army, Navy, or Air Force of the United States Government.

(b) Explosive power devices, Class B packed in any other manner must be in containers of a type examined by the Bureau of Explosives and approved by the Director, OHMT.

(c) Each outside container must be plainly marked "EXPLOSIVE POWER DEVICES, CLASS B" and "HANDLE CAREFULLY—KEEP FIRE AWAY."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.94, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.95 Rocket engines (liquid), Class B explosives.

(a) Rocket engines (liquid), Class B explosives must be packaged as follows:

(1) Specification 14, 15A, 15E, 16A, or 19B (§§ 178.165, 178.168, 178.172, 178.185, 178.191 of this subchapter). Wooden boxes or wooden boxes, fiberboard lined.

(2) Wooden boxes or metal packagings of approved military specification which comply with § 173.7(a).

(b) Rocket engines (liquid), Class B explosives, may not be shipped with igniters or initiators assembled therein unless shipped by or for the Department of Defense (DOD) and in accordance with established practices and procedures specified by DOD.

(c) Rocket engines (liquid), Class B explosives, may be packed in the same outside packaging with their separately packaged igniters, jet thrust, Class B explosives when shipped by or for the Department of Defense (DOD) and in accordance with established practices and procedures specified by DOD.

(d) Each package must be plainly marked "ROCKET ENGINES (LIQUID), CLASS B EXPLOSIVES."

[Amdt. 173-6, 34 FR 7160, May 1, 1969, as amended by Amdt. 173-94, 41 FR 18086, Apr. 15, 1976; Amdt. 173-133, 45 FR 32694, May 19, 1980; Amdt. 173-149, 46 FR 49893, Oct. 8, 1981]

CLASS C EXPLOSIVES; DEFINITIONS

§ 173.100 Definition of Class C explosives.

(a) Explosives, Class C, are defined as certain types of manufactured articles which contain Class A, or Class B explosives, or both, as components but in restricted quantities, and certain types of fireworks. These explosives are further specifically described in this section.

(b) Small arms ammunition is fixed ammunition consisting of a metallic, plastic composition, or paper cartridge case, a primer, and a propelling charge, with or without bullet, projectile, shot, tear gas material, tracer components, or incendiary compositions, or mixtures, and is further limited to the following:

(1) Ammunition designed to be fired from a pistol, revolver, rifle, or shotgun held by the hand or to the shoulder.

(2) Ammunition of caliber less than 20 millimeters with incendiary solid inert or empty projectiles (with or without tracers), designed to be fired from machine guns or cannons.

(3) Blank cartridges including canopy remover cartridges, starter cartridges, and seat ejector cartridges, containing not more than 500 grains of propellant powder, provided that such cartridges shall be incapable of functioning en masse as a result of the functioning of any single cartridge in the container or as a result of exposure to external flame.

(4) Twenty millimeter ammunition other than specified in § 173.53(q).

(c) Explosive cable cutters are used for cutting cables, etc. They consist of a metal device containing a knife-edged component which is propelled by a small charge of an explosive compound.

(d) Cord, detonating *flexible* is a device consisting of a core of pentaerythrite tetranitrate, cyclotrimethylene-trinitramine or similar explosive overspun with tapes, yarns and plastics or waterproofing compounds without wire countering. Approval of detonating cord as a class C explosive is contingent upon:

(1) examination by an agency listed in § 173.86(b); and

(2) a demonstrated ability to confine blast effects of a detonation to the package as prepared for transportation, and without propagation of detonation to similar packages which surround it.

(e) Percussion fuzes, combination fuzes, and time fuzes are devices designed to ignite powder charges of ammunition or to initiate an intermediate charge (booster) in projectiles, bombs, etc. When such fuzes are assembled with booster charges they are properly described as "detonating fuzes" (see § 173.53(g)(2)).

(f) Tracer fuzes and tracers are devices which are attached to projectiles and contain a slow-burning composition to show the flight of projectiles at night.

(g) Cartridge bags, empty, with black powder igniters consist of empty bags having attached thereto an igniter composed of black powder. (See § 173.93 (b), (c), and (d) when shipped with propellant explosives.)

(h) Igniters consist of fiberboard, plastic, paper or metal tubes containing a small quantity of igniting compound which is ignited by the action of a primer, pull wire or scratch composition.

(i) Delay electric igniters consist of small metal, fiberboard, or pasteboard tubes containing a wire bridge in contact with a small quantity of ignition compound. The ignition compound is in contact with or in close proximity to a short piece of safety fuse.

(j) Electric squibs consist of small tubes or blocks containing a small

quantity of ignition compound in contact with a wire bridge.

(k) Fuse lighters and fuse igniters are small cylindrical hollow pasteboard or metal tubes containing an igniting composition in one end, the other end being open to permit it to be placed on safety fuse.

(l) Safety squibs are small paper tubes containing a small quantity of black powder. One end of each tube is usually twisted and tipped with sulfur.

(m) Instantaneous fuse is cotton yarn impregnated with metal powder. No restrictions other than packing in strong wooden boxes or barrels plainly marked "INSTANTANEOUS FUSE" are prescribed in this part.

(n) Primers are devices used to ignite the powder charges of ammunition or the black powder bursting charges of projectiles. For small-arms ammunition the primers are "small-arm primers" or "percussion caps".

(o) Safety fuse, consisting of a core of black powder overspun with yarns, waterproofing compounds, and/or tapes must be packed in outside fiberboard boxes, wooden boxes, wooden barrels, bales, or metal containers, and must be described for shipping purposes as "SAFETY FUSE". No other restrictions apply in this part.

(p) Toy plastic or paper caps for toy pistols in sheets, strips, rolls, or individual caps, must not contain more than an average of twenty-five hundredths of a grain of explosive composition per cap and must be packed in inside packages constructed of cardboard not less than 0.013-inch in thickness, metal not less than 0.008-inch in thickness, noncombustible plastic not less than 0.015-inch in thickness, or a composite blister package consisting of cardboard not less than 0.013-inch in thickness and noncombustible plastic not less than 0.005-inch in thickness, which shall provide a complete enclosure and the minimum dimensions of each side or end of such package shall be not less than 1/8-inch in height. The number of caps in these inside packages shall be limited so that not more than 10 grains of explosives composition shall be packed into one cubic inch of space and not exceeding 17.5 grains of the explosive composition of toy caps shall be packed in any inside

container. These inner containers must be packed in outside containers as specified in § 173.109.

(q) Explosive rivets, each containing not more than 375 milligrams of explosive composition, are exempt from specification packaging and labeling requirements when packed in pasteboard or other inside boxes in securely closed strong wooden boxes, fiberboard boxes or metal containers. Each outside container must be marked "EXPLOSIVE RIVETS". No other restrictions apply in this part.

(r) Common fireworks are fireworks devices suitable for use by the public and designed primarily to produce visible effects by combustion. Some small devices designed to produce audible effects are also included in this class. The types, sizes and amount of pyrotechnic contents of these devices are limited as enumerated in this paragraph. No component, of any device listed in this paragraph, which produces or is intended to produce an audible effect shall contain pyrotechnic composition in excess of 2 grains in weight; nor shall such device or component, upon functioning, project or disperse any metal, glass or brittle plastic fragments. (Propelling or expelling charges consisting of a mixture of sulfur, charcoal, and saltpeter are not considered as designed to produce audible effects). Any new device, not enumerated in this paragraph, must be examined by the Bureau of Explosives and approved by the Director, OHMT, before being offered for transportation as Common Fireworks. Common fireworks must be in a finished state exclusive of mere ornamentation as supplied to the retail trade and must be so constructed and packed that loose pyrotechnic composition will not be present in packages in transportation. Fireworks, except articles defined in paragraphs (s) through (y) inclusive, of this section, other than common fireworks as defined in this paragraph, and those forbidden for transportation in § 173.51, are classed as Special Fireworks (see § 173.88(d)).

(1) Roman candles, not exceeding ten balls spaced uniformly in the tube, total pyrotechnic composition not to exceed twenty grams each in weight.

The inside tube diameter shall not exceed $\frac{3}{8}$ inch.

(2) Sky rockets with sticks, total pyrotechnic composition not to exceed twenty grams each in weight. The inside tube diameter shall not exceed $\frac{1}{2}$ inch. The rocket sticks must be securely fastened to the tubes.

(3) Helicopter type rockets, total pyrotechnic composition not to exceed twenty grams each in weight. The inside tube diameter shall not exceed $\frac{1}{2}$ inch.

(4) Cylindrical fountains, total pyrotechnic composition not to exceed seventy-five grams each in weight. The inside tube diameter shall not exceed $\frac{3}{4}$ inch.

(5) Cone fountains total pyrotechnic composition not to exceed fifty grams each in weight.

(6) Wheels, total pyrotechnic composition not to exceed sixty grams for each driver unit or two hundred and forty grams for each complete wheel. The inside tube diameter of driver units shall not exceed $\frac{1}{2}$ inch.

(7) Illuminating torches and colored fire in any form, total pyrotechnic composition not to exceed one hundred grams each in weight.

(8) Dipped sticks, the pyrotechnic composition of which contains any chlorate or perchlorate shall not exceed 5 grams. Sparklers, the composition of which does not exceed 100 grams each and which contain no magnesium or magnesium and a chlorate or perchlorate, are not subject to the regulations in Parts 170-189 and 397 of this title.

(9) Mines and shells of which the mortar is an integral part, total pyrotechnic composition not to exceed forty grams each in weight.

(10) Firecrackers and salutes with casings, the external dimensions of which do not exceed one and one-half inches in length or one-quarter inch in diameter, total pyrotechnic composition not to exceed two grains each in weight.

(11) Novelties consisting of two or more devices enumerated in this paragraph when examined by the Bureau of Explosives and approved by the Director, OHMT.

(8) Igniter cord consists of textile yarns and/or a wire uniformly covered

with a combustible chemical mixture, with or without additional textile or wire counterings, waterproofing or finishing coatings which, when ignited burns externally at various rates according to design. Igniter cord must be packed in strong, tight, outside fiber-board boxes or drums, wooden boxes or metal containers plainly marked "IGNITER CORD."

(t) Explosive auto alarms are tubular devices containing a small amount of explosive composition and igniting compound which is ignited by an electric spark. These devices must be so designed that they will neither burst nor cause external flame on functioning.

(u) Toy propellant devices and toy smoke devices consist of small paper or composition tubes or containers containing a small charge of slow burning propellant powder or smoke producing powder. These devices must be so designed that they will neither burst nor produce external flame on functioning. Ignition elements, if attached, must be of a design examined by the Bureau of Explosives and approved by the Director, OHMT.

(v) Oil well cartridges are tubular devices each containing not more than 350 grains of propellant powder and having no ignition device or element. Cartridges must be constructed and packed so that they will be incapable of functioning en masse as a result of exposure to external flame.

(w) Actuating cartridges, explosive, fire extinguisher or valve consist of a small metal or fiber housing containing a small amount of initiating explosive and a propellant and are used to actuate valves on remotely controlled fire extinguishers or other apparatus.

(x) Cigarette loads, trick matches, and trick noise makers, explosive, must be of type examined by the Bureau of Explosives and approved by the Director, OHMT and are described as follows:

(1) Cigarette loads consist of wooden pegs to which are affixed a small amount of explosive composition.

(2) Trick matches consist of book matches, strike anywhere matches, or strike-on-box matches which have small amounts of explosive or pyrotechnic composition affixed to the

match stem just below the match head.

(3) Trick noise makers, explosive, consist of spheres containing a small amount of explosive composition.

(y) Smoke candles, smokepots, smoke grenades, smoke signals, signal flares, hand signal devices, and very signal cartridges are devices designed to produce visible effects for signal purposes. These devices must contain no bursting charges and no more than 200 grams of pyrotechnic composition each (see Note 1), exclusive of smoke composition (see Note 2), unless greater weight of composition is examined by the Bureau of Explosives and approved by the Director, OHMT.

NOTE 1: Pyrotechnic compositions (other than smoke compositions) are defined as chemical mixtures which on burning and without explosion, produce visible or brilliant displays or bright lights.

NOTE 2: Pyrotechnic smoke compositions are defined as chemical smoke producing mixtures, which on ignition burn at a controlled rate, without the production of flame and without the build-up of internal pressure that would rupture or burst the end product.

(z) Explosive release devices consist of a rod or link fitted with means for mechanical attachment to other apparatus or equipment and containing a small electrically initiated explosive charge which will break the rod or link upon functioning. These devices must be so designed that they will not function other explosive devices in the package sympathetically.

(aa) Explosive power devices, Class C, are devices designed to drive generators or mechanical apparatus by means of propellant explosives, Class B. The devices consist of a housing with a contained propellant charge and an electric igniter or squib. The devices must be of a type examined by the Bureau of Explosives and approved by the Director, OHMT for this classification.

(bb) Detonating fuzes, Class C explosives, are used in the military service to detonate high explosive bursting charges of projectiles, mines, bombs, torpedos, grenades, demolition charges, and safety and arming devices. They contain a detonator and a quantity of high explosives. Additionally they may be used by the military

to transmit a detonation between two or more devices. This type detonating fuze contains either an explosive train consisting of mild detonating fuse, metal clad, igniter fuse-metal clad or similar type fuses, and any combination of one or more boosters, detonators and high explosives in a total quantity not exceeding 25 grams of explosive composition. All detonating fuzes, Class C explosives, must be made and packed so that they will not cause functioning of other fuzes, explosives, or other explosive devices if one of the fuzes detonates in a shipping container or in adjacent containers.

(cc) Mild detonating fuses, metal clad and flexible linear shaped charges, metal clad consists of a core containing not more than 2½ grains of high explosive composition per lineal foot, clad with metal either with or without a covering of tapes, yarns, plastics or waterproofing compounds. Mild detonating fuse, metal clad, and flexible linear shaped charges, metal clad, in lengths not over 26 feet and not exceeding 15 grains per lineal foot having the individual lengths separated from adjacent lengths so that mass propagation will not occur, may be shipped as Class C explosives.

(dd) Igniter fuse-metal clad consists of a base metal tube with a core of explosive igniter composition in quantity not exceeding 20 grains per foot.

(ee) Starter cartridges, jet engine, Class C, consist of a metal, plastic, and/or rubber case, each containing a pressed cylindrical block of flammable solid material and having in the top of the case a small compartment that encloses an electric squib, small amount of black powder, and/or smokeless powder which constitute an igniter. The starter cartridge is used to activate a mechanical starter for jet engines and must be of a type examined by the Bureau of Explosives and approved by the Director, OHMT, except as provided in § 173.51(a)(16) and § 173.86(a).

(ff) "Cartridge, practice ammunition" means a metal cartridge case containing a primer, a propelling charge of not more than 500 grains of propellant powder, and a solid projec-

tile or a projectile containing a smoke spotting charge.

(gg) Detonators (§ 173.53(g)(1)), which will undergo only limited propagation in the shipping package, are classed as Class C explosives. For the purposes of this paragraph, limited propagation means that if one detonator near the center of a shipping package is exploded, the aggregate weight of explosives, excluding ignition and delay charges, in this and all additional detonators in the outside packaging that explode may not exceed 25 grams. Detonators which mass detonate in the shipping package may not be classed as Class C explosives. For the purposes of this paragraph "mass detonate" means that more than 90 percent of the devices tested in a package explode practically simultaneously.

(hh) Detonating primers (§ 173.53(g)(2)) in which the total explosive charge per unit does not exceed 25 grams, and which will undergo only limited propagation in the shipping package, are classed as Class C explosives. For the purposes of this paragraph, limited propagation means that if one detonating primer near the center of a shipping package is exploded, the aggregate weight of explosives, excluding ignition and delay charges, in this and all additional detonating primers in the outside packaging that explode may not exceed 25 grams. Detonating primers which mass detonate in the shipping package may not be classed as Class C explosives. For the purposes of this paragraph, "mass detonate" means that more than 90 percent of the devices tested in a package explode practically simultaneously.

(ii) Explosive pest control devices, class C explosives, consist of a cardboard-pasteboard type tube not exceeding 4 inches in length and 3/4 inch in diameter or a shotgun shell type having an explosive projectile. They may contain a mixture of potassium perchlorate, aluminum powder, sulfur, black powder, smokeless powder or similar pyrotechnic mixture. The component which produces the audible effect may not contain more than 40 grains of explosive composition. Devices and packaging must be of a type examined by the Bureau

of Explosives or the Bureau of Mines and approved by the Director, OHMT.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18683, Dec. 29, 1964, as amended by 31 FR 9070, July 1, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.100, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.101 Small-arms ammunition.

(a) Small-arms ammunition must be packed in pasteboard or other inside boxes, or in partitions designed to fit snugly in the outside container, or must be packed in metal clips. The partitions and metal clips must be so designed as to protect the primers from accidental injury. The inside boxes, partitions and metal clips must be packed in securely closed strong outside wooden or fiberboard boxes or metal containers. Blank Industrial Power Load cartridges, similar to the 22 long rim-fire cartridge, may be packed in bulk in securely closed fiberboard boxes.

(b) Small-arms ammunition in pasteboard or other inside boxes, in addition to containers prescribed in paragraph (a) of this section, may be shipped when packed in the same outside container with nonexplosive and nonflammable articles; or with small-arms primers or percussion caps in quantity not to exceed 5 pounds. The weight of the small-arms ammunition packed with other articles must not exceed 55 pounds in outside fiberboard box, or 75 pounds in outside wooden box. The outside package must be a securely closed strong wooden or fiberboard container.

(c) Packages containing small-arms ammunition are excepted from the label prescribed in § 172.411 of this subchapter, but the outside of each package must be plainly marked "SMALL ARMS AMMUNITION."

(d) Each package containing cartridges loaded with an Irritating Material must, in addition to marking prescribed herein, be marked "IRRITATING AGENT" and must bear the IR-RITANT label.

(e) No restrictions other than proper description, packing and marking for small-arms ammunition and additional marking and labeling for tear gas cartridges are prescribed in this part for the transportation of small-arms ammunition and tear gas cartridges.

(f) Shipments of small-arms ammunition, including broken lots which have lost their identity (lot number identification), may be shipped loosely packed in securely closed strong wooden boxes or metal boxes, in carload or truckload lots, when shipments are made by or for the Departments of the Army, Navy or Air Force of the United States Government to depots or manufacturing plants for reprocessing or demilitarization. Seriously deteriorated ammunition or ammunition damaged to the point of exposing incendiary or tracer composition, spillage of propellant powder, or ammunition with other hazardous defects must not be shipped. Each outside package must be plainly marked "SMALL-ARMS AMMUNITION."

(g) Special exceptions for certain types of small arms ammunition in the ORM-D class are provided in Subpart N of this part.

(49 U.S.C. 1803, 1804, 49 CFR 1.53, App. A to Part 1)

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16086, Apr. 15, 1976; Amdt. 173-175, 49 FR 21936, May 24, 1984]

§ 173.101a Cartridges, practice ammunition.

(a) Cartridges, practice ammunition must be packaged in pasteboard or other inside boxes, or in partitions designed to fit snugly in the outside packaging, or must be packed in metal clips. The partitions and metal clips must be so designed as to protect the primers from accidental injury. The inside boxes, partitions, and metal clips must be packaged in securely closed strong outside wooden or fiberboard boxes or metal packagings.

(1) Each package must be plainly marked "CARTRIDGES, PRACTICE AMMUNITION."

[Amdt. 173-6, 34 FR 7161, May 1, 1969]

§ 173.102 Explosive cable cutters; explosive power devices, Class C; explosive release devices, or starter cartridges, jet engine, Class C explosives.

(a) Explosive cable cutters, explosive power devices, Class C, explosive release devices, or starter cartridges, jet engine, Class C must be packed in specification containers as follows:

(1) Spec. 12H, 23F, or 23H (§§ 178.209, 178.214, or § 178.219 of this chapter). Fiberboard boxes. Authorized gross weight not to exceed 65 pounds.

(2) In addition to specification containers prescribed in this section, explosive cable cutters, explosive power devices, Class C, explosive release devices, or starter cartridges, jet engines, Class C may be shipped in strong wooden or metal boxes. Starter cartridges, jet engine, must have igniter wires short-circuited when packed for shipment.

(b) Each package must be plainly marked "EXPLOSIVE CABLE CUTTERS"; "EXPLOSIVE POWER DEVICES, CLASS C"; "EXPLOSIVE RELEASE DEVICES", or "STARTER CARTRIDGES, JET ENGINE, CLASS C EXPLOSIVES", as appropriate, and "HANDLE CAREFULLY—KEEP FIRE AWAY."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-6, 34 FR 7161, May 1, 1969; Amdt. 173-138, 45 FR 32695, May 19, 1980]

§ 173.103 Detonators, Class C explosives, and detonating primers, Class C explosives.

(a) It must be shown by actual tests that detonators and detonating primers which are to be offered for transportation as Class C explosives meet the appropriate definitions in paragraphs (gg) and (hh) in § 173.100. Testing must be performed or confirmed and the classification approved as specified in § 173.86. Substitution of a representative packaging in place of the actual shipping package for testing purposes may be authorized by one of the agencies specified in § 173.86(b).

(b) Detonators, Class C explosives, and detonating primers, Class C explosives, may only be offered for transportation if they are packed in packag-

ings specified in §§ 173.66 and 173.68 that meet the requirements of paragraph (a) of this section, except that quantity limitations for devices in packagings (other than the gross weight limitation for the specification packaging used) do not apply.

(c) Detonators originally classed as Class C explosives in accordance with the requirements of paragraph (a) of this section, may be offered for transportation in an IME Standard 22 container as Class C explosives subject to the following conditions:

- (1) Each detonator may contain no more than 1 gram of explosive (excluding ignition and delay charges);
- (2) The detonators must be packed in accordance with the requirements and limitations of § 173.66, except paragraphs (a)(3) (ii) and (iii), and paragraph (e);
- (3) There are no more than 1,000 detonators in the container; and
- (4) Each inside packaging shall be marked "class C explosives".

NOTE 1: The "class C explosives" marking is the shippers certification that the contents of the IME Standard 22 container or compartment are class C explosives.

NOTE 2: Any detonator packed in an inside packaging that is not marked "class C explosives" shall be offered for transportation as a class A explosive.

(d) Detonators, Class C explosives, and detonating primers, Class C explosives, may be offered for transportation on passenger-carrying aircraft only under the following conditions:

- (1) They must be packed in accordance with the applicable requirements of §§ 173.66 and 173.68 except that the maximum gross weight of any completed package may not exceed 50 pounds or the maximum gross weight permitted by the specification for the outside packaging used, whichever is less;

(2) Packages must have been tested in accordance with the requirements of paragraph (a) of this section, except that when one device near the center of the package is detonated, no other device in the package may be caused to detonate and there must be no communication of detonation from one package to another; and

- (3) The shipper certifies conformance with requirements of this para-

graph by marking the outside of the package with the statement: "This package conforms to conditions and limitations specified in 49 CFR 173.103(d)".

[Amdt. 173-134, 44 FR 70731, Dec. 10, 1979, as amended by Amdt. 173-182, 50 FR 804, Jan. 7, 1985]

§ 173.104 Cord, detonating; fuse, mild detonating, metal clad; or flexible linear shaped charge, metal clad.

(a) Cord, detonating *flexible* which was properly examined, and classed and described "cordeau detonant fuse, class C explosive" prior to January 1, 1985 by an agency listed in § 173.86(b) is reclassified class A explosive and assigned the proper shipping name "cord, detonating *flexible*". However, until June 30, 1986, cord detonating *flexible* which was properly examined, and classed and described "cordeau detonant fuse, class C explosive" may be offered for transportation and transported subject to conditions of the approval and in accordance with requirements of this subchapter in effect on December 31, 1984.

(b) Cord, detonating *flexible*; mild detonating fuse, metal clad or flexible; and flexible linear shaped charges, metal clad may not be packed in the same package with detonators or with any high explosive.

(c) Cord, detonating *flexible*; fuse, mild detonating, metal clad and flexible linear shaped charges, metal clad shall be packed in wooden or fiberboard boxes. Each package shall be marked "CORD, DETONATING-HANDLE CAREFULLY" or "FLEXIBLE LINEAR SHAPED CHARGES, METAL CLAD-HANDLE CAREFULLY", as appropriate.

[Amdt. 173-182, 50 FR 804, Jan. 7, 1985, as amended by Amdt. 173-201, 52 FR 13039, Apr. 20, 1987]

§ 173.105 Percussion, tracer, combination, time fuzes and tracers.

(a) Percussion, tracer, combination, time fuzes and tracers must be packed in strong, tight, outside wooden boxes or Spec. 23F (§ 178.214 of this subchapter) fiberboard boxes, with special provision for securing individual pack-

ages of fuzes or tracers against movement in the box.

(b) The gross weight of one outside wooden box must not exceed 150 pounds, and the gross weight of one outside fiberboard box must not exceed 65 pounds.

(c) Each outside container must be plainly marked with proper descriptive name and also "HANDLE CAREFULLY".

(d) No restrictions other than proper description, packing, and marking are prescribed in this part for the transportation of percussion, tracer, time, or combination fuzes, or tracers.

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16086, Apr. 15, 1976]

§ 173.106 Cartridge bags, empty, with black powder igniters, igniters, safety squibs, electric squibs, delay electric igniters, igniter fuse-metal clad, and fuse lighters or fuse igniters.

(a) Cartridge bags, empty, with black powder igniters, igniters, safety squibs, electric squibs, delay electric igniters, igniter fuse-metal clad, and fuse lighters or fuse igniters must be packed in strong fiberboard or wooden boxes or wooden or metal barrels or drums properly described and properly marked with the name of the article packed therein.

§ 173.107 Primers, percussion caps, and grenades, empty, primed.

(a) Primers (cannon, combination and small arms), percussion caps, and empty grenades, primed, must be packed in strong, tight, outside wooden boxes, except as otherwise provided herein, with special provision for securing individual packages against movement in the box.

(b) [Reserved]

(c) Small-arms primers containing anvils must be packed in cellular inside packages, with partitions separating the layers and columns of the primers, so that the explosion of a portion of the primers in the completed shipping package will not cause the explosion of all the primers. They must be packed as prescribed in paragraphs (a) of this section or in Spec. 12B (§ 178.205 of this subchapter) fiberboard boxes, and equipped with

corrugated fiberboard liners having Mullen or Cady test equal to or exceeding that of the box, except liner is not required for full depth telescope style box which may be closed as specified by § 178.205-17(a)(2) of this subchapter. Not more than 5,000 primers shall be packed in each fiberboard box.

(1) Spec. 23H (§ 178.219 of this subchapter). Fiberboard boxes of full depth telescope style with top section having extended end flaps and bottom section with extended side flaps designed to tuck under and form boxes without glued or stapled joints. Boxes shall have full height inside perimeter liner and top and bottom full area pads of double-wall corrugated fiberboard. Hand-holes oval in shape, not more than 1 inch in width by 4 inches in length and horizontal with top score line, are authorized in ends of boxes. Primers shall be packed in cellular inside packages with partitions separating the layers and columns of the primers as required by the introductory text of this paragraph. Not more than 50,000 primers shall be packed in one outside box.

(d) Percussion caps must be packed in metal or other inside boxes containing not more than 500 caps; the construction of the cap or packing and the kind and quantity of explosives in each must be such that the explosion of a part of the caps in the completed shipping package will not cause the explosion of all the caps.

(1) Specification 12B (§ 178.205 of this subchapter). Fiberboard box. Caps must be packed in inside metal cans containing not more than 100 caps each. Can must then be packed in a chipboard box with not more than 10 cans per box. Not more than 5 chipboard boxes shall be packed in the 12B fiberboard box. The completed package must be such that the explosion of a part of the caps will not cause the explosion of all the caps.

(2) Specification 12B (§ 178.205 of this subchapter). Fiberboard box. Caps must be packed in inside plastic cans containing not more than 100 caps each. Cans must then be packed in a chipboard box with not more than 8 such chipboard boxes packed tightly in the 12B fiberboard box. The com-

pleted package must be such that the explosion of part of the caps will not cause the explosion of all of the caps.

(e) Small-arms primers and/or percussion caps may be packed with non-explosive and/or nonflammable articles, or with small-arms ammunition as provided in § 173.101(b). Small-arms primers may be included with propellant explosives (solid), class B, in the same outside container as provided in § 173.93(g)(1). The weight of the small-arms primers or percussion caps must not exceed 5 pounds in any such outside container.

(f) The gross weight of one outside package must not exceed 150 pounds.

(g) Each outside container must be plainly marked with proper descriptive name and also "HANDLE CAREFULLY"

(h) No restrictions other than proper shipping name, packaging and marking are prescribed in this subpart for the transportation of those materials named in paragraph (a) of this section.

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.107, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.108 Common fireworks, signal flares, hand signal devices, smoke signals, smoke candles, smoke grenades, smoke pots, and Very signal cartridges.

(a) Class C explosives covered by this section must, unless otherwise specifically provided for, be securely packed in packages complying with the following specifications.

(1) [Reserved]

(2) Specification 15A, 15B, 16A, 19A, or 19B (§§ 178.168, § 178.169, § 178.185, § 178.190, or § 178.191 of this subchapter). Wooden boxes. Gross weight not to exceed 100 pounds, except gross weight of 500 pounds is authorized for Very signal cartridges only.

(3) Spec. 12B (§ 178.205 of this subchapter) Fiberboard boxes. Gross weight not to exceed 65 pounds.

(4) Firecrackers, Chinese, in addition to containers specified in paragraph (a) (1), (2), and (3) of this section, may also be transported in the package in which they are imported, provided

these packages consist of wooden boxes, or fiberboard boxes, spec. 12B (§ 178.205 of this subchapter), in good condition, completely covered with strong matting and do not weigh more than 100 pounds, gross.

(5) Fireworks, such as sparklers, with match tip or head, or similar ignition point or surface, must have each individual tip, head, or similar ignition point or surface entirely covered and securely protected against accidental contact or friction.

(6) Signal flares may be packed with nonexplosive or nonflammable articles provided the outside packages are marked as prescribed in this section.

(b) [Reserved]

(c) Except as otherwise specified herein the gross weight of one outside package containing common fireworks must not exceed 100 pounds.

(d) Each outside package must be plainly marked in letters not less than seven-sixteenths of an inch in height "Common Fireworks," "Signal Flares," "Hand Signal Devices," "Smoke Signals," "Smoke Candles," "Smoke Pots," "Smoke Grenades," or "Very Signal Cartridges," as appropriate, and with the additional words "Handle Carefully—Keep Fire Away."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-56, 36 FR 21201, Nov. 4, 1971; Amdt. 173-81, 39 FR 17316, May 15, 1974; Amdt. 173-94, 41 FR 18068, Apr. 15, 1976; Amdt. 173-149, 46 FR 49893, Oct. 8, 1981]

§ 173.109 Toy caps.

(a) Toy caps must be packed in containers complying with the following specifications:

(1) Specification 15A, 15B, 16A, 19A or 19B (§§ 178.168, 178.169, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes. Gross weight not to exceed 150 pounds.

(2) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes. Gross weight not to exceed 65 pounds.

(3) Toys caps, in addition to containers specified in paragraphs (a) (1) and (2) of this section, may be transported in the package in which they are imported, provided the package consists of a wooden box, metal-lined, in good condition, and weighing not over 100

pounds gross. Inside packages must be as defined in § 173.100(p).

(b) Toy caps may be packed with nonexplosive or nonflammable articles provided the outside containers are marked as prescribed herein.

(c) Toy paper caps of any kind must not be packed with fireworks.

(d) Each outside container must be plainly marked "TOY CAPS—HANDLE CAREFULLY".

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-84, 41 FR 18066, Apr. 15, 1976; Amdt. 173-149, 46 FR 49894, Oct. 8, 1981]

§ 173.110 Charged well casing jet perforating guns, total explosive content in guns not exceeding 20 pounds per motor vehicle.

(a) Charged well casing jet perforating guns transported by motor vehicles operated by private carriers engaged in well operations in which the total weight of the explosive contents of shaped charges assembled to guns being transported does not exceed 20 pounds per such vehicle must be packed as prescribed in § 173.80(b), (c), (d) and (e).

(b) Charged well casing jet perforating guns may be offered for transportation and transported only by private carrier by highway.

(c) Charged well casing jet perforating guns may be offered for transportation and transported by private offshore well supply vessels only when carried in special motor vehicles as prescribed in § 173.80 or on offshore down hole tool pallets provided that:

(1) No blasting caps, electric blasting caps or other firing devices shall be affixed or installed in the guns;

(2) Each shaped charge shall contain not over 4 ounces of explosives;

(3) Each shaped charge, if not completely enclosed in glass or metal, shall be fully protected by a metal cover after installation in the gun; and

(4) The total weight of the explosive contents of shaped charges assembled in guns being carried does not exceed 20 pounds per vehicle or pallet. Each cargo vessel compartment may contain up to 20 pounds of explosive content if the segregation requirements of § 176.83(b)(3) are met. More than one pallet or vehicle, each containing not

more than 20 pounds of explosive content, may be stowed "on deck" provided a minimum horizontal separation distance of 10 feet is provided.

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-165, 48 FR 28101, June 20, 1983]

§ 173.111 Cigarette loads, explosive auto alarms, toy propellant devices, toy smoke devices, trick matches, and trick noise makers, explosive.

(a) Cigarette loads, explosive auto alarms, toy propellant devices, toy smoke devices, trick matches, and trick noise makers, explosive must be packed in specification containers as follows:

(1) Specification 15A, 15B, 16A, 19A or 19B (§§ 178.168, 178.169, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes. Gross weight not to exceed 150 pounds.

(2) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes. Gross weight not to exceed 65 pounds.

(3) Each outside container must be plainly marked with the proper descriptive name and "HANDLE CAREFULLY".

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-84, 41 FR 16066, Apr. 15, 1976; Amdt. 173-149, 46 FR 49894, Oct. 8, 1981]

§ 173.112 Oil well cartridges.

(a) Oil well cartridges must be so packed that the explosive composition does not exceed 20 grains per cubic inch of space in the outside shipping container and must be in specification containers as follows:

(1) Specification 15A, 15B, 16A, 19A or 19B (§§ 178.168, 178.169, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes. Gross weight not to exceed 150 pounds.

(2) Specification 12B, 12H, 23F or 23H (§§ 178.205, 178.209, 178.214, 178.219 of this subchapter). Fiberboard boxes. Gross weight not to exceed 65 pounds. Hand holes are not authorized.

(3) Each outside container must be plainly marked with the name "Oil Well Cartridge" and "HANDLE CAREFULLY".

§ 173.113

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16066, Apr. 15, 1976; Amdt. 173-149, 46 FR 49894, Oct. 8, 1981; Amdt. 173-196, 51 FR 5972, Feb. 18, 1986]

§ 173.113 Detonating fuzes, Class C explosives.

(a) Detonating fuzes, Class C explosives, must be packed in specification containers as follows:

(1) Specification 12H (§ 178.209 of this subchapter). Fiberboard boxes either without liners with well secured inside pasteboard cartons or with suitable filler or lining material to prevent movement in the box.

(2) In addition to specification containers prescribed in this section, detonating fuzes, Class C explosive, may be packed in well secured strong, tight outside wooden or metal boxes. The gross weight of the outside wooden or metal box must not exceed 190 pounds.

(b) Each outside package must be plainly marked "DETONATING FUZES, CLASS C EXPLOSIVES—HANDLE CAREFULLY".

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16066, Apr. 15, 1976; Amdt. 173-111, 42 FR 58937, Nov. 14, 1977]

§ 173.114 Actuating cartridges, explosive, fire extinguisher or valve.

(a) Actuating cartridges, explosive, fire extinguisher or valve must be packed in strong wooden or fiberboard boxes.

(b) Each outside container must be plainly marked "ACTUATING CARTRIDGES EXPLOSIVE, FIRE EXTINGUISHER—HANDLE CAREFULLY" or "ACTUATING CARTRIDGES, EXPLOSIVE, VALVE—HANDLE CAREFULLY".

(c) When shipped as components with fire extinguisher or with valve and with not more than 2 cartridges for each extinguisher or valve, they are exempt from Parts 170-189 of this subchapter.

§ 173.114a Blasting agents.

(a) *Definition of a blasting agent.* A blasting agent is a material designed for blasting which has been tested in accordance with paragraph (b) of this

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section and found to be so insensitive that there is very little probability of accidental initiation to explosion or of transition from deflagration to detonation.

(b) *Tests.* Except as provided in paragraph (c) of this section, no material may be offered for transportation described or classed as a blasting agent unless it passes the following tests:

(1) *Blasting cap sensitivity test.* (i) The container used for the blasting agent sample must be cylindrical, having a diameter of 3% inches and a length of 6% inches. The container must provide essentially no confinement.

(ii) The container must be filled with the sample. Solid materials must be packed to the same filling density as they will be packed in the shipping container. The temperature of the sample must be between 70°F. and 75°F. If it is difficult to achieve an appropriate filling density in the test container, e.g., auger packed products, it may be necessary to auger fill a special container for the test.

(iii) The filled container must be placed on a solid lead cylinder 4 inches long by 2 inches in diameter which must, in turn, be placed upright on a firm surface.

(iv) A commercial No. 8 fuse blasting cap or electric blasting cap must be inserted in the center of the top of the sample for the full length of the cap. A No. 8 commercial cap means a cap which contains 0.40-.45 grams of pentaerythrite tetranitrate (PETN) base charge pressed into an aluminum shell with bottom thickness not to exceed 0.03 inch to a specific gravity of not less than 1.4 grams per cubic centimeter and primed with standard weights of primer, in accordance with the manufacturer's specifications.

(v) The blasting cap must be initiated from a safe position.

(vi) If the lead block is compressed 1/8-inch or more, the material is considered to have detonated.

(vii) The test must be conducted three times or until detonation occurs, whichever occurs first.

(viii) A material which detonates in any trial may not be classed as a blasting agent.

(2) *Differential thermal analysis test.*

(i) This test must be conducted using a standard, commercially produced, differential thermal analysis instrument or a laboratory constructed apparatus which gives comparable results.

(ii) The portion of the blasting agent tested must be representative of the complete mixture.

(iii) The test must be conducted three times. If the first exotherm exhibited by the material in any trial is less than 212° F. (100° C.), it may not be classed as a blasting agent.

(3) *Thermal stability test.* (i) At least 50 grams of the material must be placed in a loosely covered glass vessel and maintained at 167° F. (75° C.) for 48 consecutive hours.

(ii) A material which ignites or evidences decomposition by fumes, discoloration, or other characteristics may not be classed as a blasting agent.

(4) *Electrostatic sensitivity test.* (i) The apparatus must be designed so that an electrostatic spark can be caused to jump from a pointed electrode to a metal plate which also serves as a sample holder.

(ii) Ten milligrams of material must be used for each test. The portion of the blasting agent tested must be representative of the complete mixture.

(iii) If the test portion flames, smolders, or glows from the spark, the materials is considered to have ignited.

(iv) The test must be conducted three times or until ignition occurs, whichever occurs first.

(v) A material which ignites in any trial when exposed to a spark of 0.006 joules delivered from a 0.002 to 0.004 micro-farad capacitor may not be classed as a blasting agent.

(5) *Impact sensitivity test.* (i) Impact tests must be conducted in a Bureau of Explosives Impact Apparatus. (See § 173.53, Note 4.)

(ii) The tests must be run on ten milligram samples. The test portions must be representative of the complete mixture.

(iii) The drop height used in all trials must be ten inches.

(iv) The test must be conducted ten times or until an explosion occurs, whichever occurs first. An explosion is evidenced by flame or flame and noise.

The production of smoke alone is not evidence of explosion.

(v) A material which explodes in any trial may not be classed as a blasting agent.

(6) *Fire test.* (i) The largest package [not to exceed 200 kg (440 lbs.)] of each type to be offered for transportation must be placed on incombustible supports and subjected to a fire.

(ii) The fuel used may be kerosene-soaked wood, flammable or combustible liquid, or flammable gas.

(iii) The fire shall be large enough to engulf the bottom of the package. The flames must reach at least halfway up on all sides.

(iv) The duration of the fire must be such as to cause the material in the package to burn or fume off completely, except for substances such as the oxides of aluminum or iron which are incombustible.

(v) Explosion is evidenced by a loud noise and the projection of fragments from the fire area.

(vi) Any material which explodes in this test may not be classed as a blasting agent.

(c) A material containing no ingredients, other than prilled ammonium nitrate and fuel oil, need only pass the test specified in paragraph (b)(1) of this section to be classed as a blasting agent. If a material classed as a blasting agent is offered for transportation under the test exception of this paragraph, it must be described as "ammonium nitrate-fuel oil mixture."

(d) *Notification and approval.* Except as provided in paragraphs (e) and (f) of this section, approval by the Director, Office of Hazardous Materials Transportation (OHMT) is required for materials classed as blasting agents produced by a person who:

(1) Has not previously produced that blasting agent; or

(2) Has previously produced the blasting agent but has made a change in the formulation, process, or components. A blasting agent is not required to be approved by the Director, OHMT if an agency listed in paragraph (d)(3) of this section has determined and confirmed in writing to the Director, OHMT that there are no significant differences in hazard characteristics relative to a blasting agent

previously approved by the Director, OHMT.

(3) No person may offer a blasting agent for transportation unless it has been examined by the Bureau of Explosives or Bureau of Mines, U.S. Department of the Interior and classed and approved by the Director, OHMT; or examined, classed, and approved by one of the following agencies:

(i) U.S. Department of Energy (DOE) for blasting agents made by, or under the direction or supervision of DOE; or

(ii) U.S. Army Materiel Development and Readiness Command (DRCSF), Naval Sea Systems Command (NAVSEA 06H) or HQUSAF (IGD/SEV) for blasting agents made by, or under the direction or supervision of the DOD.

(4) Except as otherwise provided in this section, each person who offers a blasting agent for transportation must submit a copy of the tentative class accompanied by a supporting laboratory report or equivalent data to, and receive a written approval from, the Director, OHMT prior to offering the blasting agent for transportation.

(e) For each mixture of a blasting agent containing only prilled ammonium nitrate and fuel oil classed in accordance with paragraph (c) of this section, a copy of the test report on which the class is based must be filed with the Director, OHMT before the material is offered for transportation and a copy of the report retained as long as that formulation is in use. As a minimum, the test report must contain the name and address of the person or organization conducting the test, date of test, quantitative composition of the mixture, including prill size and porosity, and a description of test results.

(f) Samples of materials designed for blasting not previously approved may be offered for transportation to a testing facility for examination if:

(1) The material has been assigned a tentative description and class in writing by one of the agencies listed in paragraph (d)(3) of this section.

(2) The material is packaged as required by this part according to the tentative description and class assigned.

(3) The package is labeled as required by this subchapter and the following is marked on the package:

(i) The words "SAMPLE FOR LABORATORY EXAMINATION";

(ii) The net weight of material; and

(iii) The tentative shipping description.

(g) A material designed for blasting that has not been examined or approved may be transported from where it was produced to an explosive testing facility under the following conditions:

(1) The material is not a forbidden explosive or an initiating explosive according to this subchapter;

(2) The material must be described as high explosive or high explosive, liquid, as appropriate and packed, marked, labeled, and described on the shipping paper as required by this subchapter;

(3) The material is transported in a motor vehicle operated by the owner of the material; and

(4) The shipment is accompanied by a person, in addition to the driver of the motor vehicle, who is qualified by training and experience to handle the blasting material.

(h) *Packaging for blasting agents.* Each package of blasting agent when prepared for shipment must comply with the applicable requirements of § 173.24 and withstand one of the following tests:

(1) Rigid packages (e.g., boxes and drums), prepared as for shipment, must be capable of withstanding a four-foot drop onto solid concrete so as to strike the most vulnerable point on the package without rupture or any loss of contents.

(2) Non-rigid packages (e.g., tubes and bags), prepared as for shipment, must be capable of withstanding three four-foot drops onto solid concrete without rupture or any loss of contents.

(1) Blasting agents may not be transported in bulk packagings except in accordance with the terms of specific exemptions issued pursuant to Part 107 of this chapter.

(j) See §§ 174.83, 176.83 and 177.848 of this subchapter for loading requirements.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-124, 44 FR 31182, May 31, 1979, as amended by Amdt. 173-146, 48 FR 22195, Apr. 16, 1981; Amdt. 173-158, 47 FR 43065, Sept. 30, 1982; Amdt. 173-16, 48 FR 50460, Nov. 1, 1983; Amdt. 173-196, 51 FR 5972, Feb. 18, 1986]

Subpart D—Flammable, Combustible, and Pyrophoric Liquids; Definitions and Preparation

§ 173.115 Flammable, combustible, and pyrophoric liquids; definitions.

(a) *Flammable liquid.* (1) For the purposes of this subchapter a flammable liquid means any liquid having a flash point below 100° F. (37.8° C.), with the following exceptions:

(i) Any liquid meeting one of the definitions specified in § 173.300;

(ii) Any mixture having one component or more with a flash point of 100° F., (37.8° C.) or higher, that makes up at least 99 percent of the total volume of the mixture;

(2) For the purposes of this subchapter, a distilled spirit of 140 proof or lower is considered to have a flash point no lower than 73° F.

(b) *Combustible liquid.* (1) For the purposes of this subchapter, a combustible liquid is defined as any liquid that does not meet the definition of any other classification specified in this subchapter and has a flash point at or above 100° F. (37.8° C.) and below 200° F. (93.3° C.) except any mixture having one component or more with a flash point at 200° F. (93.3° C.) or higher, that makes up at least 99 percent of the total volume of the mixture.

(2) For the purposes of this subchapter:

(i) An aqueous solution containing 24 percent or less alcohol by volume is considered to have a flash point of no less than 100° F. (37.8° C) if the remainder of the solution is not subject to this subchapter, and

(ii) An aqueous solution containing 24 percent or less alcohol by volume is not subject to the requirements of this subchapter if it contains no less than 50 percent water and no material (other than the alcohol) which is subject to this subchapter.

(3) 200° F. (93.3° C) is a limitation of the application of the regulations in this subchapter and should not be construed as indicating that liquids with higher flash points will not burn. Markings such as "NONFLAMMABLE" or "NONCOMBUSTIBLE" should not be used on a vehicle containing a material that has a flash point of 200° F. (93.3° C.) or higher.

(c) *Pyrophoric liquids.* (1) For the purposes of this subchapter, a pyrophoric liquid is any liquid that ignites spontaneously in dry or moist air at or below 130° F. (54.5° C.).

NOTE 1: The Bureau of Explosives is equipped to test samples of flammable liquids to determine whether or not they are pyrophoric.

(d) *Flash point.* (1) "Flash point" means the minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid and shall be determined as follows:

(i) For a homogeneous, single-phase, liquid having a viscosity less than 45 S.U.S. at 100° F. (37.8° C) that does not form a surface film while under test, one of the following test procedures shall be used:

(A) Standard Method of Test for Flash Point by Tag Closed Tester, (ASTM D56-79); or

(B) Standard Methods of Test for Flash Point of Liquids by Setflash Closed Tester, (ASTM D3278-78).

(ii) For a liquid other than one meeting all of the criteria of paragraph (d)(1)(i) of this section, one of the following test procedures shall be used:

(A) Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, (ASTM D93-80). For cutback asphalt, use Method B of ASTM 93-80. (Alternate tests authorized in this standard may be used); or

(B) Standard Methods of Test for Flash Point of Liquids by Setflash Closed Tester, (ASTM D3278-78).

(2) For a liquid that is a mixture of compounds that have different volatility and flash points, its flash point shall be determined as specified in paragraph (d)(1) of this section, on the material in the form in which it is to be shipped. If it is determined by

this test that the flash point is higher than 20 °F (-6.67 °C), a second test shall be made as follows: a portion of the mixture shall be placed in an open beaker (or similar container) of such dimensions that the height of the liquid can be adjusted so that the ratio of the volume of the liquid to the exposed surface area is 6 to one. The liquid shall be allowed to evaporate under ambient pressure and temperature (20 to 25 °C) for a period of 4 hours, or until 10 percent by volume has evaporated, whichever comes first. A flash point is then run on a portion of the liquid remaining in the evaporation container and the lower of the two flash points shall be the flash point of the material.

(3) For flash point determinations by Setaflash closed tester, the glass syringe specified need not be used as the method of measurement of the test sample if a minimum quantity of 2 milliliters is assured in the test cup.

(e) "S.U.S." means Saybolt Universal Seconds as determined by the Standard Method of Test for Saybolt Viscosity (ASTM D88-56) (reapproved 1968) and may be determined by use of the S.U.S. conversion tables specified in the Standard Method for Conversion of Kinematic Viscosity to Saybolt Universal Viscosity or to Saybolt Furol Viscosity ASTM D2161-79 following determination of viscosity in accordance with the Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity) (ASTM D445-79).

(f) [Reserved]

(g) If experience or other data indicate that the hazard of a material is greater or less than indicated by the criteria specified in paragraphs (a), (b), and (c) of this section, the Department may revise its classification or make the material subject to the re-

quirements of Parts 170-189 of this subchapter.

[Amdt. 173-78A, 40 FR 22264, May 22, 1975, as amended by Amdt. 173-94, 41 FR 16066, Apr. 15, 1976; Amdt. 173-158, 47 FR 43065, Sept. 30, 1982; Amdt. 173-165, 48 FR 28101, June 20, 1983; Amdt. 173-196, 51 FR 5972, Feb. 18, 1986; Amdt. 173-204, 52 FR 36672, Sept. 30, 1987]

§ 173.116 Outage.

(a) Outage for packings of flammable liquids offered for transportation, except as otherwise provided in this part, must be as prescribed in paragraphs (b) to (h) of this section.

(b) Packagings must not be completely filled. For packagings of a capacity of 110 gallons or less, sufficient outage must be provided so that the packaging will not be liquid full at 130° F. (55° C).

(c) [Reserved]

(d) Flammable liquids must not be loaded into domes of tank cars. If the dome of the tank car does not provide sufficient outage, then vacant space must be left in the shell to make up the required outage.

(e) Flammable liquids having vapor pressure of 16 pounds per square inch absolute at 100° F. or less must be so loaded in tank cars that the outage shall be not less than 2 percent.

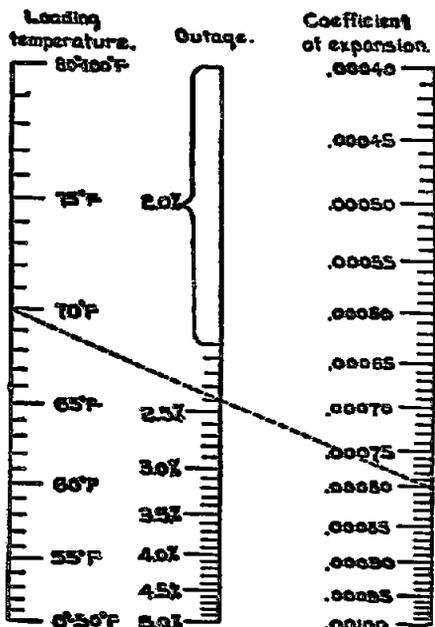
(f) Flammable liquids having a vapor pressure exceeding 16 pounds per square inch absolute at 100° F. for which minimum outage is not otherwise specifically provided herein, when loaded in uninsulated tank cars, must be so loaded that the minimum outage will be the greatest of the following values:

(1) Dome capacity.

(2) Two percent of total capacity of tank and dome.

(3) Outage as shown in paragraph (g) of this section.

(g) Outage chart for flammable liquids loaded in uninsulated tank cars:



(1) Example: Suppose the temperature of the liquid at time of loading is 70° F. and its coefficient of expansion is 0.00080; lay a ruler on the chart running from 70° to 0.00080 as shown by the dotted line and the required outage is 2.4 percent where the ruler crosses the outage scale.

The following coefficients of expansion per degree Fahrenheit, of the principal flammable liquids shall be used in determining outages:

Acetone	0.00086
Amyl acetate	.00068
Benzol (benzene)	.00071
Carbon bisulfide	.00070
Ether	.00098
Ethyl acetate	.00079
Ethyl (grain) alcohol	.00082
Methyl (wood) alcohol	.00072
Toluol (toluene)	.00068
Gasoline or naphtha:	
50-55° A.P.I. ¹	.00055
55.1-60° A.P.I. ¹	.00060
60.1-65° A.P.I. ¹	.00065
65.1-70° A.P.I. ¹	.00070
70.1-75° A.P.I. ¹	.00075
75.1-80° A.P.I. ¹	.00080
80.1-85° A.P.I. ¹	.00085
85.1-90° A.P.I. ¹	.00090

¹A.P.I. (American Petroleum Institute), according to the following formula:
¹A.P.I. = (141.5 / specific gravity) - 131.5

(h) No cargo tank or compartment thereof used for the transportation of any flammable liquid shall be liquid full. The vacant space (outage) in a cargo tank or compartment thereof used in the transportation of flammable liquids shall be not less than 1 percent; sufficient space (outage) shall be left vacant in every case to prevent leakage from or distortion of such tank or compartment by expansion of the contents due to rise in temperature in transit.

[29 FR 18700, Dec. 29, 1964, as amended by Order 67, 30 FR 7420, June 5, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16066, Apr. 15, 1976; Amdt. 173-94B, 41 FR 57069, Dec. 30, 1976]

§ 173.117 Closing and cushioning.

(a) All containers must be tightly and securely closed. Inside containers must be cushioned as prescribed, or in any case when necessary to prevent breakage or leakage.

[29 FR 18701, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

§ 173.118 Limited quantities of flammable liquids.

(a) Limited quantities of flammable liquids that do not meet the definition of another hazard class in this subchapter and for which exceptions are permitted as noted by reference to this section in § 172.101 of this subchapter, are excepted from labeling (except when offered for transportation by air) and specification packaging requirements of this subchapter when packed according to the following paragraphs. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(1) In metal containers not over 1 quart capacity each, packed in strong outside containers,

(2) In containers having a capacity not over 1 pint or 16 ounces by weight each, packed in strong outside containers, or

(3) In inside containers having a rated capacity of one gallon or less when packed in strong outside con-

tainers. The provisions of this partial exemption apply only if the flash point of the material is 73° F. or higher and the flash point, or an indication that the flash point is 73° F. or higher is marked on the outside package.

(b) A flammable liquid that does not meet the definition of another hazard class and has a flash point of 73° F. or higher is not subject to the specification packaging requirements of this part when in packagings of 110 gallons or less. The provisions of this paragraph apply only if the flash point, or an indication that its flash point is 73° F. or higher, is marked on the outside package. Notwithstanding § 172.101 of this subchapter, the net quantity limitation for flammable liquids meeting the conditions of this paragraph is one gallon per package for carriage aboard passenger-carrying aircraft or railcar, and 55 gallons per package for carriage aboard cargo aircraft only.

(c) Alcoholic beverages (wine and distilled spirits as defined in 27 CFR 4.10 and 5.11) in containers having a rated capacity of one gallon or less are not subject to the requirements of this subchapter.

(d) Special exceptions for shipment of certain flammable liquids in the ORM-D class are provided in Subpart N of this part.

[Amdt. 173-78A, 40 FR 22244, May 22, 1975, as amended by Amdt. 173-94, 41 FR 16066, Apr. 15, 1976; Amdt. 173-94A, 41 FR 40681, Sept. 20, 1976; Amdt. 173-135, 45 FR 13090, Feb. 28, 1980; Amdt. 173-16, 43 FR 50461, Nov. 1, 1983]

§ 173.118a Exceptions for combustible liquids.

(a) Unless otherwise stated for a specific material, the regulations in this subchapter do not apply to a material classed as a combustible liquid in a packaging having a rated capacity of 110 gallons or less, unless the combustible liquid is a hazardous substance, or a hazardous waste.

(b) A combustible liquid that is a hazardous substance or a hazardous waste in a packaging having a rated capacity of 110 gallons or less, and a combustible liquid in a portable tank, cargo tank or tank car is not subject to

the requirements of this subchapter except those pertaining to:

(1) Shipping papers, waybills, switching orders, and hazardous waste manifests;

(2) Marking of portable tanks and marking of packages having a rated capacity of 110 gallons or less that contain hazardous substances or hazardous wastes;

(3) Display of identification numbers on portable tanks, cargo tanks, tank cars and multi-unit tank car tanks;

(4) Placarding of portable tanks, cargo tanks and tank cars;

(5) Carriage aboard aircraft and vessels (for packaging requirements for transport by vessel see § 176.340 of this subchapter);

(6) Reporting incidents as prescribed by §§ 171.15 and 171.16 of this subchapter; and

(7) The requirements of §§ 173.1, 173.24, 174.1 and 177.804 of this subchapter.

[Amdt. 173-137, 45 FR 34703, May 22, 1980, as amended by Amdt. 173-137, 45 FR 74869, Nov. 10, 1980; Amdt. 173-144, 46 FR 9893, Jan. 29, 1981; 46 FR 24184, Apr. 30, 1981; Amdt. 173-196, 51 FR 5972, Feb. 18, 1986; Amdt. 173-200, 52 FR 8592, Mar. 19, 1987]

§ 173.119 Flammable liquids not specifically provided for.

(a) *Flammable liquids with flash point 20° F. or below.* Flammable liquids with flash point 20° F. or below and having vapor pressure (Reid¹ test) not over 16 pounds per square inch, absolute, at 100° F., other than those for which special requirements are prescribed in this part, must be prepared for shipment in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein as required in the following paragraphs (see paragraphs (c) to (l) of this section for high pressure liquids, paragraphs (j) to (l) of this section for viscous liquids, and paragraph (m) of this section for flammable liquids which are also oxidizers, radioactive material, corrosive liquids, poison B liquids, or organic peroxides and § 173.134 for flammable

¹ASTM Test D323.

liquids that are also pyrophoric liquids):

(1) Specification 1A, 1D, or 1M (§§ 178.1, 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Rated capacity may not exceed 5 gallons for Specification 1A. Not authorized for transportation by aircraft.

(2) Spec. 5, 5A, 5B, 5C, or 5M (§§ 178.80, 178.81, 178.82, 178.83, or § 178.90 of this subchapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter.

(3) Specification 17E (§ 178.116 of this subchapter). Metal drums (single-trip) with openings not over 2.3 inches in diameter. Drums with a marked capacity of more than 5 gallons but not more than 30 gallons must be constructed of 19-gauge body and head sheets. Drums with a marked capacity in excess of 30 gallons must be constructed of 18-gauge body and head sheets. Drums with a marked capacity of more than 5 gallons are not authorized for transportation by air.

(4) Spec. 17C (§ 178.115 of this subchapter). Metal drums (single-trip), with openings not exceeding 2.3 inches in diameter.

(5)-(6) [Reserved]

(7) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside containers which must be glass or earthenware, not over 1 quart each; metal cans not over 1 gallon each.

NOTE 1: Spec. 12B fiberboard boxes (§ 178.205-26(a) of this subchapter), with one inside rectangular metal can, spec. 2F (§ 178.25 of this subchapter) not to exceed 5 gallons capacity, are authorized for gasoline only. Gross weight of completed package not over 65 pounds.

(8) Spec. 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, or § 178.191 of this subchapter.) Wooden boxes with inside containers which must be metal pails, kits, or cans, not over 10 gallons each or inside glass or earthenware containers not over 1 gallon each, except that glass or earthenware containers up to 3 gallons each are authorized when only one inside container is packed in each outside container.

(9) Spec. 21C, 22A or 22B (§ 178.224, § 178.196 or § 178.197 of this subchapter). Fiber drums and plywood drums

with a single inside glass, earthenware, or metal container of not over one gallon capacity in each drum. Inside container must be so cushioned at top, sides, and bottom, as to prevent breakage or leakage in transit.

(10) Specification 42B, (§ 178.107, of this subchapter). Aluminum drums.

(11) Cylinders as prescribed for any compressed gas, except acetylene.

(12) Specification 103,² 103W, 103ALW, 103DW, 104,² 104W, 105A100,² 105A100ALW, 105A100W, 106A500X, 106A800XNC, 106A800NCI,² 109A100ALW, 109A300W, 110A500W, 111A60ALW1, 111A60F1, 111A60W1, 111A100W3, 111A100W4, 111A100W6, 112A200W, 112A400F, 114A340W, 115A60W1, 115A60ALW, or 115A60W6, (§§ 179.100, 179.101, 179.200, 179.201, 179.220, 179.300, 179.301 of this subchapter) tank cars. For cars equipped with expansion domes, manway closures must be so designed that pressure will be released automatically by starting the operation of removing the manway cover. Openings in tank heads to facilitate application of lining are authorized on tank cars constructed before January 1, 1975. These openings must be closed in an approved manner (§ 179.3 of this subchapter).

(13) The use of spec. 103AL special riveted aluminum tank cars is authorized for the transportation of gasoline, ethyl acetate, acetone, methanol, or butyraldehyde as provided in special orders of November 5, 1937 and February 1, 1939.

(14) Spec. 15X (§ 178.181 of this subchapter). Wooden boxes with inside metal containers. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are assigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(15)-(16) [Reserved]

(17) Specification MC 300, MC 301, MC 302, MC 303, MC 304, MC 305, MC

²Use of existing tank cars authorized, but new construction not authorized.

306, MC 307, MC 310, MC 311, MC 312, MC 330 or MC 331 (§§ 178.340, 178.341, 178.342, 178.343, 178.337 of this subchapter) cargo tanks, subject to the following conditions:

(i) Bottom outlets on Specification MC 304, MC 310, MC 311 or MC 312 cargo tanks must conform to § 178.342-5(a). Bottom outlets on Specification MC 330 cargo tanks must be equipped with valves conforming to § 178.337-11(c).

(ii) Specification MC 310, MC 311 or MC 312, cargo tanks must be equipped with pressure relief devices conforming to § 178.342-4. Safety relief devices on Specification MC 330 cargo tanks must conform with § 178.337-9.

(iii) Necessary interior cleaning of cargo tanks must be performed between changes in lading.

(18) [Reserved]

(19) Spec. 5L (§ 178.89 of this subchapter). Metal barrels or drums for gasoline shipments offered by or consigned to the Departments of the Army, Navy, and Air Force of the United States Government or Allies. Use of this container will be permitted because of the present emergency and until further order of the Department.

(20) Spec. 12D (§ 178.207 of this subchapter). Fiberboard boxes with inside containers which must be glass or earthenware not over one gallon each; authorized for not more than 75 pounds gross weight; not to contain more than 4 such inside containers if their capacity is greater than 5 pints each. Use of this container will be permitted because of the present emergency and until further order of the Department.

(21) Gasoline samples in boxes of metal not lighter than 20 gauge, United States standard, having hinged cover securely closed, and containing not more than 5 inside rectangular metal cans with screw cap closure, each having a capacity not to exceed ½ gallon, may be shipped when consigned to state laboratories for examination.

(22) Specification 17H or 37A (§§ 178.118 and 178.131 of this subchapter). Metal drums with inside glass packagings not over 9 pints capacity each. Inside containers may contain biological materials if these

materials are not etiologic agents, except that etiologic agents exempt by § 173.386(d) are authorized.

(23) Specification 12A (§ 178.210 of this subchapter). Fiberboard box, with inside glass bottles or specification 2E (§ 178.24a of this subchapter) polyethylene bottles, not over 1 gallon capacity each. Polyethylene bottles are authorized only for materials that will not react with, or cause decomposition of the plastic. Not more than four inside bottles exceeding 5 pints capacity each may be packed in a package. Shipper must have established that the completed package meets the test requirements prescribed by § 178.210-10 of this subchapter.

(24) Spec. 6D (§ 178.102 of this subchapter). Cylindrical steel overpack with inside spec. 2S (§ 178.35 of this subchapter) polyethylene container.

(25) Spec. 51 (§ 178.245 of this subchapter). Portable tanks.

(26) Specification 57 (§ 178.253 of this subchapter). Portable tanks. Not authorized for transportation by water.

(27) Specification 12P (§ 178.211 of this subchapter). Fiberboard box with one inside specification 2U (§ 178.24 of this subchapter) polyethylene container of not over 5-gallon capacity, or two inside specification 2U polyethylene containers of not over 2½ gallon capacity each. Authorized only for material which will not react with or cause decomposition of polyethylene. Not authorized for transportation by air.

(28) Specification 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside metal containers not over 1-gallon capacity each. Not more than six metal containers shall be packed in a 275-pound test, double faced, corrugated fiberboard, specification 12A box and gross weight shall not exceed 45 pounds. The inner flap gaps of the box shall not exceed ¼-inch and the box shall provide a tight fit so there is no movement of the cans within the box.

(29) Marine portable tanks meeting the requirements of 46 CFR Part 64 authorized for highway and cargo vessel only when shipped in support of off-shore oil well drilling activities. Tanks shall comply with mounting and tie-down requirements of

§ 178.245-4 of this subchapter when transported by highway.

(30) IM portable tanks, under conditions specified in the IM Tank Table.

(b) *Flammable liquids with flash points above 20° F. to 73° F.* Flammable liquids with flash points above 20° F. to 73° F. and having vapor pressure (Reid¹ test) not over 16 pounds per square inch, absolute, at 100° F. other than those for which special requirements are prescribed in this Part, must be packaged in packagings of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein as follows (see paragraphs (c) through (i) of this section for high-pressure liquids and paragraph (m) of this section for flammable liquids which are also oxidizers, poison B liquids, organic peroxides or corrosive liquids):

(1) Containers as specified in paragraph (a) of this section, except that openings greater than 2.3 inches in diameter in barrels and drums are authorized when permitted by the specification.

(2) Spec. 17E or 17H (§ 178.116 or § 178.118 of this subchapter). Metal drums (single-trip).

(3) Specification 10B (§ 178.156 of this subchapter). Wooden barrels or kegs. Authorized only for alcohol and alcohol-water-mixtures.

NOTE 1: Until further order of the Department, wooden whiskey barrels, properly re-coopered, which comply with all the provisions of spec. 10B (§ 178.156 of this subchapter), are also authorized. Marking is required on the head of each container, by the reconditioner, by hot branding or legible stenciling, as follows: DOT-10B.

Name or symbol (letters) of reconditioner; this must be registered with the Director, OHMT and located just above, below, or following the mark DOT-10B.

Size of marking (minimum) ¼ inch high.

(4) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside containers which must be glass, earthenware, polyethylene (bags are not authorized), or metal, not over 1 gallon each. Packages containing inside glass or earthenware containers must not contain more than 4 such inside con-

tainers if their capacity is greater than 5 pints each. Polyethylene containers are authorized only for materials that will not react with or cause decomposition of the plastic.

NOTE 1: Until further order of the Department, fiberboard boxes, spec. 12B (§ 178.205-26(a) of this subchapter), with one inside rectangular metal can, spec. 2F (§ 178.25 of this subchapter), not to exceed 5 gallons capacity, are authorized. Gross weight of completed package not over 65 pounds.

(5) Spec. 12E (§ 178.208 of this subchapter). Fiberboard box with 1 or 2 rectangular metal inside containers of not over 5 gallons capacity each.

(6) Specification 57 (§ 178.253 of this subchapter). Steel portable tank. Authorized for transportation by water when having a minimum design pressure of 9 psig and equipped in accordance with § 178.253-4, except that frangible devices are not authorized. Also, for water transportation, no pressure relief device may open at less than 5 psig. Authorized for liquids with flash points above 20° F and a vapor pressure not over 16 psia at 100° F.

(7) Specification 37P (§ 178.133 of this subchapter). Steel drums with polyethylene liner (nonreusable container). Authorized only for materials that will not react with polyethylene and result in container failure. Not authorized for transportation by air.

(8) Specification 6D or 37M (nonreusable container) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpack with an inside specification 2S or 2SL (§§ 178.35, 178.35a of this subchapter) polyethylene container. Authorized only for materials that will not react with polyethylene and result in container failure.

(9) Spec. 21P (§ 178.225 of this subchapter). Fiber drum overpack with inside Spec. 2S or 2SL (§ 178.35 or § 178.35a of this subchapter) polyethylene container. Authorized only for materials that will not react with polyethylene and result in container failure.

(10) Specification 37D (§ 178.137 of this subchapter). Nonreusable steel drum authorized only for a material not exceeding a weight of 10 pounds

¹ASTM Test D323.

per gallon. For a material weighing more than 10 pounds per gallon but not exceeding a weight of 12 pounds per gallon, drum made of not less than 21-gage body and 20-gauge heads must be used.

(11) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(c) *Flammable liquids for which other special packing requirements are not prescribed.* Flammable liquids for which other special packing requirements are not prescribed in this part, must be shipped, depending upon their Reid¹ vapor pressures as prescribed in paragraphs (d) to (i) of this section.

(d) *When the vapor pressure does not exceed 16 pounds per square inch, absolute, at 100° F.* When the vapor pressure does not exceed 16 pounds per square inch, absolute, at 100° F., flammable liquids must be packed as prescribed in paragraphs (a) and (b) of this section.

(e) *When the vapor pressure exceeds 16 pounds per square inch, absolute, at 100° F.* When the vapor pressure exceeds 16 pounds per square inch, absolute, at 100° F., but does not exceed 27 pounds per square inch, absolute, at 100° F., flammable liquids must be packed in specification containers as follows:

(1) As prescribed in paragraphs (a) (1) to (11) of this section, except spec. 17E (§ 178.116 of this subchapter). Bung labels required, for metal barrels and drums, as prescribed in paragraph (1) of this section.

(2) Specification 103,² 103W, 103ALW, 103DW, 104,² 104W, 105A100,² 105A100ALW, 105A100W, 106A500X, 106A800XNC, 106A800NCL,² 109A100ALW, 109A300W, 110A500W, 111A60ALW1, 111A60F1, 111A60W1, 111A100W3, 111A100W4, 111A100W6, 112A200W, 112A400F, 114A340W, 115A60W1, 115A60W6, or 115A60ALW, (§§ 179.100, 179.101, 179.200, 179.201, 179.220, 179.221, 179.300, 179.301 of

this subchapter) tank cars. Openings in tank heads to facilitate the application of linings are authorized on tank cars constructed before January 1, 1975. These openings must be closed in an approved manner (§ 179.3 of this subchapter).

(3) Specification MC 304, MC 307, MC 310, MC 311, MC 312, MC 330, or MC 331 (§§ 178.340, 178.342, 178.343, 178.337 of this subchapter) cargo tanks, subject to the following conditions:

(i) Bottom outlets on Specification MC 304, MC 310, MC 311 cargo tanks must conform to § 178.342-5. Bottom outlets on Specification MC 330 cargo tanks must be equipped with valves conforming to § 178.337-11(c).

(ii) MC 310, MC 311 or MC 312 cargo tanks must have a design pressure of at least 25 psig. These cargo tanks must be equipped with pressure relief devices conforming to § 178.342-4.

(iii) MC 330 cargo tanks must be equipped with pressure relief devices conforming to § 178.337-9.

(iv) Each safety relief device must be set to discharge at no less than 25 psig.

(v) Necessary interior cleaning of cargo tanks must be performed between changes in lading.

(4) Spec. 51 (§ 178.245 of this subchapter). Portable tanks.

(5) IM portable tanks, under conditions specified in the IM Tank Table.

(f) *When the vapor pressure exceeds 27 pounds per square inch absolute at 100 °F.* When the vapor pressure exceeds 27 psia at 100 °F., but does not exceed 40 psia (see note 1) at 100 °F., flammable liquids must be packed in specification containers as follows:

(1) Spec. 5, 5A, or 5P (§§ 178.80, 178.81, or 178.92 of this subchapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter. Bung labels required as prescribed in paragraph (i) of this section.

(2) Cylinders as prescribed for any compressed gas except acetylene.

(3) Specification 105A100,² 105A100ALW, 105A100W, 106A500X, 106A800XNC, 106A800NCL,² 109A100ALW, 109A300W, 110A500W, 111A100W4, 112A200W, 112A400F, or 114A340W, §§ 179.100, 179.101, 179.200, 179.201, (179.300, 179.301 of this subchapter) tank cars. (See Note 1 of this

¹ASTM Test D323.

²Use of existing tank cars authorized, but new construction not authorized.

paragraph.) Specification 104² 104W, and 111A100W3 (§§ 179.200, 179.201 of this subchapter), tank cars are authorized under conditions prescribed in paragraph (f)(4), of this section and Note 2 of this paragraph. Openings in tank heads to facilitate the application of linings are authorized on tank cars constructed before January 1, 1975. These openings must be closed in an approved manner (§ 179.3 of this subchapter).

(4) Specification 103², 103W, 103ALW, 104², 104W, 111A60ALW1, 111A60F1, 111A60W1, 115A60W1, 115A60W6, or 115A60ALW (§§ 179.200, 179.201, 179.220, 179.221, of this subchapter) tank cars.

NOTE 1: Tanks built in compliance with American Railway Association specifications for class IV-A² tank cars authorized for use effective October 1, 1925, may be continued in service for the transportation of ethyl chloride and other liquids which do not have a vapor pressure exceeding 28 pounds per square inch, gauge pressure, at 100° F., provided there is stenciled on each side of the tank immediately below the valve protecting housing the words "Liquids having vapor pressure exceeding 28 pounds per square inch at 100° F. must not be loaded into this tank" in letters and figures at least 1 inch high. These tank cars must be retested as prescribed in current spec. 105A100W except that safety valves must open at pressure not exceeding 35 pounds, and be vapor tight at 28 pounds per square inch.

NOTE 2: When the vapor pressure exceeds 40 pounds per square inch, absolute, at 100° F., these flammable liquids are classed as flammable compressed gases and must be described, packed, and shipped as prescribed for such articles.

NOTE 3: Spec. 104² or 104-W tank cars are authorized provided they are equipped with approved fittings designed to provide for the loading, unloading, gauging, sampling, and taking temperature of the contents without removing the manway closure; that pressure relief valves are set to open at pressure of 35 pounds gauge (with a tolerance of plus or minus 3 pounds), and are vapor tight at 28 pounds per square inch gauge pressure; that bottom discharge outlets are of the same type as authorized for specification 104² or 104-W tank cars; and that there is stenciled on each side of the tank above the specification mark, in letters and figures at least 1 inch high. "For vapor pressures not exceeding 40 pounds per square inch,

absolute, at 100° F." Specification ICC-104² or 104-W tank cars, equipped with pressure relief valves set to open at pressure of 35 pounds gauge (with a tolerance of plus or minus 3 pounds) and which are vapor tight at 28 pounds per square inch gauge pressure are authorized provided that they are stenciled as required above.

(5) Specification cargo tanks as prescribed in paragraph (e)(3) of this section.

(6) Spec. 51 (§ 178.245 of this subchapter). Portable tanks.

(7) IM portable tanks, under conditions specified in the IM Tank Table.

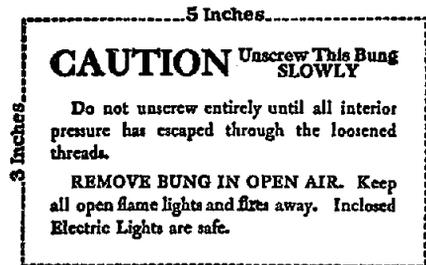
(g)-(h) [Reserved]

(i) *Bung label*. A flammable liquid as described in paragraph (e) or (f) of this section, shipped in a metal drum or barrel, in addition to the **FLAMMABLE LIQUID** label, must be labeled near the bung with a white rectangular label or tag measuring 5 by 3 inches, bearing the wording as displayed below:

BUNG LABEL

(Reduced Size)

(Black printing on white)



(j) *Viscous flammable liquids*. Flammable liquids which are viscous as defined in § 171.8 of this subchapter must be shipped in specification packagings as prescribed in paragraph (k) or (l) of this section.

(k) *Viscous flammable liquids having a vapor pressure which does not exceed 16 pounds per square inch, absolute, at 100° F.* (See paragraphs (c) to (l) of this section for higher pressure liquids) must be prepared for shipment in containers as follows:

²Use of existing tank cars authorized, but new construction not authorized.

(1) As prescribed in paragraphs (a) or (b) of this section, irrespective of flash point.

(2) Specification 6B, or 6C (§§ 178.98, 178.99 of this subchapter). Metal barrels or drums.

(3) Specification 37A or 37B (§§ 178.131, 178.132 of this subchapter). Metal drums (single-trip) not over 5 gallons with welded side seams. Not authorized for transportation by air.

(4) [Reserved]

(1) *Viscous flammable liquids with flash point above 20° F. to 73° F. and having a vapor pressure which does not exceed 18 pounds per square inch, absolute, at 100° F.* Viscous flammable liquids with flash point above 20° F. to 73° F. and having a vapor pressure which does not exceed 18 pounds per square inch, absolute, at 100° F. must be packaged as follows:

(1) As prescribed in paragraphs (e) to (i) of this section.

(2) Spec. 17E or 17H (§§ 178.116 or § 178.118 of this subchapter). Metal drums (single-trip).

(m) *Flammable liquids which are also organic peroxides, oxidizers, radioactive material, corrosive liquids or poison B liquids.* A flammable liquid which is also an organic peroxide, oxidizer, radioactive material, corrosive liquid, or poison B liquid must be packed as follows:

(1) Specification 1A, 1D, 1EX (single-trip) or 1M (§§ 178.1, 178.4, 178.6, 178.17 of this subchapter). Glass earboys in boxes, plywood drums, or expanded polystyrene packagings. Rated capacity may not exceed 5 gallons for Specification 1A. Not authorized for transportation by aircraft.

(2) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside containers which must be glass, earthenware, or polyethylene not over 1 gallon capacity each. Inside containers must be cushioned with noncombustible packaging material in sufficient quantity to absorb the contents of the inner container.

(3) Specification 12B (§ 178.205 of this subchapter). Fiberboard box with inside metal cans, glass or earthenware containers not over 1-quart capacity each. Inside containers must be

cushioned with incombustible packing material in sufficient quantity to absorb the contents of the inner container. Use of the inside metal can is authorized only for materials which will not react dangerously with the metal can, or be decomposed by contact with it.

(4) Specification 5, 5A, 5B, 5C, 5P, 17C (single-trip), or 17E (single-trip) (§§ 178.80, 178.81, 178.82, 178.83, 178.92, 178.115, 178.116 of this subchapter). Metal barrels or drums. Removable head packagings over 16 gallons capacity are not authorized. Authorized only for materials which will not react dangerously with the drum metal, or be decomposed by contact with it.

(5) Specification 37P (§ 178.133 of this subchapter). Steel drums, not over 15 gallons capacity, with polyethylene liner (non-reusable container). Drums exceeding one gallon capacity must be constructed of at least 24-gauge metal. Authorized only for materials that will not react with polyethylene and result in container failure. Not authorized for transportation by air.

(6) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside Specification 2E (§ 178.24a of this subchapter) polyethylene bottles not over 1-gallon capacity each. Not more than four 1-gallon polyethylene bottles shall be packed in one outside fiberboard box. Authorized only for material which will not react dangerously with or be decomposed by contact with polyethylene.

(7) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with one inside polyethylene bottle not over 5-gallons capacity, as specified by § 178.205-34 of this subchapter. Authorized only for material which will not react dangerously with or cause decomposition of polyethylene.

(8) Specification 12P (§ 178.211 of this subchapter). Fiberboard box with one inside specification 2U (§ 178.24 of this subchapter) polyethylene container of not over 6-gallon capacity, or two inside specification 2U polyethylene containers of not over 2½ gallon capacity each. Authorized only for material which will not react with or cause

decomposition of polyethylene. Not authorized for transportation by air.

(9) Specification steel or nickel cylinders as prescribed for any compressed gas except acetylene. All cylinder valves must be protected by one of the methods described in § 173.301(g) (1), (2), or (3) of this part. See § 173.34(e)(16).

(10) Specification MC 303 or MC 304: Cargo tanks meeting § 173.343-2(c) of this subchapter. If the cargo tank is constructed with bottom outlets, they must meet § 173.342-5(a) of this subchapter. Not authorized for flammable liquids which are also organic peroxides. MC 303 not authorized for transportation by water.

(11) Specification MC 305, MC 306, or MC 307 (§§ 173.340, 173.341, 173.342 of this subchapter). Cargo tanks meeting § 173.343-2(c) of this subchapter. Not authorized for flammable liquids which are also organic peroxides. MC 305 and MC 306 not authorized for transportation by water.

(12) Specification MC 310, MC 311, or MC 312 (§§ 173.340, 173.343 of this subchapter). Cargo tanks. If the cargo tank is constructed with bottom outlets, they must meet §§ 173.342-5(a) and 173.343-5 of this subchapter. Not authorized for flammable liquids which are also organic peroxides.

(13) Specification 103AW, 103ALW, 103A-ALW, 103ANW, 103BW, 103CW, 103DW, 103EW, 103W, 104W, 105A100W, 111A60ALW1, 111A60ALW2, 111A60W1, 111A60W2, 111A60W5, 111A100F2, 111A100W3, 111A100W6, 115A60W6, or AAR206W (§§ 179.200, 179.201, 179.220 of this subchapter). Tank cars. All special requirements for tank cars according to flash point, vapor pressure, and viscosity, in paragraphs (a) through (l) of this section apply. Not authorized for flammable liquids which are also organic peroxides.

(14) Specification 112A200W or 114A340W (§§ 179.100, 179.101 of this subchapter). Tank cars. Authorized only for propylene oxide except 112A200W also authorized for acrylonitrile and dichlorobutene.

(15) Specification 51 (§ 178.245 of this subchapter). Portable tank. Authorized only for a flammable liquid

which is also a Poison B liquid. Bottom outlets are not authorized.

(16) Specification 6D or 37M (non-reusable container) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpacks with an inside specification 2S or 2SL (§§ 178.35, 178.35a of this subchapter) polyethylene container. Authorized only for materials that will not react with polyethylene and result in container failure.

(17) Specification 6D or 37M (non-reusable container) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpacks with an inside specification 2U (§ 178.24 of this subchapter) polyethylene container, not over 5 gallons capacity. Authorized only for materials that will not react with polyethylene and result in container failure.

(18) IM portable tanks, under the conditions specified in the IM Tank Table. Not authorized for flammable liquids which are also organic peroxides or oxidizers.

(19) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. Authorized only for flammable liquids which are also organic peroxides or corrosive liquids. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5608, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.119, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.120 Automobiles, motorcycles, tractors, or other self-propelled vehicles.

(a) Automobiles, motorcycles, tractors, or other self-propelled vehicles, equipped with flammable liquid fuel tanks, provided these tanks are securely closed, are not subject to any other requirements for transportation by rail or highway. For transportation by air see paragraph (d) of this section.

(b) *Engines or motors (internal combustion)*. Engines or motors (internal combustion) employing liquid fuel classed as flammable liquid in this chapter, whether shipped separately

or as a part of other apparatus, unless specifically exempt in paragraph (a) of this section, must have their fuel tanks completely drained. Fuel may be left in the carburetor, fuel pump, and fuel lines provided the total flammable fuel content does not exceed 16 ounces and provided the lines are tightly closed to prevent leakage of the fuel.

(c) *Truck bodies or trailers on flat cars.* Except as specified in § 173.21, truck bodies or trailers with automatic heating or refrigerating equipment of the flammable liquid type may be shipped with fuel tanks filled and equipment operating or not operating, when used for the transportation of other freight and loaded on flat cars as part of a joint rail highway movement. The heating or refrigerating equipment is considered to be a part of the truck body or trailer, and is not subject to any other requirements of this subchapter.

(d) Except as provided in § 175.305 of this subchapter, each automobile, motorcycle, tractor, or other self-propelled vehicle, powered by an internal combustion engine fueled by a flammable or combustible liquid, when offered for transportation by air, must have the fuel tank drained of all fuel and have the tank opening tightly closed.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16067, Apr. 15, 1976; Amdt. 173-138, 45 FR 32695, May 19, 1980; Amdt. 173-196, 51 FR 5972, Feb. 18, 1986]

§ 173.121 Carbon bisulfide (disulfide).

(a) Carbon bisulfide must be packed in specification containers as follows:

(1) [Reserved]

(2) Spec. 12A or 12B (§ 178.210 or § 178.205 of this subchapter). Fiberboard boxes with inside containers which must be glass or earthenware, not over 1 pint each, or metal cans, not over 1 quart each. Outside containers not to exceed 65 pounds gross weight.

(3) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, or § 178.191 of this subchapter). Wooden boxes with strong inside metal containers or

with inside glass or earthenware container not over 5 pints capacity each.

(4) Spec. 17E (§ 178.116 of this subchapter). Metal drums (single-trip) not over 5 gallons capacity each, with openings not exceeding 2.3 inches in diameter.

(5) Spec. 5, 5A, or 17C (single-trip) (§ 178.80, § 178.81, or § 178.115 of this subchapter). Metal barrels or drums not over 55 gallons capacity each, with openings not exceeding 2.3 inches in diameter.

(6) Tank cars as prescribed in § 173.119(a)(12). (See § 173.10 for shipping instructions.)

(7) Specification cylinders as prescribed for any compressed gas except acetylene.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17317, May 15, 1974; Amdt. 173-94, 41 FR 16067, Apr. 15, 1976; Amdt. 173-14, 45 FR 59888, Sept. 11, 1980; Amdt. 173-149, 46 FR 49894, Oct. 8, 1981; Amdt. 173-52, 46 FR 62455, Dec. 24, 1981; Amdt. 173-162, 48 FR 10228, Mar. 10, 1983]

§ 173.122 Acrolein, inhibited.

(a) Acrolein must be inhibited when shipped, and when offered for transportation must be packaged as follows:

(1) Spec. 5, 5A, or 5B (§§ 178.80, 178.81, or § 178.82 of this subchapter). Metal drums not over 55 gallons capacity each. Spec. 5 or 5B drums must have no opening exceeding 2.3 inches in diameter.

(2) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with strong inside tight metal containers not over 5 gallons capacity each.

(3) Specification 105A300W (§§ 179.100, 179.101, of this subchapter) tank car.

(i) Each tank car must be stenciled DOT-105A200W, and must be equipped with the 150 psig safety relief valve required by that specification.

(ii) Each tank car must be marked "ACROLEIN" in accordance with the requirements of § 172.330 of this subchapter.

(4) [Reserved]

(5) Specification 4B240, 4BA240, or 4BW240 (§§ 178.50, 178.51, 178.61 of

this subchapter) welded cylinders each having a water capacity not exceeding 500 pounds.

(6) Specification 51 (§ 178.245 of this subchapter) portable tanks each having a water capacity not exceeding 425 gallons.

(b) Acrolein must be inhibited and when offered for transportation by cargo-only aircraft must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, or § 178.191 of this subchapter). Wooden boxes, or Spec. 12B (§ 178.205 of this subchapter) fiberboard boxes having not more than one inside glass container of not over 1-quart capacity, securely cushioned within a metal container.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.123, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.123 Ethyl chloride.

(a) Ethyl chloride must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, or § 178.191 of this subchapter). Wooden boxes with glass, earthenware, or metal inside containers not over 1-pound capacity each.

(2) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with glass, earthenware, or metal inside containers not over 1 pound capacity each. Outside containers not to exceed 65 pounds gross weight.

(3) Spec. 5A (§ 178.81 of this subchapter). Metal barrels or drums not over 33 gallons capacity each.

(4) Cylinders as prescribed for any compressed gas, except acetylene.

(5) Specification 105A100,¹ 105A100W, 111A100W4, 112A200W, 112A400F, or 114A340W (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter) tank cars. Specification 114A340W tank cars must not be equipped with any bottom outlet. Bottom washout permitted. (See Note

1 following § 173.119(f)(3).) (See § 173.10 for shipping instructions.)

(6) Specification MC 330 or MC 331 (§ 178.337 of this subchapter). Cargo tanks. Tank bottom outlets must be equipped with valves conforming with § 178.337-11(c) of this subchapter.

(7) Specification 51 (§ 178.245 of this subchapter) portable tanks.

(b) Outage for all containers except tank cars must be 7.5 percent or more at 70° F. Outage for tank cars must be 4.2 percent or more at 70° F.

(c) Maximum quantity in one package for cargo aircraft only is limited to 300 pounds in cylinders and 15 pounds in other packagings.

[29 FR 18700 Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.123, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.124 Ethylene oxide.

(a) Ethylene oxide must be packed in specification containers as follows and copper or copper bearing alloys shall not be used in any part of a container, container valve or other container appurtenance if that part is normally in contact with ethylene oxide liquid or vapor.

(1) Specification 15A, 15B, 15C, 16A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.191 of this subchapter) wooden boxes and Spec. 12B (§ 178.205 of this subchapter) fiberboard boxes, with inside metal packaging not over 12-ounce capacity each. Each inside packaging must have a minimum bursting strength of 180 psig as prepared for shipment and be provided with a safety vent having a minimum diameter of 0.1023 inch and closed with fusible metal having a yield temperature of 157° to 170 °F. The safety vent opening must be hot tinned before filling with fusible metal. Filling must be such that the container will not be liquid full below 185 °F. Each inside packaging must be completely insulated except for top closure. Not more than 12 inside packages nor more than one layer of packagings may be packed in one outside box.

¹The use of existing tank cars authorized but new construction not authorized.

(2) Cylinders as prescribed for any compressed gas, except acetylene, not exceeding 30 gallons nominal water capacity, which meet the following requirements: All cylinders must be seamless or steel welded. Cylinders must be equipped with safety devices of the fusible plug type with threaded straight bore orifice, with yield temperature of 157° to 170 °F., having a minimum vent area of 0.0055 square inch per pound of water capacity for packagings not over 1-gallon capacity and 0.0012 square inch per pound of water capacity for all packagings over 1-gallon capacity. Each cylinder must be tested for leakage at a pressure of at least 15 psig with an inert gas before each refilling. Fillings must be such that the packaging will not be liquid full at 185 °F. Pressurizing valves must be provided for all packagings over 1-gallon capacity. Eductor tubes must be provided for all packagings over 5-gallon capacity. Cylinders having a water capacity in excess of 1-gallon must be insulated.

(3) In addition to specification packagings prescribed in this section, ethylene oxide may be shipped when packed in strong noncombustible outside packagings, with inside containers which must be securely sealed glass ampules or vials, contents not over 109 grams each, or inside aluminum cartridges, contents not over 138 grams each, cushioned in vermiculite or equally efficient noncombustible cushioning material. Not more than 100 grams of ethylene oxide shall be packed in any outside packaging except a maximum of 12 aluminum cartridges may be packed in a DOT Specification 12B (§ 178.205 of this subchapter) fiberboard box having top and bottom pads and an inside perimeter liner. A maximum of 10 such boxes may be overpacked in a master carton under the provisions of § 173.25(a).

(4) Spec. 5P (§ 178.92 of this subchapter) Lagged steel drums not over 61 gallons capacity each. Drums must be equipped with safety devices of the fusible plug type with threaded straight bore orifice, with yield temperature of 157 to 170° F. having a minimum vent area of 0.0055 square inch per pound of water capacity of the container for containers not over 1

gallon capacity and 0.0012 square inch per pound of water capacity of the container for all containers over one gallon capacity. Each drum must be tested for leakage at a pressure of at least 15 p.s.i. gauge with an inert gas before each refilling; top head of each drum must be plainly marked with paint "Keep This End Up." Filling shall be such that the container will not be liquid full below 185° F. and the maximum filling for 61 gallon drums must not exceed 55 gallons of ethylene oxide at 60° F.

(5) Specification 105A100W or 111A-100W4 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter) tank car. Each 105A* * * W series tank car must be equipped with a 75 p.s.i.g. safety valve and must be stenciled 105A100W. Outage of each tank must be sufficient to prevent the tank from becoming liquid full at 105° F. Each tank, loaded or empty, must be padded with dry nitrogen or other suitable dry inert gas in sufficient quantity to render the vapor phase in the tank nonflammable at a temperature up to 105° F. Consideration must be given to the lading temperature and the solubility of the gas in ethylene oxide as well as the partial pressure required of the padding gas used to provide this protection. The gas must be free of impurities which may cause the ethylene oxide to rearrange chemically or to polymerize, decompose, or undergo other violent chemical reaction. See §§ 179.102-12 and 179.202-18 of this subchapter for special requirements for tank cars authorized for ethylene oxide. Openings in tank heads to facilitate application of nickel lining are authorized on tank cars constructed before January 1, 1975. These openings must be closed in an approved (§ 179.3 of this subchapter) manner (See Note 1 of § 173.119(f)(3)).

(i) Each tank car must be marked "ETHYLENE OXIDE" in accordance with the requirements of § 172.330 of this subchapter.

(ii) Each Specification 105 tank car built after August 31, 1981, and before March 1, 1984, used for the transportation of ethylene oxide, must conform to DOT Specification 105J, except for the safety relief valve requirements of § 179.106-2(c)(4). Each

Specification 105 tank car built after February 29, 1984, used for the transportation of ethylene oxide, must conform to DOT Specification 105J.

(iii) After December 31, 1986, each Specification 105 tank car built before September 1, 1981, having a water capacity (shell full volume, including manways) exceeding 18,500 U.S. gallons and used for the transportation of ethylene oxide shall conform to Specification 105J.

(iv) After December 31, 1986, each Specification 111 tank car with a water capacity (shell full volume, including manways) exceeding 18,500 U.S. gallons, used for the transportation of ethylene oxide, shall conform to DOT Specification 111J.

(v) Specification 111 tank cars built after March 1, 1984, are not permitted for the transportation of ethylene oxide.

(6) Specification 51 (§ 178.245 of this subchapter) portable tank. Each tank, loaded or empty, must be padded with dry nitrogen or other suitable dry inert gas in sufficient quantity to render the vapor phase in the tank nonflammable at a temperature up to 105° F. Consideration must be given to the lading temperature and the solubility of the gas in ethylene oxide as well as the partial pressure required of the padding gas used to provide this protection. The gas must be free of impurities which may cause the ethylene oxide to rearrange chemically or to polymerize, decompose, or undergo other violent chemical reaction. Each tank must be constructed to be in compliance with the following requirements:

(i) The tank must be insulated with mineral wool or glass fiber of sufficient thickness so that the thermal conductance at 60° F. is not more than 0.075 B.t.u. per hour, per square foot, per degree Fahrenheit temperature differential. When a tank is equipped with fusible plugs instead of a safety relief valve or frangible disc, insulation must meet the requirements of paragraph (a)(6)(iii) of this section.

(ii) The insulating material of the tank must be protected by a steel jacket having a minimum thickness of 12 gauge. This jacket must be applied to prevent moisture from coming in contact with the insulation.

(iii) Each tank must be equipped with a safety relief valve or frangible disc, meeting the requirements of § 173.315, set to relieve at 75 p.s.i.g. Instead of a safety relief valve or frangible disc, a tank may be equipped with safety devices of the fusible plug type with threaded straight base orifice, with yield temperature of 157° to 170° F., having a minimum vent area of 0.0012 square inch per pound of water capacity of the container. When a fusible plug is used instead of a safety relief valve or frangible disc, the tank must be insulated with mineral wool or glass fiber of such insulating properties and required additional thickness that the tank filled as for shipment will not rupture in a fire.

(iv) Filling must be such that the tank will not be liquid full below 185° F.

(v) Copper, silver, mercury, magnesium, or their alloys may not be used in any part of the tank or appurtenances if that part or appurtenance is normally in contact with ethylene oxide liquid or vapor.

(vi) Neoprene, natural rubber, and asbestos gaskets are prohibited. All packings and gaskets must be constructed of materials which do not react spontaneously with or lower the autoignition temperature of ethylene oxide.

(vii) The capacity of the tank may not exceed 300 gallons.

(b) The maximum quantity in one package for cargo aircraft only is limited to 300 pounds in cylinders and 15 pounds in other packagings.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5006, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.124, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.125 Alcohol, n.o.s. (flammable liquid).

(a) Except as otherwise provided in this Part, alcohol, n.o.s., which is classed as a flammable liquid must be packaged as follows:

(1) In containers as prescribed in § 173.119 (a) and (b).

(2) Securely closed metal tanks of not exceeding 16 gallons capacity, made of metal not lighter than 20 gauge, United States standard, packed in strong outside wooden boxes, may be used for the transportation of natural history or laboratory specimens preserved in alcohol, when shipped by or for the United States Government.

(3)-(5) [Reserved]

(6) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside polyethylene bottles, not over 1-gallon capacity each, suitably cushioned to prevent movement within the box.

(7) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.125, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.126 Nickel carbonyl.

Nickel carbonyl must be packed in specification steel or nickel cylinders as prescribed for any compressed gas except acetylene. A cylinder used exclusively for nickel carbonyl may be given a complete external visual inspection in lieu of the interior hydrostatic pressure test required by § 173.34(e) of this part. Visual inspection must be in accordance with CGA Pamphlet C-6. All cylinder valves must be protected by one of the methods described in § 173.301(g) (1), (2) or (3) of this part.

[Amdt. 173-52, 46 FR 62455, Dec. 24, 1981]

§ 173.127 Nitrocellulose or collodion cotton, fibrous or nitrostarch, wet; nitrocellulose flakes; colloid nitrocellulose, granular, flake, or block, and lacquer base or lacquer chips, wet.

(a) Nitrocellulose, fibrous, wet with alcohol or solvent, must contain at least 25 percent by weight of alcohol or a solvent with flash point not lower than 25° F.; collodion cotton, fibrous and nitrostarch, wet with alcohol or a solvent, must contain at least 30 percent by weight of alcohol or a solvent with flash point not lower than 25° F.; nitrocellulose flakes; colloid nitrocellulose, granular or flake; lacquer base or lacquer chips, wet with alcohol

or a solvent, must contain at least 20 percent by weight of alcohol or a solvent with flash point not lower than 25° F., and nitrocellulose blocks wet with alcohol must contain at least 25 percent by weight of alcohol and must be packed in specification containers as follows:

(1) Containers, except cargo tanks or tank cars, as prescribed in § 173.119.

(2) Specification 6B, 6C, or 6J (§§ 178.98, 178.99, 178.100 of this subchapter). Metal barrels or drums not over 55 gallons capacity. Specification 6J (§ 178.100 of this subchapter) drums must have removable heads of 14 gauge metal or 16 gauge metal with one or more corrugations near the periphery and heads must have a minimum convexity of 3/8 inch; each drum must have three rolled or swedged-in hoops, one of which shall be in the body near the curl.

(3) [Reserved]

(4) Spec. 37A or 37B (§ 178.131 or § 178.132 of this subchapter). Metal barrels or drums.

(5) Spec. 6J (§ 178.100 of this subchapter). Metal drums. Authorized only for nitrocellulose in solid block forms and wet with alcohol to not less than 25 percent by weight. Authorized only for carload or truckload shipments.

(b) Except for Spec. 37A which is limited to 480 pounds, gross weight of any container must not exceed 490 pounds.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16068, Apr. 15, 1976; Amdt. 173-14, 45 FR 59888, Sept. 11, 1980; Amdt. 173-187, 50 FR 11703, Mar. 25, 1985]

§ 173.128 Paint and paint related material (flammable liquids).

(a) Except as otherwise provided in this part, the description "Paint" is the proper shipping name for paint, lacquer, enamel, stain, shellac, varnish, liquid aluminum, liquid bronze, liquid gold, liquid wood filler, and liquid lacquer base. The description "Paint related material" is the proper shipping name for a paint thinning, reducing or removing compound. However, if a more specific description is listed in § 172.101, that description

must be used. Paint and paint related material must be packaged as follows:

(1) As prescribed in § 173.119, according to flash point, pressure, or viscosity.

(2) Specification 37A or 37B (§§ 173.131, 173.132 of this subchapter). Metal drums (single-trip) not over 5 gallons capacity, with welded side seams for drums over 2 gallons capacity, irrespective of flash point or viscosity. Specification 37A metal drums constructed with 26-gauge body sheets, 24-gauge removable heads, and 26-gauge bottom heads are authorized for not over 80 pounds gross weight. Not authorized for transportation by air.

(3) Specification 52¹ or 57 (§§ 173.251, 173.253 of this subchapter). Metal portable tank. Not authorized for transportation by water except as prescribed in § 173.119(b)(6) of this subchapter.

(4) Specification 37C (§ 173.135 of this subchapter). Metal drums (non-reusable containers) not over 5 gallons capacity each. Authorized only for materials having flash point above 20° F. Not authorized for transportation by air.

(5) Specification 34 (§ 173.19 of this subchapter). Polyethylene drum. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(b) The flammable liquids identified in paragraph (a) of this section, in glass packagings of not over 1 quart capacity each, or in metal packagings of not over 5 gallons capacity each, further overpacked in a strong outside packaging are excepted from the specification packaging requirements of this part.

(c) Special exceptions for shipment of paint and paint related material in the ORM-D class are provided in Subpart N of this part.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5806, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.128, see the List of CFR

Sections Affected appearing in the Finding Aids section of this volume.

§ 173.130 Refrigerating machines.

Refrigerating machines assembled for shipment and containing limited quantities of 15 pounds or less of a flammable liquid for their operation are excepted from labeling and the specification packaging requirements of this subchapter (except when offered for transportation by air). In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

[Amdt. 173-94, 41 FR 18088, Apr. 15, 1976, as amended by Amdt. 173-94A, 41 FR 40681, Sept. 20, 1976]

§ 173.131 Road asphalt, or tar, liquid.

(a) Road asphalt, or tar, liquid, must be packaged as follows:

(1) As prescribed in § 173.119, according to flash point, pressure, or viscosity.

(2) In cargo tanks that are at least equivalent in design and construction to Specification MC-306 (§§ 173.340, 173.341 of this subchapter) except for the requirements of §§ 173.340-10, 173.341-3, 173.341-4, and 173.341-5.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 17800, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.131, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.132 Adhesive; cement; container cement; linoleum cement; pyroxylin cement; rubber cement; tile cement; wallboard cement, and coating solution.

(a) Except as otherwise provided in this part, a flammable liquid which is an adhesive; cement; container cement; linoleum cement; pyroxylin cement; rubber cement; tile cement; wallboard cement, or coating solution must be packaged as follows:

(1) As prescribed in § 173.119, irrespective of flash point or viscosity.

¹ Use of existing tanks authorized. Construction not authorized after May 31, 1972.

(2) Specification 52¹ or 57 (§§ 178.251, 178.253 of this subchapter). Metal portable tank. Not authorized for transportation by water except as prescribed in § 173.119(b)(6) of this subchapter.

(3) Specification 37C (§ 178.135 of this subchapter). Metal drums (non-reusable container) not over 5 gallons capacity each. Authorized only for materials having flash point above 20° F. Not authorized for transportation by air.

(b) The adhesive and cements identified in paragraph (a) of this section, except any adhesive or cement containing carbon bisulfide (carbon disulfide), in glass or leakproof packagings consisting of a fiberboard body and metal tops and bottoms of not over 1-quart capacity each, or metal packagings of not over 5 gallons capacity each, further overpacked in a strong outside packaging are excepted from the specification packaging requirements of this part.

[29 FR 18700, Dec. 29, 1964, as amended by Order 66, 30 FR 5744, Apr. 23, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.133, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.133 Spirits of nitroglycerin.

(a) Spirits of nitroglycerin means nitroglycerin in ethyl alcohol or in propylene glycol. Solutions of nitroglycerin means nitroglycerin in acetone. These mixtures and solutions may not contain more than 10 percent by weight of nitroglycerin. They must be packed in specification packagings as follows:

(1) Specifications 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes lined with paraffined paper, Spec. 2L (§ 178.30 of this subchapter), and with inside packagings securely closed with rubber stoppers tied in place. The inside packagings must be entirely surrounded by at least 2 inches of dry, fine sawdust or kieselguhr. Not more than 6 quarts of the spirits or solu-

tions may be packed in any outside wooden box. Inside packagings made of metal are not authorized.

(2) Specification 12A or 12B (§§ 178.210 or 178.205 of this subchapter). Fiberboard boxes or Spec. 21C (§ 178.224 of this subchapter) fiber drums laminated with a 0.004 inch polyethylene lining. Inside packagings must be Spec. 2E polyethylene bottles or Spec. 2U polyethylene containers not exceeding 5 gallons capacity each, overpacked in a strong polyethylene bag. The inside packagings must be entirely surrounded by at least 2 inches of dry, fine sawdust or kieselguhr. Not more than 6 quarts of the nitroglycerin mixture may be packed in one outside packaging, except that a maximum of 5 gallons of a nitroglycerin-propylene glycol mixture may be packaged in one Spec. 2U and overpacked in the fiber drum.

(b) Spirits of nitroglycerin consisting of not over 1 percent by weight of nitroglycerin in ethyl alcohol or propylene glycol, in addition to containers specified in paragraphs (a)(1) and (a)(2) of this section, may be packed in specification packagings as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass containers not over 1-quart capacity each, cushioned by at least 2 inches of dry, fine sawdust or kieselguhr.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-149, 46 FR 49894, Oct. 8, 1981; Amdt. 173-187, 50 FR 11703, Mar. 25, 1985]

§ 173.134 Pyroforic liquids, n.o.s.

(a) Pyroforic liquids, n.o.s., must be packed in specification packagings as follows:

(1) Specification steel or nickel cylinders prescribed for any compressed gas except acetylene having a minimum design pressure of 175 pounds per square inch are authorized. Cylinders with valves must be:

(i) Equipped with steel valve protection caps or collars, when shipped loose,

(ii) Overpacked in a strong wooden box; or

¹ Use of existing tanks authorized. Construction not authorized after May 31, 1972.

(iii) Overpacked in a Specification 12A or 12B (§§ 178.210, 178.205 of this subchapter) fiberboard box or Specification 33A (§ 178.150 of this subchapter) polystyrene case. When overpacked, cylinders must be secured to protect all valves. Unless packed in a box or case, any safety relief device must be in the vapor space of any loaded cylinder. (See §§ 174.300(d) and 177.837(d) of this subchapter.)

(2) Specification 15A, 15B, 15C, or 19B (§§ 178.168, 178.169, 178.170, 178.191 of this subchapter). Wooden boxes or Spec. 12B (§178.205 of this subchapter) fiberboard boxes enclosing not more than four strong tight metal cans with inside containers of glass or metal, not over 1-quart capacity each, having positive screwcap closures adequately gasketed ahead of the threads. Inside containers must be cushioned on all sides with dry, absorbent, incombustible material in a quantity sufficient to absorb the entire contents. The strong tight metal cans must be closed by positive means, not by friction.

(3) Spec. 17C or 37A (§ 178.115 or 178.131 of this subchapter). Metal drums (single-trip) with inside metal cans not over 1 gallon capacity each, constructed of not less than 28 gauge electro-coated tin plate closed by positive means, not friction. Inside containers shall have no opening exceeding 1 inch diameter and must be surrounded on all sides with incombustible cushioning material. Spec. 17C, 30-gallon capacity drums, shall contain not more than 20 gallons of pyroforic liquids, n.o.s. per drum and 55-gallon capacity drums shall contain not more than 35 gallons of pyroforic liquids, n.o.s. per drum; each layer of inside containers must be separated by a tin plate separator in addition to cushioning material. Spec. 37A drums shall not exceed 5 gallons capacity each.

(4) Spec. 105A300-W (§§ 179.100 and 179.101 of this subchapter) tank cars.

(5) Spec. 51 (§ 178.245 of this subchapter). Portable tanks having a minimum design pressure of 175 pounds per square inch. Safety relief devices must communicate with the vapor space when tanks are fully loaded.

(6) Specification MC 230 or MC 331 (§ 178.337 of this subchapter). Cargo

tanks having a minimum design pressure of 175 p.s.i. Safety relief devices must communicate with the vapor space when tanks are fully loaded. Tank bottom outlets must be equipped with valves conforming with § 178.337-11(c) of this subchapter.

[Order 66, 30 FR 5744, Apr. 23, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.134, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.135 Diethyl dichlorosilane, dimethyl dichlorosilane, ethyl dichlorosilane, ethyl trichlorosilane, methyl trichlorosilane, trimethyl chlorosilane, and vinyl trichlorosilane.

(a) Diethyl dichlorosilane, dimethyl dichlorosilane, ethyl dichlorosilane, ethyl trichlorosilane, methyl trichlorosilane, trimethyl chlorosilane, and vinyl trichlorosilane must be packaged as follows:

(1) Specification 15A, 16B, or 19B (§§ 178.168, 178.186, 178.191 of this subchapter). Wooden boxes with inside glass containers not over 1-gallon capacity each, securely closed and cushioned with incombustible absorbent material.

(2) Spec. 17H or 37A (§ 178.118 or § 178.131 of this subchapter). Metal drums (single-trip) with glass inside containers not over 1 gallon capacity each securely closed and cushioned with incombustible absorbent material.

(3) Spec. 5A (§ 178.81 of this subchapter). Metal drums not over 55 gallons capacity.

(4) [Reserved]

(5) Specifications 5, 5B, 5C, and 17E (single-trip) (§§ 178.86, 178.82, 178.83, 178.116 of this subchapter). Metal drums. Not authorized for shipment by air.

(6) Specification steel or nickel cylinders as prescribed for any compressed gas except acetylene.

(7) Spec. 103,¹ 103-W, 111A60-F-1, or 111A60-W-1 (§§ 179.200, 179.201 of

¹Use of existing tanks authorized. Construction not authorized after May 31, 1972.

this subchapter). Tank cars, without bottom discharge outlet.

(8) Spec. 105A100,¹ 105A100-W, or 111A100-W-4 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars.

(9) Specification MC 300, MC 303, MC 304, MC 306, MC 307, MC 330 or MC 331 (§§ 178.340, 178.341, 178.342, 178.337 of this subchapter). Cargo tanks having cargo tanks of steel or stainless steel construction. Bottom outlets, if any, must be equipped with valves conforming with § 178.342-5(a) of this subchapter.

(10) Specification 51 (§ 178.245 of this subchapter). Portable tanks.

(11) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.136, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.136 Methyl dichlorosilane and trichlorosilane.

(a) Methyl dichlorosilane and trichlorosilane must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside glass containers not over 1-quart capacity each, securely closed and cushioned with incombustible absorbent material.

(2) Spec. 17H or 37A (§ 178.118 or § 178.131 of this subchapter). Metal drums (single-trip) with glass inside containers not over 1 quart capacity each securely closed and cushioned with incombustible absorbent material.

(3) Specification 5A, 5B, or 5C (§§ 178.81, 178.82, 178.83 of this subchapter). Metal drums not over 55 gallons capacity each. Specification 5B drums must have no opening exceeding 2.3 inches in diameter. Not authorized for shipment by air.

(4) [Reserved]

(5) Specification steel or nickel cylinders as prescribed for any compressed gas except acetylene.

(6) Spec. 103,¹ 103-W, 111A60-F-1, or 111A60-W-1 (§§ 179.200, 179.201 of this subchapter). Tank cars, without bottom discharge outlet.

(7) Spec. 105A100,¹ 105A100-W, or 111A100-W-4 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars.

(8) Specification MC 330 or MC 331 (§ 178.337 of this subchapter). Cargo tanks. Tank bottom outlets must be equipped with valves conforming with § 178.337-11(c) of this subchapter.

(9) Spec. 51 (§ 178.245 of this subchapter). Portable tanks.

(10) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.136, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.137 Lithium aluminum hydride, ethereal.

(a) Lithium aluminum hydride, ethereal, must be packed in specification containers as follows:

(1) Specification 15A, or 19B (§§ 178.168, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-quart capacity each, enclosed in airtight metal cans and cushioned with sufficient incombustible cushioning material to completely absorb the contents in event of leakage.

(2) Specification 6B, 6C, or 17H (single-trip) (§§ 178.98, 178.99, 178.118 of this subchapter). Metal barrels or drums with not more than one inside glass container not exceeding 2 gallons capacity. The inside container must be completely cushioned in sufficient incombustible cushioning material to completely absorb the contents in event of breakage.

(3) Specification steel or nickel cylinders as prescribed for any compressed gas except acetylene. Valves or fittings

¹ See footnote 1 in § 173.135.

must be protected from injury by a metal cap or equally efficient device securely attached to the cylinder.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5806, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16069, Apr. 15, 1976; Amdt. 173-14, 45 FR 59689, Sept. 11, 1980; Amdt. 173-149, 46 FR 49894, Oct. 8, 1981; Amdt. 173-52, 46 FR 62455, Dec. 24, 1981]

§ 173.138 Pentaborane.

Specification steel or nickel cylinders prescribed for any compressed gas except acetylene are authorized. Each cylinder must be protected with a valve protection cap or must be packed in a strong wooden box and blocked therein so as to protect the valve from injury under conditions normally incident to transportation. Cylinders not exceeding 2 inches in diameter nor 6 inches in length, excluding the length of the valve, may also be packed in strong solid fiberboard boxes, having no outside dimension less than 4 inches, completely filled with layers of strong corrugated fiberboard, the center of which shall be cut out to fit the cylinder valve, and otherwise so designed that neither the cylinder nor the valve will be in contact with the wall of the box under conditions normally incident to transportation.

[Amdt. 173-52, 46 FR 62455, Dec. 24, 1981]

§ 173.139 Ethylene imine, inhibited, and propylene imine, inhibited.

(a) Ethylene imine and propylene imine must be inhibited and must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside securely sealed glass ampules or glass bottles, contents not over 16 fluid ounces or 1-pound each, in tightly closed metal cans. If more than one ampule or bottle is packed in a metal can, ampules or bottles must be separated by fiberboard partitions. Ampules or bottles must be cushioned with sufficient incombustible cushioning material to completely absorb contents in event of leakage. Not more than 5 pints of liquid may be packed in any outside wooden box.

(2) Specification 15A, 15B, 15C, or 19B (§§ 178.168, 178.169, 178.170,

178.191 of this subchapter). Wooden boxes with not more than four inside metal drums, Spec. 37B (§ 178.132 of this subchapter), not over 1-gallon capacity each, or not more than one Spec. 37B metal drum of 5 gallons capacity, in one outside box. Inside drums must be surrounded on all sides with incombustible absorbent cushioning material.

(3) Specification 6B, 6C, or 6J (§§ 178.98, 178.99, 178.100 of this subchapter). Metal barrels or drums, with one inside Specification 17E (§ 178.116 of this subchapter) metal drum not over 30 gallons capacity. Inside drum must be completely surrounded with incombustible cushioning material.

(4) Specification 104W, 105A100W, and 111A60W1 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars, for ethylene imine, inhibited only. Specification 111A60W1 tank cars must be insulated in accordance with § 179.200-4 of this subchapter.

(5) Spec. 5A (§ 178.81 of this subchapter). Metal barrels or drums not over 55-gallon capacity. Authorized for propylene imine, inhibited only.

(6) Specification 4B240, 4BA240, or 4BW240 (§§ 178.50, 178.51, 178.61 of this subchapter). Cylinders of all welded construction.

[29 FR 18700, Dec. 29, 1964, as amended by Order 71, 31 FR 9070, July 1, 1966. Redesignated at 32 FR 5806, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.139, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.140 Zirconium, metallic, solutions, or mixtures thereof, liquid.

(a) Zirconium, metallic, solutions, or mixtures thereof, liquid, must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, or 19B (§§ 178.168, 178.169, 178.170, 178.191 of this subchapter). Wooden boxes with inside metal containers. Each inside container shall not contain more than 20 individual glass or porcelain jars, not exceeding 2-ounce capacity each, securely closed and completely cushioned in incombustible cushioning material in sufficient quan-

tity to completely absorb the contents in event of leakage.

129 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16069, Apr. 15, 1976; Amdt. 173-149, 46 FR 49895, Oct. 8, 1981]

§ 173.141 Amyl mercaptan, butyl mercaptan, ethyl mercaptan, isopropyl mercaptan, propyl mercaptan, and aliphatic mercaptan mixtures.

(a) Amyl mercaptan, butyl mercaptan, ethyl mercaptan, isopropyl mercaptan, propyl mercaptan, and aliphatic mercaptan mixtures must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with securely closed inside metal containers not over 5 gallons capacity each, or in tightly closed glass bottles not exceeding 1-quart capacity each, securely cushioned in incombustible cushioning material in sufficient quantity to completely absorb the contents in event of leakage.

(2) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with securely closed inside metal containers not over 1 gallon capacity each; or in tightly closed glass bottles not exceeding 1 quart capacity each, securely cushioned in sufficient quantity of absorbent material to completely absorb the contents in event of leakage.

(3) Spec. 5, 5A, 5B, or 5C (§§ 178.80, 178.81, 178.82, or 178.83 of this subchapter). Metal barrels or drums, with not more than one opening not exceeding 2.3 inches in diameter and not more than one vent opening not exceeding 1 inch in diameter. Gaskets are required and must be not less than $\frac{3}{16}$ -inch thick and of resilient material such as polyethylene, neoprene, or equally efficient material.

(4) Spec. 17C (§ 178.115 of this subchapter). Metal drums (single-trip), with not more than one opening not exceeding 2.3 inches in diameter and not more than one vent opening not exceeding 1 inch in diameter. Gaskets are required and must be not less than $\frac{3}{16}$ -inch thick and of resilient material such as polyethylene, neoprene, or equally efficient material.

(5) Spec. 17E (§ 178.116 of this subchapter). Metal drums (single-trip), not over 5 gallons capacity, without opening except bung hole not exceeding 2.3 inches in diameter. Gaskets are required and must be not less than $\frac{3}{16}$ -inch thick and of resilient material such as polyethylene, neoprene, or equally efficient material. (See also paragraph (a)(6) of this section.)

(6) Spec. 17E (§ 178.116 of this subchapter). Metal drums (single-trip), not over 55 gallons capacity, with not more than one opening not exceeding 2.3 inches in diameter and not more than one vent opening not exceeding 1 inch in diameter. Gaskets are required and must be not less than $\frac{3}{16}$ -inch thick and of resilient material such as polyethylene, neoprene, or equally efficient material. Authorized only for mercaptans having flash point above 20° F.

(7) Specification 103W, 105A100,¹ 105A100W, 105A200ALW, 106A500X, 110A500W, 111A60F1, 111A60W1, 112A200W, 112A400F, or 114A340W (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars. Specifications 103W, 111A60F1, 111A60W1, and 114A340W tank cars must not be equipped with any bottom outlet. Bottom washout permitted. Specification 105A200ALW is authorized for ethyl mercaptan only and is not authorized for transportation by water.

(8) Specification MC 330 or MC 331 (§ 178.337 of this subchapter). Cargo tanks. Tank bottom outlets must be equipped with valves conforming with § 178.337-11(c) of this subchapter.

(9) Specification steel or nickel cylinders as prescribed for any compressed gas except acetylene.

(10) Specification 51 (§ 178.245 of this subchapter). Portable tank. Each tank must be equipped with safety relief valves which must be in compliance with all requirements of § 173.315(i). A tank must not be liquid full at 130° F.

(11) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

¹Use of existing tank cars authorized, but new construction not authorized.

(b) Warning or odorizing devices containing not more than one ounce of a mercaptan or an aliphatic mercaptan mixture in a hermetically sealed container or in a hermetically sealed portion of the device are not subject to the regulations in Parts 170-189 and 397 of this title.

[29 FR 18700, Dec. 29, 1964. Redesignated 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.141, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.143 Methylchloromethyl ether, anhydrous.

(a) Methylchloromethyl ether, anhydrous, must be packed in specification containers as follows:

(1) Spec. 5K (§ 178.88 of this subchapter). Nickel barrels or drums.

(2) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-gallon capacity each, except that inside containers up to 3 gallons each are authorized when only one inside container is packed in each outside box.

(3) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.143, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.144 Ink (flammable liquid).

(a) Except as otherwise provided in this part, ink which is classed as a flammable liquid in this subchapter must be packaged as follows:

(1) In containers as prescribed in § 173.119, according to flash point, pressure, or viscosity.

(2) Spec. 17C (§§ 178.115 of this subchapter). Full removable head metal drums (single-trip).

(3) Specification 37C (§ 178.135 of this subchapter). Metal drums (non-reusable container) not over 5 gallons capacity each. Authorized only for mate-

rial having flash point over 20° F. Not authorized for transportation by air.

(b) Ink in glass packagings not over 1 quart capacity each, or in metal packagings not over 5 gallons capacity each, further overpacked in a strong outside packaging is excepted from the specification packaging requirements of this part.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.144, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.145 Dimethylhydrazine, unsymmetrical, and methylhydrazine.

(a) Dimethylhydrazine, unsymmetrical, and methylhydrazine must be packed in specification containers as follows:

(1) Specification 1D or 1M (§§ 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Not authorized for transportation by aircraft.

(2) Specification 15A, 15B, 15C, or 19B (§§ 178.168, 178.169, 178.170, 178.191 of this subchapter). Wooden boxes with inside glass bottles not exceeding 1-gallon capacity each, cushioned by means of vermiculite within tin cans which shall be tightly closed, or containers not over 2 quarts capacity each made of aluminum not less than 0.04 inch thick. Closures and gaskets must be of material which will not react dangerously with or be decomposed by contact with the contents.

(3) Spec. 5, 5A, or 5C (§ 178.80, § 178.81, or § 178.83 of this subchapter); or 17E (§ 178.116 of this subchapter) (single-trip). Metal barrels or drums which shall be of type 304 or 347 stainless steel, with openings not exceeding 2.3 inches in diameter.

(4) Spec. 17C (§ 178.115 of this subchapter). Metal barrels or drums (single-trip) with openings not exceeding 2.3 inches in diameter. Authorized only for dimethylhydrazine, unsymmetrical.

(5) Spec. 42B (§ 178.107 of this subchapter). Aluminum drums. Authorized only for dimethylhydrazine, unsymmetrical.

(6) Specification 103W, 103CW, 105A100W, 111A60W1, 111A60W7, or 111A100W4 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars.¹ Authorized for dimethylhydrazine, unsymmetrical only. Each tank car must be equipped with steel safety valves of approved design and any 103W or 111A * * * tank car must not be equipped with any bottom outlet. Bottom washout permitted. Specification 105A200W, 105A300W, 105A400W, 105A500W, and 105A600W (§§ 179.100, 179.101 of this subchapter) tanks must be restenciled 105A100W and be equipped with safety valves of the type and size used on specification 105A100W tank cars.

(7) Specification MC 300, MC 301, MC 302, MC 303, MC 304, MC 305, MC 306, MC 307, MC 310, MC 311, or MC 312 (§§ 178.341, 178.342, 178.343 of this subchapter). Cargo tanks without bottom discharge outlets and equipped with steel safety valves of approved design.

(8) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18700, Dec. 29, 1964, as amended by Order 73, 32 FR 3455, Mar. 2, 1967. Redesignated at 32 FR 5608, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.146, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.146 Heaters for refrigerator cars, flammable liquid fuel type.

(a) Heaters of the liquid fuel type for refrigerator cars, containing flammable liquid fuel, may be shipped in carload or truckload lots provided each heater shall have been inspected to see that flame has been extinguished, that there is no leakage of fuel, and that controls are in the "off" position. Heaters shall be loaded and braced so as to prevent falling, tipping, or mechanical damage under normal conditions incident to transportation.

(b) Heaters of the liquid fuel type for refrigerator cars must have their flammable liquid fuel tanks completely drained if offered for transportation

or transported in less-than-carload or less-than-truckload lots.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5608, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16089, Apr. 15, 1976]

§ 173.147 Methyl vinyl ketone, inhibited.

(a) Methyl vinyl ketone must be inhibited and must be packed in specification containers as follows:

(1) As prescribed in § 173.119 (a) or (b).

(b) Limited quantities of inhibited methyl vinyl ketone, in a glass or metal inside container having a capacity of no more than 4 fluid ounces with no more than one such container securely closed and efficiently cushioned in a strong outside packaging, is excepted from labeling and the specification packaging requirements of this subpart (except that labeling is required for transportation by air). In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.147, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.148 Monoethylamine.

(a) Monoethylamine must be packed in specification containers as follows:

(1) Specification 9, 5A, or 5P (§§ 178.80, 178.81, 178.92 of this subchapter). Metal barrel or drum equipped with openings not exceeding 2.3 inches in diameter. Bung labels must be applied and must meet the requirements prescribed in § 173.119(i).

(2) Cylinders as prescribed for any compressed gas except acetylene.

(3) Tank cars prescribed in § 173.119(f)(3).

(4) Specification 106A500X or 110A500W (§§ 179.300, 179.301 of this subchapter) tanks. Authorized only for transportation by rail freight and by highway. (See §§ 174.560 and 177.834(m) of this subchapter for special requirements.)

(5) Cargo tanks as prescribed in § 173.119(f)(5).

¹The use of existing tank cars authorized but new construction not authorized.

(6) Specification 51 (§ 178.245 of this subchapter). Portable tanks. Tanks must have no bottom opening, except one 3-inch maximum plugged opening for maintenance purposes is authorized.

(b) Solution of monoethylamine in water which has a vapor pressure not exceeding 16 pounds per square inch absolute at 100° F. may be shipped in containers prescribed by § 173.119(d).

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.148, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.149 Methyl magnesium bromide in ethyl ether in concentrations not over 40 percent.

(a) Methyl magnesium bromide in ethyl ether in concentrations not over 40 percent must be packed in specification containers as follows:

(1) As prescribed in § 173.134.

(2) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside glass bottles not over 1 quart capacity each. Inside containers must be surrounded on all sides with dry absorbent noncombustible material in quantity sufficient to absorb entire contents. Authorized gross weight not over 65 pounds.

(3) Spec. 17C (§ 178.115 of this subchapter). Metal drums (single-trip) with openings not exceeding 2.3 inches in diameter.

[Order 66, 30 FR 5744, Apr. 23, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16069, Apr. 15, 1976; Amdt. 173-142, 45 FR 81571, Dec. 11, 1980]

§ 173.149a Nitromethane.

Nitromethane must be packaged as specified in § 173.119(b) except that shipment in cargo tanks, tank cars, portable tanks, and any container having a capacity greater than 110 gallons is forbidden.

[Amdt. 173-94, 41 FR 16069, Apr. 15, 1976]

Subpart E—Flammable Solids, Oxidizers, and Organic Peroxides; Definitions and Preparation

SOURCE: 29 FR 18709, Dec. 29, 1964, unless otherwise noted. Redesignated at 32 FR 5606, Apr. 5, 1967.

§ 173.150 Flammable solid; definition.

For the purpose of this subchapter, "Flammable solid" is any solid material, other than one classed as an explosive, which, under conditions normally incident to transportation is liable to cause fires through friction, retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation hazard. Included in this class are spontaneously combustible and water-reactive materials.

[Amdt. 173-94, 41 FR 16069, Apr. 15, 1976, as amended by Amdt. 173-94A, 41 FR 40681, Sept. 20, 1976]

§ 173.151 Oxidizer; definition.

An oxidizer for the purpose of this subchapter is a substance such as a chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-94, 41 FR 16069, Apr. 15, 1976, as amended by Amdt. 173-124, 44 FR 31184, May 31, 1979]

§ 173.151a Organic peroxide; definition.

(a) An organic compound containing the bivalent —O—O— structure and which may be considered a derivative of hydrogen peroxide where one or more of the hydrogen atoms have been replaced by organic radicals must be classed as an organic peroxide unless:

(1) The material meets the definition of an explosive A or explosive B, as prescribed in Subpart C of this part, in which case it must be classed as an explosive,

(2) The material is forbidden to be offered for transportation according to § 172.101 or § 173.21 of this subchapter,

(3) It is determined that the predominant hazard of the material containing an organic peroxide is other than that of an organic peroxide, or

(4) According to data on file with the Research and Special Programs Administration, it has been determined that the material does not present a hazard in transportation.

[Amdt. 173-94A, 41 FR 40681, Sept. 20, 1976, as amended by Amdt. 173-137, 45 FR 34703, May 22, 1980]

§ 173.152 Packing.

(a) Flammable solids or oxidizing materials must not be packed in the same outside container with corrosive liquids unless the corrosive liquids are in bottles, cushioned by incombustible absorbent material, in tightly closed metal containers.

NOTE 1: Oxidizing or other materials in quantity not exceeding 4 ounces, in securely closed metal cans, packed in the same compartment with other securely packed materials necessary for a complete fumigant, are acceptable for transportation.

(b) Closing and cushioning. All containers must be tightly and securely closed. Inside containers must be cushioned as prescribed or in any case when necessary to prevent breakage or leakage.

§ 173.153 Limited quantities of flammable solids, oxidizers and organic peroxides.

(a) Limited quantities of flammable solids for which exceptions are permitted as noted by reference to this section in § 172.101 of this subchapter, are excepted from labeling (except when offered for transportation by air) and specification packaging requirements when packed according to the following paragraph. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(1) Flammable solids in inside containers not over 1 pound net weight each, in outside containers not exceeding 25 pounds net weight each.

(b) Limited quantities of oxidizers and organic peroxides for which exceptions are permitted as noted by reference to this section in § 172.101 of

this subchapter are excepted from labeling (except when offered for transportation by air) and specification packaging requirements when packed according to the following paragraphs. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(1) Oxidizers in inside containers having a rated capacity of not over one pint for liquids or a net weight of not over one pound for solids, in strong outside packagings not exceeding 25 pounds net weight each.

(2) Organic peroxides, except acetyl benzoyl peroxide and benzoyl peroxide, as follows:

(i) In inside containers which must be securely packed and cushioned with noncombustible cushioning material (except that cushioning material is not required when the liquid is contained in strong, securely closed plastic packagings of not over 1 ounce by volume capacity each), further overpacked in strong outside packagings containing not over 1 pint or 1 pound net weight of the material.

(ii) In not more than 24 inside fiberboard containers each having not more than 70 securely closed tubes having a maximum fluid capacity each of ½-ounce and securely packed in non-combustible cushioning material.

(c) Special exceptions for shipment of certain flammable solids, oxidizers and organic peroxides in the ORM-D Class are provided in Subpart N of this part.

[Amdt. 173-94, 41 FR 16069, Apr. 15, 1976, as amended by Amdt. 173-94A, 41 FR 40681, Sept. 20, 1976; Amdt. 173-121, 43 FR 48643, Oct. 19, 1978; Amdt. 173-142, 45 FR 81571, Dec. 11, 1980]

§ 173.154 Flammable solids, organic peroxide solids and oxidizers not specifically provided for.

(a) Flammable solids, organic peroxide solids and oxidizers as defined in §§ 173.150 and 173.151, other than those for which special packing requirements are prescribed, must be packed in specification containers of a design and constructed of materials that will not react dangerously with or

be decomposed by the chemical packed therein. Specific packaging requirements are as follows:

(1) Specification 6B or 6C (§ 178.98 or § 178.99 of this subchapter). Metal barrels or drums.

(2) Spec. 17C, 17E, 17H, 37A or 37B (§§ 178.115, 178.116, 178.118, 178.131, or 178.132 of this chapter), metal drums (single-trip).

(3) Specification 57 (§ 178.253 of this subchapter). Portable tanks. Tanks must have a fusible plug having a fusing temperature between 70° C and 90° C. Authorized only for dicumyl peroxide, dry and a, a'-bis(t-butylperoxy) diisopropyl-benzene, solid.

(4) Specification MC 303, MC 304, MC 306, MC 307, MC 311 or MC 312 (§§ 178.341, 178.342, 178.343 of this subchapter). Cargo tanks. Tanks must conform with § 178.340-8. Discharge valves must be located inside the tank or at a point outside the tank where the line enters or leaves the tank. The valve seat must be located inside the tank or within the welded flange, its companion flange, nozzle, or coupling. Each product discharge opening shall have a secondary closing means, remote from tank filling or discharge openings, for operation in event of fire or other accident. Tanks may have heating coils if an inorganic heating medium is used. Authorized only for sodium perchlorate or magnesium perchlorate, wet, with 10 percent or more of water, equally distributed within the cargo tank. Specification MC 311 and MC 312 also authorized for potassium nitrite solution. Only Specification MC 304 and MC 307 are authorized for transportation by vessel.

(5) Specification 56 (§ 178.252 of this subchapter). Metal portable tank. Authorized only for flammable solids (including water reactive materials) and dry oxidizers.

(6) Spec. 12B (§ 178.205 of this chapter). Fiberboard boxes with inside containers which must be metal cans; sliding-lid wooden boxes; fiber cans or boxes, Spec. 2G (§ 178.26 of this chapter), not over 5 pounds capacity each; or glass bottles not over 1 pound capacity each. Packages containing glass containers must not weigh over 65 pounds gross.

(7) Spec. 15A or 15B (§§ 178.168 or 178.169 of this subchapter). Wooden boxes lined, Spec. 2F or 2M (§§ 178.25 or 178.31 of this subchapter).

(8) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside containers.

(9) Specification 21C (§ 178.224 of this subchapter). Fiber drums. Maximum net weight may not exceed 225 pounds except that a 21C400 fiber drum may have a net weight not exceeding 350 pounds.

(10) Spec. 22A (§ 178.196 of this subchapter). Plywood drums.

(11) Spec. 22B (§ 178.197 of this subchapter). Plywood drums with inside metal drums, Spec. 2F (§ 178.25 of this subchapter).

(12) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes constructed of at least 275-pound test double-faced fiberboard and provided with a perimeter liner and bottom pad of at least 200-pound test fiberboard. Boxes constructed of at least 350-pound fiberboard having top and bottom pads shall not require perimeter liner. Product must be contained within a tightly closed polyethylene or other equally efficient plastic bag constructed of material having minimum thickness of 0.004 inch. Not more than 25 pounds net weight of product may be packed in one outside box.

(13) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 5 pounds capacity each. Not more than four bottles having capacity of 5 pounds each, shall be packed in one outside container. Shipper must have established that completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(14) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside polyethylene bottles not over 1-gallon capacity each or polyethylene jars not over 9 pints capacity each. Each jar shall contain not more than 10 pounds net weight of product. Not more than four bottles or jars may be packed in one outside container. Authorized only for materials which will not cause decomposition of polyethylene or container failure.

(15) Specification 103,¹ W, 111A-60W1, or 111A60F1 (§§ 179.200, 179.201 of this subchapter). Tank cars. Authorized only for sodium perchlorate or magnesium perchlorate wet with 10 percent or more water equally distributed.

(16) Specification 35 (§ 178.16 of this subchapter) non-reusable, removable head polyethylene drum for use without overpack and not over seven gallons capacity. Authorized only for dry or paste material that will maintain its form to a minimum temperature of 130° F.

(17) Specification 103ALW or 111A60ALW (§§ 179.200, 179.201 of this subchapter). Insulated tank cars designed for operation at temperatures up to 250° F. Authorized only for ammonium nitrate with 15 percent or more water in solution at a maximum temperature of 240° F. Transportation by water is not authorized.

(18) Specification MC 307 or MC 311 (§§ 178.340, 178.342 of this subchapter). Insulated cargo tanks designed for operation at temperatures up to 250° F. Authorized only for ammonium nitrate with 15 percent or more water in solution at a maximum temperature of 240° F. Transportation by water is not authorized.

(19) Specification 6D or 37M (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpacks (non-reusable containers) with inside specification 2S, 2SL, or 2U (§§ 178.35, 178.35a, 178.24 of this subchapter) polyethylene packaging.

(20) As prescribed in § 173.163(a)(7). Authorized only for ammonium persulfate, hydrated calcium hypochlorite, potassium persulfate, sodium carbonate peroxide, sodium chlorate, dry, sodium perborate monohydrate and sodium persulfate.

(21) Specification 105A200ALW (§§ 179.100, 179.101 of this subchapter). Tank cars. Authorized only for a mixture of 24 to 26 percent ammonia, 68 to 70 percent ammonium nitrate and 5 to 7 percent water. Transportation by water is not authorized.

(22) Specification 44P (§ 178.241 of this subchapter). All plastic bags. Au-

thorized only for ammonium persulfate, potassium persulfate, sodium carbonate peroxide, sodium perborate monohydrate and sodium persulfate. Net weight may not exceed 81 pounds.

(23) Specification 44B or 44C (§§ 178.236, 178.237 of this subchapter). Multiwall paper bags. Authorized only for ammonium persulfate, dibasic lead phosphite, potassium persulfate, sodium carbonate peroxide, sodium perborate monohydrate and sodium persulfate.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.154, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.154a Fusees.

(a) A fusee is a device designed to burn at a controlled rate and to produce visible effects for signaling purposes. It consists of a pasteboard or fiber tube containing a colored flare mixture and with or without a means of support. The composition of the fusee must be such that spontaneous ignition does not occur when the moistened composition is exposed to a temperature of 212° F. for 72 consecutive hours. Fusees must have individual tip, head, or similar ignition point or surface entirely covered and securely protected against accidental contact or friction. Fusees must be securely packed in packages complying with the following specifications:

(1) Specifications 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes having a gross weight not to exceed 150 pounds for specification 19B boxes; 200 pounds for the other boxes. When specification 15C boxes are used, devices must be packed in airtight inside metal receptacles.

(2) Specification 12B (§ 178.205 of this subchapter) fiberboard boxes. Boxes must have reinforced ends proven to be capable of preventing penetration of spikes through the outside box when a sample package, prepared as for shipment, is subjected to

¹The use of existing tanks authorized but new construction not authorized.

two drops from a height of 4 feet onto a solid surface. The package must be dropped so as to strike diagonally with the spikes in a downward position. Gross weight not to exceed 65 pounds except that gross weight not to exceed 75 pounds is authorized in boxes made in accordance with § 178.205-24 of this subchapter.

(3) Specification 29 (§ 178.226 of this subchapter). Mailing tubes, provided the penetration of the spikes of the fuseses through the outside container is prevented by the method specified for fiberboard boxes, specification 12B, in paragraph (a)(2) of this section. Gross weight not to exceed 5 pounds.

(4) Fusees without spikes when offered for shipment may be packed in packages prescribed in this paragraph, omitting the protection required for these devices when equipped with spikes.

(5) Fusees may be packed with non-explosive or nonflammable articles provided the outside packages are marked as prescribed in this section.

(b) Each outside package must be plainly marked in letters not less than seven-sixteenths inch in height "Fusees" and with the additional words "Handle Carefully—Keep Fire Away."

[Amdt. 173-56, 36 FR 21201, Nov. 4, 1971, as amended by Amdt. 173-94, 41 FR 16070, Apr. 15, 1976]

§ 173.156 Barium peroxide and calcium peroxide.

(a) Barium peroxide and calcium peroxide must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass containers not over 1-pound capacity each; or with inside glass containers not over 5 pounds capacity each, cushioned with incombustible cushioning material; or with inside metal containers or lining, Spec. 2F (§ 178.25 of this subchapter).

(2) [Reserved]

(3) Spec. 6B or 6C (§§ 178.98 or 178.99 of this subchapter). Metal barrels or drums with not more than 1400 pounds net weight in each container.

(4) Spec. 17E, 17H, 37A, or 37B (§§ 178.116, 178.118, 178.131, or 178.132 of this subchapter). Metal drums (single-trip).

(5) Spec. 21C (§ 178.224 of this subchapter). Fiber drums. Authorized net weight not over 225 pounds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16070, Apr. 15, 1976; Amdt. 173-14, 45 FR 59889, Sept. 11, 1980; Amdt. 173-149, 46 FR 49895, Oct. 8, 1981]

§ 173.157 Benzoyl peroxide, chlorobenzoyl peroxide (para), cyclohexanone peroxide, dimethylhexane dihydroperoxide, lauroyl peroxide, or succinic acid peroxide, wet.

(a) Benzoyl peroxide, chlorobenzoyl peroxide (para), dimethylhexane dihydroperoxide, lauroyl peroxide, and succinic acid peroxide, each wet with at least 30 percent of water by weight, and cyclohexanone peroxide over 50 percent concentration but not exceeding 85 percent concentration, wet, must be packed in specification packagings as follows:

(1) Specification 15A, 15B, 15C, or 19B, (§§ 178.168, 178.169, 178.170, 178.191 of this subchapter). Wooden boxes with inside metal containers or lining, Specification 2F (§ 178.25 of this subchapter), or with securely closed inside paper bags lined with polyethylene at least 0.002 inch thick, or with inside aluminum drums of at least 16 gage metal throughout. Net weight (dry weight) in each inside DOT-2F metal container or in each paper bag may not exceed 1-pound. Gross weight may not exceed 200 pounds.

(2) [Reserved]

(3) Specification 12B (§ 178.205 of this subchapter). Fiberboard box with inside fiber containers securely closed by taping or gluing, or with securely closed inside paper bags lined with polyethylene at least 0.002 inch thick. The net weight (dry weight) in each inside container may not exceed 1 pound. Except for lauroyl peroxide, wet, each inside container must be surrounded by an appropriate fire-resistant cushioning material. The gross weight in Specification 12B65 fiberboard boxes may exceed 65 pounds,

but may not exceed 80 pounds, provided the net weight (dry weight) of the contents does not exceed 50 pounds.

(4) Specification 21C (§ 178.224 of this subchapter). Fiber drum with securely closed inside plastic containers made of polyethylene film at least 0.002 inch thick for cyclohexanone peroxide over 50 percent concentration but not exceeding 85 percent concentration and for dimethylhexane dihydroperoxide; with securely closed inside plastic containers made of polyethylene film at least 0.004 inch thick for benzoyl peroxide wet with at least 30 percent of water by weight. Authorized net weight (wet weight) in one outside drum may not exceed 50 pounds for cyclohexanone peroxide, 100 pounds for dimethylhexane dihydroperoxide, or 225 pounds for benzoyl peroxide.

(5) Specification 12B (§ 178.205 of this subchapter). Fiberboard box with securely closed inside plastic containers made of polyethylene film at least 0.004 inch thick. The net weight (dry weight) in each inside container may not exceed 25 pounds. Each inside container must be surrounded by an appropriate fire-resistant cushioning material. Authorized only for benzoyl peroxide.

(b) Benzoyl peroxide, wet with at least 20 percent of water by weight, must be packed in specification packagings as follows:

(1) Specification 12B (§ 178.205 of this subchapter). Fiberboard box with securely closed inside paper bags lined with polyethylene at least 0.002 inch thick. The net weight (dry weight) in each bag may not exceed 1 pound. Each bag must be surrounded by an appropriate fire-resistant cushioning material.

(2) Specification 21C (§ 178.224 of this subchapter). Fiber drum with securely closed inside plastic containers made of polyethylene film at least 0.004 inch thick. Net weight (dry weight) in each outside drum may not exceed 55 pounds.

(3) Specification 12B (§ 178.205 of this subchapter). Fiberboard box with securely closed inside plastic containers made of polyethylene film at least 0.004 inch thick. The net weight (dry weight) in each inside container may

not exceed 25 pounds. Each inside container must be surrounded by an appropriate fire-resistant cushioning material. The net weight (dry weight) in each outside box may not exceed 50 pounds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.157, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.158 Benzoyl peroxide, dry; chlorobenzoyl peroxide (para) dry; cyclohexanone peroxide, dry; lauroyl peroxide, dry; or succinic acid peroxide, dry.

(a) Benzoyl peroxide, dry; chlorobenzoyl peroxide (para), dry; cyclohexanone peroxide over 50 percent concentration but not exceeding 85 percent concentration, dry; lauroyl peroxide, dry; or succinic acid peroxide, dry; must be packed in specification packagings as follows:

(1) Specification 15A, 15B, 19A, or 19B (§§ 178.168, 178.169, 178.190, 178.191 of this subchapter). Wooden boxes with inside fiber containers securely closed by taping or gluing, or inside securely closed paper bags lined with 0.002 inch thick polyethylene, not over 1-pound capacity each. Except for lauroyl peroxide, dry, each inside container must be surrounded by an appropriate fire-resistant cushioning material. The net weight in outside container must not exceed 50 pounds, except that for lauroyl peroxide, dry, a net weight not over 100 pounds is authorized.

(2) Spec. 21C (§ 178.224 of this subchapter) fiber drums. Authorized only for lauroyl peroxide, dry. Authorized net weight not over 100 pounds in one drum.

(3) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes, with inside fiber containers securely closed by taping or gluing, or inside securely closed paper bags lined with polyethylene not less than 0.002 inch thick, not over 1 pound capacity each. Except for lauroyl peroxide, dry, each inside container must be surrounded by an appropriate fire-resistant cushioning material. The gross weight in Specification 12B65 boxes may be

more than 65 pounds, but not more than 80 pounds, provided the net weight of contents does not exceed 50 pounds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5806, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.158, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.159 Burnt cotton.

(a) "Burnt cotton" is cotton that has been on fire and from which the burnt portions have not been removed by re-picking. It must not be offered for transportation until at least 10 days have elapsed since the last evidence of fire in it.

(b) When burnt cotton is picked and baled, the separated unburnt cotton is subject to the same regulations as cotton that has not been involved in a fire. See § 172.101 of this subchapter.

[Amdt. 173-94, 41 FR 16070, Apr. 15, 1976]

§ 173.160 Calcium chlorite and sodium chlorite.

(a) Calcium chlorite and sodium chlorite must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 173.168, 173.169, 173.170, 173.185, 173.190, 173.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 2½ pounds capacity each or metal not over 9 pounds capacity each.

(2) Specification 6B or 6C (§§ 173.98, 173.99 of this subchapter). Metal barrels or drums.

(3) Spec. 17E, 17H, 37A, or 37B (§§ 173.116, 173.118, 173.131 or § 173.132 of this subchapter). Metal drums (single-trip).

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5806, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16070, Apr. 15, 1976; Amdt. 173-14, 45 FR 59889, Sept. 11, 1980; Amdt. 173-149, 46 FR 49896, Oct. 8, 1981]

§ 173.161 Calcium phosphide.

(a) Calcium phosphide must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 173.168, 173.169, or 173.191 of this subchapter). Wooden boxes, lined,

Spec. 2F (§ 173.25 of this subchapter), and with hermetically sealed inside containers.

(2) Specifications 6B, or 6C (§ 173.98, or § 173.99 of this subchapter). Metal barrels or drums.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5806, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16070, Apr. 15, 1976; Amdt. 173-14, 45 FR 59889, Sept. 11, 1980; Amdt. 173-149, 46 FR 49896, Oct. 8, 1981]

§ 173.162 Charcoal.

(a) "Limited quantities of charcoal, as described in this paragraph, are excepted from labeling (except when offered for transportation by air) and specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(1) [Reserved]

(2) Charcoal made from pine wood and processed so that it is not liable to heat dangerously or cause fires in transportation.

(3) Charcoal briquettes made from wood charcoal with starch and water, or tar, for a binder, which have been screened and cooled to a temperature below 100° F., before being offered for transportation.

(4) Charcoal screenings made from "pinon" wood.

(5) Charcoal made from walnut shells, corn cobs, peach pits, and similar material, must be cooled and held not less than five days before shipment, and shipped in bags, barrels, or boxes. The five-day holding period shall not apply to charcoal briquettes screened and cooled to a temperature below 100° F. before being offered for transportation.

(6) Charcoal, lump, made by the old kiln or pit method by which long air exposure is provided before shipment.

(7) Charcoal, wood, except charcoal screenings, when packed in boxes or barrels.

(8) Charcoal, wood, when in bags in less-than-carload or less-than-truck-load shipments of not exceeding 2,000 pounds.

(9) When offered for transportation by air, charcoal must be packaged in boxes or barrels.

(10) Charcoal screenings or ground, crushed, granulated, or pulverized charcoal, from pit or kiln burned charcoal, provided the screenings or the material from which the ground charcoal is made has been exposed to the air for not less than 5 days prior to shipment or grinding (see paragraphs (j) and (k) of this section).

(11) Special exceptions for shipment of charcoal in the ORM-D class are provided in Subpart N of this part.

(b) Charcoal made in round retorts must be transferred to air-tight metal cans for cooling, and must be kept in these cans for 24 hours or more. The charcoal after removal from these cans should be aired by spreading on a floor to a depth not exceeding 1 foot. This air exposure must last not less than 44 hours. Not less than 72 hours should elapse from the time the air exposure of the charcoal commences before a car loaded with it is closed for shipment, or before the lump charcoal is placed in paper bags.

(1) The charcoal during this airing period must be protected from the weather, and exposed to good circulation of air. When the charcoal is aired on the floor for only 24 hours and then placed in burlap bags, it must be kept in the bags 60 hours before shipment. If the charcoal is not aired on the floor for at least 24 hours, it must be kept in the burlap bags for at least 96 hours before loading for shipment.

(c) Charcoal made in ovens in slatted cars should be kept for two periods of 24 hours each in first and secondary airtight cooling chambers respectively. After removing the charcoal from the secondary coolers it must be exposed to good air circulation, but protected from the weather for a period of not less than 44 hours.

(1) Not less than 72 hours must elapse from the time the air exposure of the charcoal commences before a car loaded with it is closed for shipment, or before the lump charcoal is placed in paper bags.

(d) When fire occurs in charcoal during air exposure period, it should be extinguished with as little water as possible. Any charcoal wet in this way

or otherwise must be dried, by again heating in the retorts or ovens, and cooled and aired in the usual way described in paragraphs (b) and (c) of this section, or the charcoal must be set aside and allowed to dry for not less than 30 days before shipment.

(e) Charcoal, lump, must be dry and free from screenings and brands.

(1) Shipments must be loaded into tight box cars, tight container cars, or into tight closed-top hopper cars, except that lump charcoal made from soft wood may be shipped in open or stock cars.

(2) When a chute is used in loading the car, the chute must contain a properly constructed screen which must be kept clean. This screen shall be not less than $\frac{3}{4}$ inch mesh. Forks with prongs not less than 1 inch apart must be used instead of shovels to handle the charcoal. The screenings which accumulate in the doorway of the car must be removed before loading the doorway. The car should be swept before loading, and a car which has contained lime must be thoroughly cleaned before loading with charcoal. The doors of the car must be closed tightly before the car is forwarded.

(3) Lump charcoal may be shipped in bags, barrels or boxes, or bulk in cars.

(4) Lump charcoal, dry and free from screenings and brands, may be shipped in bulk in motor vehicles. Vehicle must be swept before loading and if it contained lime it must be thoroughly cleaned.

(f) Charcoal screenings consist of small pieces of charcoal varying from about one-half inch in the maximum dimension to grains of dust. These screenings are more liable to produce fires than other forms of charcoal. Charcoal screenings from wet charcoal or wet screenings or screenings which have been wet must not be offered for shipment unless they have been dried for not less than 12 hours in a retort or oven, and then subjected to not less than 10 days airing and cooling before shipment.

(1) Charcoal screenings must be stored in a dry place, in loosely piled bags, freely exposed to the air for not less than 20 days after separation from the lump before shipment.

(2) Screenings from pine-wood charcoal must be stored as above described for not less than five days before shipment.

(3) Charcoal screenings must be packed in cotton or jute bags of not greater than 4 bushels capacity.

(g) Charcoal ground, crushed, granulated, or pulverized is prepared from either lump charcoal or screenings.

(1) Lump charcoal used for the preparation of ground, crushed, granulated, or pulverized charcoal must be stored subject to ventilation, and protected from the weather for not less than 20 days after its removal from the coolers before milling; or the ground, crushed, granulated or pulverized charcoal must be stored in bags, subject to ventilation and protected from the weather for not less than 20 days before shipment. Lump charcoal made from pine wood must be stored as above described for not less than 5 days before milling. Ground, crushed, or granulated charcoal made by the "Stafford" process must be stored subject to ventilation and protected from the weather for not less than 7 days before shipment in lieu of the 20-days' storage otherwise prescribed.

(2) Charcoal screenings used for the preparation of ground, crushed, granulated, or pulverized charcoal must be stored in a dry place in loosely piled cotton or jute bags freely exposed to air for a period of not less than 20 days after separation from the lump charcoal, and before milling; or the ground, crushed, granulated, or pulverized charcoal must be stored in bags, subject to ventilation and protected from the weather for not less than 20 days before shipment. Charcoal screenings made from pine wood charcoal must be stored as above described not less than 5 days before milling.

(3) Ground, crushed, granulated, or pulverized charcoal must be packed in tight sift-proof wooden barrels or boxes containing not more than 4 bushels each; or in fiberboard boxes; or in unlined jute bags, or in strong unlined cotton bags, containing not more than 4 bushels each; or in paper-lined jute bags, or in paper bags, containing not more than 2½ bushels each. Whenever practicable, all boxes,

barrels, or bags, after filling, should be allowed to remain open and freely exposed to the air, and protected from the weather for not less than 24 hours before being closed. Ground, crushed, granulated, or pulverized charcoal made from pine-wood charcoal should be so stored for not less than 72 hours before the packages are closed.

(h) Charcoal, screenings or ground, crushed, granulated or pulverized charcoal, in bags, when loaded in cars for shipment by rail must be so loaded that the bags are laid horizontally in the car, and so piled that there will be spaces for efficient air circulation. These spaces must be not less than 4 inches wide. If the bags are not compactly filled and closed so as to avoid free space within, transverse wooden strips must be laid between the bags and extending the full width of the car; these strips should be approximately 2 feet apart vertically and longitudinally. The bags must not be piled closer than 6 inches from the top of the car, and no more than 26,000 pounds of screenings, ground, granulated, crushed, or pulverized charcoal, shall be loaded in a 36-foot, 6-inch car; 27,000 pounds in a 37-foot, 6-inch car; 28,000 pounds in a 38-foot, 6-inch car; 29,000 pounds in a 39-foot, 6-inch car; 36,000 pounds in a 40-foot, 6-inch car; and 40,000 pounds in a 50-foot, 6-inch car. A tight car must be used, and any loose material must be swept up and removed from the doorway of the car before completing the loading.

(i) See § 177.838 of this subchapter for loading in motor vehicles.

(j) Charcoal burned in pits or kilns must be thoroughly cooled in the sealed kilns. After the kilns are opened, the charcoal must be allowed to stand in the open kiln or elsewhere exposed to the air for not less than 24 hours before loading in a freight car. Charcoal burned in kilns may be loaded in open cars or in box cars, but after loading in box cars, the cars must be allowed to stand not less than 24 hours with doors open before shipment.

(k) Screenings, or ground, crushed, granulated, or pulverized charcoal, from pit or kiln burned charcoal, are considered as non-hazardous, provided the screenings or the material from

which the ground charcoal is made has been exposed to the air for not less than 5 days prior to shipment or grinding.

(1) Reburned charcoal must be cooled and exposed to good fresh-air circulation for not less than five days after removal from the reburning furnaces and before being shipped or ground to produce ground or pulverized charcoal.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 18070, Apr. 15, 1976; Amdt. 173-94A, 41 FR 40681, Sept. 20, 1976; Amdt. 173-138, 45 FR 32695, May 19, 1980; Amdt. 173-169, 48 FR 52313, Nov. 17, 1983]

§ 173.163 Chlorate of soda, chlorate of potash, and other chlorates.

(a) Chlorate of soda, chlorate of potash, and other chlorates must be packed in specification containers as follows:

(1) Specification 6B, or 6C (§ 178.98 or § 178.99 of this subchapter). Metal barrels or drums.

(2) Spec. 17E, 17H, 37A, or 37B (§§ 178.116, 178.118, 178.131, or § 178.132 of this subchapter). Metal drums (single-trip).

NOTE 1: Specs. 37A and 37B. Metal drums for export service, marked for an authorized gross weight of 160 pounds, must be at least 24 gauge metal throughout.

(3) Spec. 21C, 22A, or 22B (§ 178.224, § 178.196 or § 178.197 of this subchapter). Fiber or plywood drums with inside metal drums, Spec. 2F (§ 178.25 of this subchapter). Authorized net weight not over 225 pounds.

(4) Specification 15A, 15B, 15C, 16A, 16A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with tightly closed inside containers which must be of metal not over 10 pounds capacity each; or of glass not over 5 pounds each; or of fiber, Spec. 2G (§ 178.26 of this subchapter), not over 6 pounds capacity each.

(5) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside metal cans not over 5 pounds capacity each, closed air tight and with not over 25 pounds of chlorate in the outside container.

(6) Chlorates wet with 10 percent or more of water are authorized for shipment in tank cars, Spec. 103,¹ 103-W, 111A60-F-1, or 111A60-W-1 (§§ 179.200, 179.201 of this subchapter), when equally distributed therein.

(7) Chlorate of soda, dry, is authorized for shipment in aluminum or steel tank car tanks, cargo tank vehicles, tight sift-proof covered hopper cars, or tight sift-proof covered hopper type motor vehicles. Tank car tanks, cargo tank vehicles, hopper cars, and hopper type motor vehicles must be thoroughly cleaned before loading. Tank car tanks may have their internal operating valve removed provided the bottom outlet is securely capped.

(8) Specification 12A (§ 178.210 of this subchapter). Fiberboard box with inside glass or plastic bottles not over 5 pounds capacity each. Not more than 4 glass bottles or 6 plastic bottles having a capacity of 5 pounds each shall be packed in one outside container. Shipper must have established that completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(9) Specification 56 (§§ 178.251, 178.252 of this subchapter). Metal portable tanks.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.163, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.164 Chromic acid or chromic acid mixture, dry.

(a) Chromic acid and chromic acid mixture, dry, must be packaged as follows:

(1) Specification 6B, or 6C (§ 178.98 or § 178.99 of this subchapter). Metal barrels or drums.

(2) Specification 17C, 17H, or 37A (§§ 178.115, 178.118, 178.131 of this subchapter) metal drums. Spec. 37A metal drums constructed from 22-gauge steel throughout are authorized for a gross weight of 490 pounds or less when shipped in a carload or truckload lot.

¹Use of existing tank cars authorized, but new construction not authorized.

(3) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes, with inside glass bottles of not over 5 pounds capacity each, with closures securely fastened, each bottle individually packed in a tight metal container, and cushioned therein with incombustible mineral packing material; or with inside tightly closed metal containers, not over 10 pounds capacity each.

(4) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 5 pounds capacity each. Not more than four bottles having capacity of 5 pounds each, shall be packed in one outside container. Shipper must have established that completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(5) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with metal inside containers which must have closing device securely fastened by positive means (not friction), not over 1-gallon capacity each. Not more than 4 metal containers shall be packed in one outside box.

(6) Specification 21C (§ 178.224 of this subchapter). Fiber drums lined with a plastic material having a minimum thickness of 0.003-inch. Net weight may not exceed 115 pounds.

(7) Specification 56 (§ 178.252 of this subchapter). Steel portable tank.

[29 FR 18709, Dec. 29, 1964, as amended by Order 71, 31 FR 9070, July 1, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16070, Apr. 15, 1976; Amdt. 173-14, 45 FR 59849, Sept. 11, 1980; Amdt. 173-149, 46 FR 49896, Oct. 8, 1981; Amdt. 173-151, 46 FR 58695, Dec. 3, 1981; Amdt. 173-187, 50 FR 11703, Mar. 25, 1985; Amdt. 173-201, 52 FR 13040, Apr. 20, 1987]

§ 173.165 Coal, ground bituminous, sea coal, coal facings.

(a) Coal, ground bituminous, sea coal, coal facings, 90 percent of which will pass through a 100-mesh sieve, must be stored for at least six days after grinding, or if not so stored must be shipped in tight metal tank cars or in tight metal containers on container cars, or in permanently covered metal hopper cars, or in other tight metal containers, or in tight, metal-bodied, covered motor vehicles.

(b) Coal, ground bituminous, which has been dried by heating before grinding must be packed in hermetically sealed metal-lined wooden boxes or air-tight metal containers.

§ 173.166 Cobalt resinate, precipitated, calcium resinate, and calcium resinate fused.

(a) Cobalt resinate, precipitated, calcium resinate, and calcium resinate fused, must be packed in specification containers as follows:

(1) Specification 6B, or 6C (§ 178.98 or § 178.99 of this subchapter). Metal barrels or drums.

(2) Spec. 17E, 17H, 37A, or 37B (§§ 178.116, 178.118, 178.131, or § 178.132 of this subchapter). Metal drums (single-trip).

(3) Spec. 15A or 15B (§ 178.168 or § 178.169 of this subchapter). Wooden boxes with air-tight metal inside containers.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.166, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.168 Lithium amide, powdered.

(a) Lithium amide, powdered, must be packed as follows:

(1) As prescribed in § 173.154(a) (1), (2), (8) and (11).

(2) Spec. 21C (§ 178.224 of this subchapter). Fiber drums with inside metal drums, Spec. 2F (§ 178.25 of this subchapter). Authorized net weight not over 225 pounds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16070, Apr. 15, 1976; Amdt. 173-121, 43 FR 48644, Oct. 19, 1978]

§ 173.171 Fish scrap or fish meal.

Fish scrap or fish meal containing less than 6 or more than 12 percent moisture (does not include wet acidulated fish scrap with moisture 40 to 55 percent), or which has not been sufficiently cooled after manufacture, or is liable to spontaneous heating in transit, must be packed in air-tight metal containers.

§ 173.173

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16070, Apr. 15, 1976]

§ 173.173 Aluminum dross or magnesium dross.

Aluminum dross or magnesium dross must not be shipped when hot or when containing moisture liable to cause heating or fire during transportation.

§ 173.174 Iron sponge, spent oxide, spent iron mass, spent iron sponge.

(a) Iron sponge that has not been properly oxidized during manufacture must be packed in hermetically sealed metal-lined wooden boxes or air-tight metal containers.

(b) [Reserved]

(c) Spent oxide, spent iron mass, or spent iron sponge must be loaded in open steel cars or open highway vehicles with steel bodies. After exposure to air for a period of not less than 10 days, these articles may be offered for transportation by carrier by water in bulk in all-steel barges having open holds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16070, Apr. 15, 1976]

§ 173.175 Lacquer base, or lacquer chips, dry.

(a) Lacquer base, or lacquer chips, dry, must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside metal containers, Spec. 2F (§ 178.25 of this subchapter).

(2) Specification 6B or 6C (§ 178.98 or § 178.99 of this subchapter). Metal barrels or drums.

(3) Spec. 17E, 17H, 37A, 37B, or 37C (§§ 178.116, 178.118, 178.131, 178.132, or § 178.135 of this subchapter). Metal drums (single-trip), or Spec. 37C (non-reusable container).

(4) Spec. 21C (§ 178.224 of this subchapter). Fiber drums. Authorized net weight not over 225 pounds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16070, Apr. 15, 1976]

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Amdt. 173-14, 45 FR 59889, Sept. 11, 1980; Amdt. 173-149, 46 FR 49896, Oct. 8, 1981]

§ 173.176 Safety matches.

(a) Safety matches (strike-on-box, book, and card) are matches which are intended to be ignited on a prepared surface. Safety matches, when offered for transportation, must be of a type which will not ignite spontaneously or undergo marked decomposition when subjected for eight consecutive hours to a temperature of 200 °F. (93.3 °C.). As used in this section, the term "safety matches" includes matches combined with or attached to the box, book, or card.

(b) Safety matches must be tightly packed in securely closed inside packagings to prevent accidental ignition under conditions normally incident to transportation, and further packed in outside fiberboard, wooden, or other equivalent-type packagings. Safety matches in outside packagings not exceeding 50 pounds gross weight are not subject to any other requirement (except marking) of this subchapter. Safety matches may be packed in the same outside packaging with materials not subject to this subchapter.

(49 U.S.C. 1803, 1804, 1808, 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-177, 49 FR 35951, Sept. 13, 1984]

§ 173.176a Strike anywhere matches.

(a) Strike anywhere matches are matches which may be ignited by friction on a solid surface. Strike anywhere matches, when offered for transportation, must be of a type which will not ignite spontaneously or under go marked decomposition when one complete inside package is subjected for eight consecutive hours to a temperature of 200 °F. (93.3 °C.).

(b) Strike anywhere matches may not be packed in the same outside packaging with any material other than safety matches. The safety matches must be packed in separate inside packagings.

(c) *Inside packagings.* Strike anywhere matches must be tightly packed in securely closed chipboard, fiberboard, wooden, or metal inside packagings to prevent accidental ignition under conditions normally incident to

transportation. Each inside packaging may contain no more than 700 strike anywhere matches.

(d) *Outside packagings.* Strike anywhere matches must be packed in specification packagings as follows:

(1) Spec. 15A or 19B (§§ 178.191 of this subchapter). Wooden boxes, with inside packages. Gross weight must not exceed 100 pounds.

(2) Spec. 12B or 12C (§§ 178.205, 178.206 of this subchapter). Fiberboard boxes, with inside packages. Gross weight must not exceed 60 pounds. Fill-in pieces specified by § 178.205-14 or § 178.206-14 of this subchapter are not required.

(49 U.S.C. 1803, 1804, 1808, 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-177, 49 FR 35951, Sept. 13, 1984]

§ 173.177 Motion-picture film and X-ray film.

(a) Motion-picture film and X-ray film (nitrocellulose base) must be packed in specification containers as follows:

(1) Spec. 32A or 32B (§ 178.146 or § 178.147 of this subchapter). Metal cases.

(2) Specification 15A, 15B, 15C, or 19B (§§ 178.168, 178.169, 178.170, 178.191 of this subchapter). Wooden boxes with each reel in a tightly closed metal can, or strong cardboard or fiberboard box with cover held in place by adhesive tape or paper. Gross weight must not exceed 200 pounds.

(3) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes complying with § 178.205-22(a)(1) of this subchapter; authorized for a single tightly closed inside metal can or strong cardboard or fiberboard box with cover held in place by adhesive tape or paper, not over 2,000 feet of film. Taped closure authorized.

(4) Spec. 12B (§ 178.205 of this subchapter). One-piece fiberboard boxes complying with § 178.205-22(a)(2) of this subchapter; authorized only when each film is in a tightly closed metal filmreel can or strong cardboard or fiberboard box with cover held in place by adhesive tape or paper containing not over 2,000 feet (approximately) of film; cans or boxes to be adequately braced in center of box by fiberboard, at least 175-pound test, extending full

depth of box. Gross weight not over 65 pounds. Closing of box must be effected by coating entire contact surfaces of flaps with efficient adhesive; stitched closure not authorized. Boxes that have been filled, shipped, and opened, are not authorized for reuse.

(5) Spec. 32C (§ 178.148 of this subchapter). Trunks with each film in standard metal film-reel can or strong cardboard or fiberboard box with cover held in place by adhesive tape or paper. Trunks to contain no material other than films in cans or boxes and projecting apparatus. The apparatus, as packed, must not be capable of creating an electric current.

(6) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes complying with § 178.205-27 of this subchapter; authorized only for not more than two square inside metal cans containing not over 200 feet (approx.) of film each; gross weight not over 15 pounds. Taped closure authorized.

(b) Slow burning motion-picture film is excepted from the requirements of this subchapter, except when packed with flammable film.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16070, Apr. 15, 1976; Amdt. 173-149, 46 FR 49896, Oct. 8, 1981]

§ 173.178 Calcium carbide, calcium silicon powder, and magnesium granules, coated.

(a) Calcium carbide, calcium silicon powder, and magnesium granules, coated must be packed as follows:

(1) In water-tight metal drums with rolled, folded top and bottom seams and with welded side seams. Closures must be of the friction-type or screw-type. Full open-top closures must be gasketed and equipped with leverlock or bolted clamping ring. Maximum rated capacity may not exceed 60 gallons.

(2) In water-tight, sift-proof, bulk metal containers.

(3) In water-tight, sift-proof, closed-top metal covered hopper rail cars.

(4) In water-tight, sift-proof, closed-top metal covered hopper motor vehicles.

(5) In water-tight metal containers not exceeding 10 pounds net weight.

[Amdt. 173-94, 41 FR 16071, Apr. 15, 1976, as amended by Amdt. 173-133, 44 FR 60100, Oct. 18, 1979; Amdt. 173-141, 45 FR 62081, Sept. 18, 1980; Amdt. 173-151, 46 FR 58695, Dec. 3, 1981]

§ 173.179 N-methyl-N'-nitro-N-nitrosoguanidine.

N-methyl-N'-nitro-N-nitrosoguanidine must be packaged as follows: The quantity in one outside packaging may not exceed 25 grams and must be placed in a polyethylene bottle which is tightly closed and the closure secured in place with pressure sensitive tape. The bottle must be sealed in a polyethylene bag constructed of polyethylene at least 4 mils thick. The bag containing the bottle must be cushioned in a hermetically sealed can with noncombustible cushioning material. There must be at least one inch of cushioning material between the outer surface of the bag and the inner surface of the can. The metal can must be cushioned in a DOT 12B fiberboard box constructed of at least 350 pound test fiberboard. There must be at least one inch of cushioning material between the outer surface of the can and the inner surface of the fiberboard box.

[Amdt. 173-137, 45 FR 34703, May 22, 1980]

§ 173.182 Nitrates.

(a) Aluminum nitrate, ammonium nitrate (no organic coating), ammonium nitrate (organic coating), ammonium nitrate-carbonate mixture, ammonium nitrate-phosphate, ammonium nitrate fertilizer,¹ (containing no more than 0.2 percent carbon), ammonium nitrate mixed fertilizer, barium nitrate, beryllium nitrate, calcium nitrate, cupric nitrate, ferric nitrate (NOTE: The double salt of calcium and ammonium nitrate ($5Ca(NO_3)_2 \cdot NH_4NO_3 \cdot 10H_2O$) containing not more than 15.5 percent nitrogen and at least 12 percent water is not subject to the regulations in this subchapter), guanidine nitrate, lead nitrate, magnesium nitrate, mercuric nitrate, nickel nitrate, ni-

trates, n.o.s., nitrate of soda and potash, potassium nitrate, silver nitrate, sodium nitrate, strontium nitrate, zinc nitrate and zirconium nitrate must be packaged as follows:

(1) In wooden or fiberboard boxes with glass, metal, or other strong inside containers; in metal or fiber drums; in kegs or barrels; or in strong metal cans. When so packed, they are excepted from the specification packaging requirements of this part.

(b) Aluminum nitrate, ammonium nitrate (no organic coating), ammonium nitrate-carbonate mixture, ammonium nitrate-phosphate, ammonium nitrate fertilizer¹ (containing no more than 0.2 percent carbon) ammonium nitrate mixed fertilizer, barium nitrate, beryllium nitrate, calcium nitrate, cupric nitrate, ferric nitrate, guanidine nitrate, mercuric nitrate, nickel nitrate, nitrate of soda and potash, potassium nitrate, sodium nitrate, strontium nitrate, and zirconium nitrate, in addition to containers prescribed in paragraph (a) of this section, may be packaged as follows:

(1) In bulk, in tightly closed freight cars.

(2) In bulk, in sift-proof closed or open type motor vehicles.

(3) [Reserved]

(4) In burlap bags not exceeding 200 pounds net weight, water-resistant, made tight against sifting, and made of not less than 7½-ounce burlap.

(5) Multiple-wall paper bags must be constructed as follows:

(i) At least 4-ply including moisture-barrier ply, and made tight against sifting. Maximum authorized net weight is 110 pounds. Completed package, filled to weight with product and closed for shipment, must be capable of withstanding three 4-foot drops on face or back onto solid concrete without rupture.

(ii) At least 3-ply of extensible kraft paper having a minimum total basis weight of 180 pounds including an innermost ply coated with polyethylene to provide a moisture barrier. Maximum authorized net weight is 80 pounds. Completed package, filled to weight with product and closed for shipment, must be capable of withstanding three 4-foot drops on face or

¹Applies only to materials tested in accordance with and meeting the definition in The Fertilizer Institute's publication "Definition and Test Procedures for Ammonium Nitrate Fertilizer" dated May 7, 1971.

back onto solid concrete without rupture.

(6) Plastic bags must be constructed as follows:

(i) Specification 44P (§ 178.241 of this subchapter). All plastic bags. Maximum authorized net weight is 81 pounds. Authorized only for ammonium nitrate mixed fertilizer, ammonium nitrate fertilizer (containing no more than 0.2 percent carbon), and potassium nitrate.

(ii) Polypropylene bag made of 9 denier polypropylene fibers spun continuously to form a sheet weighing at least 3½ ounces per square yard. Maximum authorized net weight is 100 pounds. Each bag must have an inner liner of polyethylene not less than 4 mils thick. Each bag filled to weight with product and closed for shipment must be capable of withstanding three 4-foot drops on face or back onto solid concrete without rupture. Authorized only for ammonium nitrate (no organic coating), ammonium nitrate fertilizer, and potassium nitrate; or

(iii) Polyethylene bag made of two plies of high-density polyethylene film laminated together so that the orientation of each ply of film is at right angles to the other. Maximum authorized net weight is 100 pounds. For a net weight not exceeding 50 pounds, the thickness of each bag must be at least 2.5 mils. For a net weight exceeding 50 pounds but not exceeding 100 pounds, the thickness of each bag must be at least 4 mils. Each bag must be capable of withstanding the test requirements of § 178.241-4 and each bag must be in compliance with the requirements of § 178.241-3 of this subchapter for bag closures. Authorized only for ammonium nitrate (no organic coating), ammonium nitrate fertilizer, and sodium nitrate.

(7) Specification 53² or 56 (§§ 178.251, 178.252 of this subchapter). Portable tank. Authorized only for sodium nitrate.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amtd. 173-94, 41 FR 18071, Apr. 15, 1976]

EDITORIAL NOTE: For Federal Register citations affecting § 173.182, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.183 Potassium nitrate mixed (fused) with sodium nitrite.

(a) Potassium nitrate mixed (fused) with sodium nitrite must be packed in containers as follows:

(1) In containers as prescribed in § 173.182(a).

(2) Spec. 103-W (§§ 179.200 and 179.201 of this subchapter). Tank cars specially designed, equipped and approved for this service without bottom discharge outlet and with heavier plate thicknesses than the minimum prescribed for cars built under this specification. For specification 103-W tank cars made of plates having the minimum prescribed thicknesses, internal reinforcement of the upper sheets of tank in the region of the dome and reinforcing plates attached to the bottom sheet of the tank which rests on bolsters is required, and these tanks must be equipped with baffle plates. Heater pipes must be of welded construction designed for a test pressure of 500 pounds per square inch. A 1-inch woven asbestos lining must be placed between bolster slabbing and bottom of tank to prevent heat transmission. Safety vents of the frangible disc type may be used and if used the frangible discs must be perforated with ¼ inch hole. If safety valves are used, a vacuum relief valve must be installed on the dome. Each tank car must be marked "Fused Potassium Nitrate and Sodium Nitrite" in accordance with the requirements of § 172.330 of this subchapter.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.183, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.184 Nitrocellulose or collodion cotton, wet, or nitrocellulose, colloided, granular, or flake, wet, or nitrostarch, wet, or nitroguanidine, wet.

(a) Nitrocellulose or collodion cotton, wet, or nitrocellulose, colloided, granular, or flake, wet, or nitrostarch, wet, or nitroguanidine, wet,

²Use of existing tanks authorized. Construction not authorized after May 31, 1972.

must be uniformly wet with at least 20 pounds of water to 80 pounds of dry material and must be packed in specification containers as follows:

(1) [Reserved]

(2) Specification 14, 15A, 15B, or 19B (§§ 178.165, 178.168, 178.169, 178.191 of this subchapter). Wooden boxes lined, Spec. 2M (§ 178.31 of this subchapter).

(3) Specification 6B, 6C, or 6J (§§ 178.98, 178.99, 178.100 of this subchapter). Metal barrels or drums not over 55 gallons capacity. Specification 6J (§ 178.100 of this subchapter) drums must have removable heads of 14 gauge metal or 16 gauge metal with one or more corrugations near the periphery and the heads must have a minimum convexity of $\frac{3}{8}$ inch; each drum must have three rolled or swedged-in hoops, one of which shall be in the body near the top curl.

(4) Spec. 37A or 37B (§ 178.131 or § 178.132 of this subchapter). Metal drums (single-trip) not over 5 gallons capacity. Welded side seams required.

(5) Spec. 17E or 17H (§ 178.116 or § 178.118 of this subchapter). Metal drums (single-trip).

(6) [Reserved]

(b) Gross weight of any container must not exceed 490 pounds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17317, May 15, 1974; Amdt. 173-94, 41 FR 16071, Apr. 15, 1976; Amdt. 173-14, 45 FR 59889, Sept. 11, 1980; Amdt. 173-149, 46 FR 49896, Oct. 8, 1981]

§ 173.187 Potassium peroxide; potassium superoxide; sodium peroxide or sodium superoxide.

(a) Potassium peroxide, potassium superoxide, sodium peroxide or sodium superoxide must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside air-tight metal cans.

(2) Specification 6B or 6C (§§ 178.98, 178.99 of this subchapter). Metal barrels or drums.

(3) Spec. 17E, 17H, 37A, or 37B (§§ 178.116, 178.118, 178.131, or § 178.132 of this subchapter). Metal drums (single-trip).

(4) Spec. 12A or 12B (§ 178.210 or § 178.205 of this subchapter). Fiberboard boxes with inside air-tight metal cans not over 5 pounds capacity each.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17317, May 15, 1974; Amdt. 173-94, 41 FR 16071, Apr. 15, 1976; Amdt. 173-14, 45 FR 59889, Sept. 11, 1980; Amdt. 173-149, 46 FR 49896, Oct. 8, 1981]

§ 173.188 Phosphoric anhydride.

(a) Phosphoric anhydride must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, or 19B (§§ 178.168, 178.169, 178.170, 178.191 of this subchapter). Wooden boxes with inside tightly stoppered glass bottles not over 1-pound capacity each; or metal cans, not over 3 pounds capacity each, hermetically sealed (soldered) or closed with cork securely held in place by metal strap soldered in position. Inside containers must be cushioned with elastic incombustible packing materials.

(2) Specification 6B or 6C (§§ 178.98, 178.99 of this subchapter). Metal barrels or drums.

(3) Spec. 17E, 17H, 37A, or 37B (§§ 178.116, 178.118, 178.131, or § 178.132 of this subchapter). Metal drums (single-trip).

(4) Specification 56 (§ 178.252 of this subchapter). Stainless steel portable tanks.

(5) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 1 pound capacity each. Not more than 12 bottles shall be packed in one outside box. Shipper must have established that completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(6) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles of one-third fluid ounce capacity each. Each bottle shall be packed in a heat-sealed polyethylene or other suitable plastic bag of equal efficiency and not more than 75 such units shall be packed in a heat-sealed polyethylene or other suitable plastic bag of equal efficiency, which shall be placed in a securely closed metal can. Not more than 1 can shall be packed in one outside box.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.188, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.189 Phosphorus, amorphous, red.

(a) Phosphorus, amorphous, red, must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside air-tight metal containers.

(2) Specification 6B; also 37A or 37B (single-trip containers) (§§ 178.98, 178.131, 178.130 of this subchapter). Metal barrels or drums. Gross weight not to exceed 160 pounds.

(3) Spec. 29 (§ 178.226 of this subchapter). Mailing tube having not more than 100 grams of phosphorus contained in an inside glass container, sealed under nitrogen or other inert gas, with an air tight closure. The glass container shall be packed in a metal can having air tight closure. Both the inside glass container and the metal can shall be surrounded on all sides with incombustible cushioning material.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16071, Apr. 15, 1976; Amdt. 173-14, 45 FR 59839, Sept. 11, 1980; Amdt. 173-149, 46 FR 49896, Oct. 8, 1981]

§ 173.190 Phosphorus, white or yellow.

(a) Phosphorus, white or yellow, when offered for transportation by rail freight, highway, or water, must be packed in water or dry.

(b) When placed in water it must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside hermetically sealed (soldered) metal cans, inclosed in other hermetically sealed (soldered) metal cans, or inside water-tight metal cans containing not over 1-pound with screw-top closures, or Spec. 2F (§ 178.25 of this subchapter).

(2) Specification 5A or 6B (§§ 178.81, 178.98 of this subchapter). Metal bar-

rels or drums, not over 30 gallons capacity each.

(3) Spec. 103,¹ 103-W, 111A60-F-1 or 111A60-W-1 (§§ 179.200, 179.201 of this subchapter). Tank cars without bottom outlet for discharge of lading and with approved dome fittings, external heater systems, and with insulation at least 4 inches in thickness, except that thickness of insulation may be reduced to 2 inches over external heater coils. Bottom washout nozzle of approved design may be applied. The material must be immersed in water or be blanketed with an inert gas and be loaded at a temperature not exceeding 140° F. The water must be loaded in the dome to not more than 50 percent of the capacity of the dome. After unloading, the person who unloaded the tank car must fill it to its entire capacity with an inert gas or must fill it with water having a temperature not exceeding 140°F, to not more than 50 percent of the capacity of its dome. Before the car is offered for return movement, it must be placarded with **FLAMMABLE SOLID-RESIDUE** placards, as described in § 172.525 of this subchapter.

(i) Each tank car must be marked "PHOSPHORUS" in accordance with the requirements of § 172.330 of this subchapter.

NOTE 1: Until further order of the Department, Specification ARA-III¹ tank cars, converted as follows, are authorized for use: Without bottom discharge outlet, with insulation at least 2 inches in thickness, internal heater coils, at least one safety valve or frangible disc safety vent of approved design, and dome equipped for top unloading. Cars to be loaded and unloaded as prescribed in paragraph (b)(3) of this section. Cars to be stenciled immediately above the mark ARA-III¹ with the words "FOR PHOSPHORUS ONLY".

(4) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks; without bottom outlet and with insulation at least 4 inches in thickness, except that 2 inches of insulation is authorized for tanks equipped with an exterior heating jacket. Interior heating coils are not authorized. The material must be immersed in

¹Use of existing tank cars authorized, but new construction not authorized.

water or be blanketed with an inert gas and be loaded at a temperature not exceeding 140° F. After unloading, the tank must be filled to its entire capacity with an inert gas or to its entire capacity with water having a temperature not exceeding 140° F.

(5) Specification IM 101 portable tanks (§§ 178.270, and 178.271 of this subchapter) are authorized under the conditions specified in the IM Tank Table. The material must be immersed in water or blanketed with an inert gas and be loaded at a temperature not exceeding 140° F. After unloading, the tank must be filled with an inert gas or water having a temperature not exceeding 140° F.

(c) Phosphorus, white or yellow, when offered for transportation by air must be packed in water in packaging as follows (also authorized for transportation by rail freight, highway or water):

(1) Specification 15A, 15B, 19A or 19B (§§ 178.168, 178.169, 178.190, 178.191 of this subchapter). Wooden boxes with inside hermetically sealed (soldered) metal cans, inclosed in other water-tight metal cans containing not over 1-pound with screw-top closures, or with soldered closures.

(2) Samples of phosphorus, white or yellow, not to exceed 4 ounces each, placed in water in sealed metal cylinders or cans, inclosed in a wooden box, Spec. 15A or 15B (§ 178.168 or § 178.169 of this subchapter), may be transported only when consigned to the laboratory of the Internal Revenue Bureau or to the Hygienic Laboratory of the Public Health Service, Washington, D.C.

(3) Spec. 29 (§ 178.226 of this subchapter). Mailing tube having a water-tight rigid polyethylene container in which is placed a quartz tube containing not more than 100 grams of phosphorus sealed under nitrogen or other inert gas, with the remaining space in the polyethylene container filled with water. The polyethylene container shall be cushioned within the mailing tube with incombustible cushioning material.

(d) Phosphorus, white or yellow, when dry must be cast solid and shipped in containers as follows:

(1) Specification 6B, or 6C (§§ 178.98, 178.99 of this subchapter). Metal barrels or drums not over 30 gallons capacity each.

(2) In projectiles or bombs when shipped by, for, or to the Departments of the Army, Navy, and the Air Force of the United States Government, without bursting elements.

[29 FR 18709, Dec. 29, 1964, as amended by Order 73, 32 FR 3455, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.190, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.191 Phosphorus pentachloride.

(a) Phosphorus pentachloride must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or glazed earthenware containers, not over 25 pounds capacity each, cushioned with mineral packing. When inside containers are packed in the same outside container with other articles, they must be enclosed in tightly closed metal cans. Net weight not to exceed 50 pounds in each outside box.

(2) Specification 6B, or 6C; also 37A or 37B (single-trip containers) (§§ 178.98, 178.99, 178.131, or § 178.132 of this subchapter). "Black iron" metal barrels or drums.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.191, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.192 Ammonium picrate, picric acid, trinitrobenzoic acid, and urea nitrate, wet.

Ammonium picrate, picric acid, trinitrobenzoic acid, and urea nitrate, wet with not less than 10 percent water, in quantity not exceeding 16 ounces in one outside package, may be shipped as drugs, medicines, or chemicals, when in glass bottles securely stoppered, each bottle inclosed in a strong fiber carton properly cushioned in the

outside shipping case. No restrictions other than packing prescribed by this section are required when these materials are offered for transportation.

[Amdt. 173-121, 43 FR 48644, Oct. 19, 1978]

§ 173.193 Picric acid, trinitrobenzoic acid, or urea nitrate, wet.

(a) Picric acid, trinitrobenzoic acid, or urea nitrate, wet with not less than 10 percent water must be packed in specification containers as follows:

(1) Specification 15A or 19B (§§ 178.168, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers, cushioned and tightly closed. The net weight in an outside package must not exceed 25 pounds dry weight. (See § 173.65 for shipment of wet picric acid, wet trinitrobenzoic acid and wet urea nitrate in excess of 25 pounds, and § 173.192 for exemption up to 16 ounces.)

(2) Specification 21C (§ 178.224 of this subchapter). Fiber drums of not over 6½ gallons capacity with one inside 5-mil polyethylene bag. Drum must be made vapor tight through the installation of a 7-mil polyethylene interior lining, plus 1½ mil of polyethylene buried in the inside ply of the drum. The full open head of the container must be made vapor tight by the use of a 24-gauge metal lid with a 10-mil preformed sealing disc glued to the rubber gasket cover and locked with a lever type locking ring and a pilfer proof seal. The net weight of the dry material shall not exceed 25 pounds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16072, Apr. 15, 1976; Amdt. 173-118, 43 FR 17944, Apr. 27, 1978; Amdt. 173-149, 46 FR 49897, Oct. 8, 1981; Amdt. 173-192, 50 FR 41522, Oct. 11, 1985]

§ 173.194 Potassium permanganate.

(a) Potassium permanganate must be packed in specification containers as follows:

(1) In containers as prescribed in § 173.154.

(2) In bulk, in sift-proof, self-clearing, covered hopper or bottom outlet steel cars or in sift-proof all steel flat bottom gondola cars with fixed sides and ends equipped with water-proof and dust-proof wooden or steel covers

well secured in place for all openings, or in bulk, in motor vehicles with steel, sift-proof, self-clearing hopper-type or dump-type bodies, with water-proof and dust-proof covers, well secured in place. Such cars, when used exclusively in this service and stencilled "FOR POTASSIUM PERMANGANATE ONLY," are not subject to the requirements of § 174.515 of this subchapter.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16072, Apr. 15, 1976]

§ 173.195 Pyroxylin plastic scrap.

(a) Pyroxylin plastic scrap must be packaged as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes lined, Spec. 2F or 2M (§§ 178.25, 178.31 of this subchapter). Gross weight must not exceed 450 pounds each.

(2) Specification 6B, 6C, or 6J; also 17H, 37A, or 37B (single-trip containers) (§§ 178.98, 178.99, 178.100, 178.118, 178.131, or § 178.132 of this subchapter). Metal barrels or drums.

(3)-(4) [Reserved]

(5) Spec. 21C (§ 178.224 of this subchapter). Fiber drums. Must be externally treated to provide protection against moisture. Authorized net weight not over 225 pounds.

(b) Pyroxylin plastic scrap, photographic film scrap, X-ray film scrap, motion picture film scrap, or pieces of exposed or unexposed film which show evidence of decomposition or instability or are liable to decompose or become unstable must be packed submerged in water in specification containers as follows:

(1) Specification 6B or 6C; or 17H (single-trip) (§§ 178.98, § 178.99, or § 178.118 of this subchapter). Metal barrels or drums.

(2) Specification 15A, 15B, 15C, or 19B (§§ 178.168, 178.169, 178.170, 178.191 of this subchapter). Wooden boxes with tightly closed inside metal containers.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17317, May 15, 1974; Amdt. 173-94, 41 FR 16072, Apr. 15, 1976;

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Amdt. 173-14, 45 FR 59890, Sept. 11, 1980;
Amdt. 173-149, 46 FR 49897, Oct. 8, 1981

§ 173.197 Pyroxylin plastics, in sheets, rolls, rods, or tubes.

(a) Pyroxylin plastics, in sheets, rolls, rods, or tubes containing nitrocellulose are subject to this subchapter only when offered for transportation by air or water and then must be packaged as follows:

(1) Specification 15A, 15B, 19A, or 19B (§§ 178.168, 178.169, 178.190, 178.191 of this subchapter). Wooden boxes.

(2) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes. Special boxes §§ 178.205-20 and 178.205-21 authorized only for pyroxylin in sheets, rods or tubes.

(3) Sheets rolled, in spec. 21C (§ 178.224 of this subchapter) fiber drums, having 2 straps applied lengthwise and one or more circumferentially; straps at least $\frac{1}{2}$ by 0.02 inch steel. Authorized net weight not over 225 pounds.

(4) Sheets, rolled, not over 15 pounds net weight in fiber tubes lined throughout with singlefaced corrugated fiberboard at least 0.2 inch thick and securely closed; tube material at least 0.115 inch thick for side walls and 0.05 inch thick for ends with strength, Mullen or Cady test, at least 245 and 220 pounds respectively; metal ends for tubes acceptable when lined with fiber discs at least 0.05 inch thick.

(b) Pyroxylin plastics in manufactured articles or articles made therefrom is not subject to Parts 170-189 of this subchapter and Part 397 of this title.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16072, Apr. 15, 1976; Amdt. 173-149, 46 FR 49897, Oct. 8, 1981]

§ 173.197a Smokeless powder for small arms.

Smokeless powder for small arms in quantities not exceeding 100 pounds net weight transported in one rail car or motor vehicle may be classed as a flammable solid when examined for this classification by the Bureau of Explosives or the Bureau of Mines and approved by the Director, OHMT.

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Maximum quantity in any inside packaging may not exceed 8 pounds. Inside packagings must be arranged and protected to prevent simultaneous ignition of the contents. The complete package must be a type examined by the Bureau of Explosives or the Bureau of Mines and approved by the Director, OHMT. In addition, inside packages which have been examined by the Bureau of Explosives or the Bureau of Mines and approved by the Director, OHMT, may be overpacked in DOT-12A65, 12B65, or 12H65 fiberboard boxes provided all inside containers are firmly packed to prevent movement and the net weight of smokeless powder in any one box does not exceed 16 pounds. Each outside package must bear a **FLAMMABLE SOLID** label.

[Amdt. 173-201, 52 FR 13040, Apr. 20, 1987]

§ 173.198 Sodium hydride.

(a) Sodium hydride must be packed in specification containers as follows:

(1) In containers as prescribed in § 173.206 (a)(1) and (a)(2).

(2) Spec. 17H (§ 178.118 of this subchapter). Metal drums (single-trip).

(3) Spec. 37A or 37B (§ 178.131 or § 178.132 of this subchapter). Metal drums (single-trip) with welded side seams and hermetically sealed closure or closure made fast by positive pressure of the lid against a rubber gasket with edge of the lid crimped over the lip of the drum and a protective metal ring fastened around the crimped edge, packed in strong outside wooden boxes.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16072, Apr. 15, 1976]

§ 173.202 Sodium metal liquid alloy, potassium metal liquid alloy, and sodium potassium liquid alloy.

(a) Sodium metal liquid alloy, potassium metal liquid alloy, and sodium potassium liquid alloy, must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter) wooden boxes with inside metal packagings. Inside packagings must be cushioned with incombustible cushioning material. Each inside metal

packaging must have been tested hydrostatically to a pressure of not less than 60 pounds per square inch without rupture. Closing devices on inside metal packagings must be protected from injury. Not more than 300 pounds of the material may be shipped in one outside box.

(2) Spec. 5A (§ 178.81 of this subchapter), metal barrels or drums not exceeding 400 pounds capacity each, having protruding valves protected by a 12-gauge steel dome securely attached to the head of the drum. Shipments are authorized by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Specification 4BW240 (§ 178.61 of this subchapter) cylinder. Each cylinder must be equipped with steel valve protection caps or collars, or be packed in strong wooden boxes and secured therein to protect the valves.

(4) Specification 51 (§ 178.245 of this subchapter) portable tank. Tanks shall have a minimum design pressure of 150 pounds per square inch. Safety relief devices must communicate with the vapor space when tanks are fully loaded. Tank must be blanketed with dry nitrogen at a pressure not to exceed 15 psig at all times.

(b) Packaging of metallic liquid alloys of sodium or potassium in combination with fissile or large quantities of radioactive material, is authorized as provided in § 173.206(a)(10) and (12).

[29 FR 18700, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.202, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.203 Tetranitromethane.

(a) Tetranitromethane must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes, gross weight not exceeding 150 pounds, with inside containers which must be: glass bottles not more than 1 quart capacity each, with closures securely fastened and of a type not deteriorated by the contents, each bottle individually packed in a tight metal container and

cushioned therein with absorbent incombustible material; or aluminum cans or polyethylene bottles, not more than 5 pounds capacity each, with opening not more than 1.25 inches diameter, fitted with securely fastened screw type closures and gaskets of material not deteriorated by contact with the contents, cushioned with not less than 2 inches of absorbent incombustible cushioning material between the inside containers and any part of the wooden box.

(2) Specification 6B or 6C (§§ 178.98, 178.99 of this subchapter). Metal barrels or drums, with an inside stainless steel or aluminum drum(s). The inside drum may have no opening larger than 2.5 inches in diameter and must be securely closed by a gasketed screw type device. Gaskets must be made of materials that will not deteriorate upon contact with the contents. The inside drum(s) must be cushioned with not less than 2 inches of absorbent incombustible cushioning material. Each inside drum shall be of not less than 20 gauge metal and shall be tested for leakage before packing in the outside drum.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16072, Apr. 15, 1976; Amdt. 173-14, 45 FR 59890, Sept. 11, 1980; Amdt. 173-149, 46 FR 49897, Oct. 8, 1981]

§ 173.204 Sodium hydrosulfite.

(a) Sodium hydrosulfite must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass bottles not exceeding 5 pounds capacity each, or metal containers.

(2) Specification 6B, or 6C (§§ 178.98, 178.99 of this subchapter). Metal barrels or drums.

(3) Spec. 17E, 17H, or 37K (§§ 178.116, 178.118, or § 178.130 of this subchapter) Metal drums (single-trip).

(4) Specification 37A or 37B (§§ 178.131, 178.132 of this subchapter). Metal drums (STC). Not authorized for transportation by air. Authorized for transportation by water only

when the containers are fitted with a minimum 4-mil polyethylene liner, the drum covers contain sponge rubber gaskets, the drums are closed with a bolted ring closure and the gross weight is not over 275 pounds.

(5) Spec. 21C (§ 178.224 of this subchapter). Fiber drums with inside metal drums. Authorized net weight not over 225 pounds.

(6) Spec. 21C (§ 178.224 of this subchapter). Fiber drums. Authorized net weight of product not over 250 pounds; drums must have a metal foil (laminated between two sheets of kraft paper with thermoplastic adhesive) moisture and water barrier wound into the sidewall of the drum and located not more than 2 plies from the interior of drum but not to be wound as the first ply; a metal foil moisture and water barrier must also be present in the fiber or wood heading; exterior of drum sidewall must be protected with a water resistant coating; in addition to the tests prescribed by § 178.224-2(a), (b), and (c) of this subchapter, a drum having been given a 4-foot diagonal bottom chime drop must, after being emptied, withstand complete immersion of the bottom in 6 inches of water for 4 hours without leakage to the interior; drums must not be offered for transportation by carriers by water.

(7) Spec. 22B (§ 178.197 of this subchapter). Plywood drums with inside metal drums.

(8) Specification 56 (§§ 178.251, 178.252 of this subchapter). Portable tank. Authorized only for shipment in a closed transport vehicle. For rail transportation see § 174.63 of this subchapter. Not authorized for transportation by water.

[29 FR 18709, Dec. 29, 1964, as amended by Order 67, 30 FR 7421, June 5, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.204, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.205 Sodium picramate, wet.

(a) Sodium picramate must be wet with not less than 20 percent of water by weight and packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass containers not exceeding 1-quart capacity each, and cushioned in outside container.

(2) Specification 21P (§ 178.225 of this subchapter). Fiber drum overpack with inside polyethylene container meeting all requirements of Specification 2U (§ 178.24 of this subchapter) except removable head is authorized. Fiber drum must be rated for a minimum net weight of 600 pounds. Maximum gross weight shall not exceed 400 pounds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.205, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.206 Sodium or potassium, metallic; sodium amide; sodium potassium alloys; sodium aluminum hydride; lithium metal; lithium silicon; lithium ferro silicon; lithium hydride; lithium borohydride; lithium aluminum hydride; lithium acetylide-ethylene diamine complex; aluminum hydride; cesium metal; rubidium metal; zirconium hydride, powdered.

(a) Metallic sodium or potassium, sodium amide, sodium potassium alloys, sodium aluminum hydride, lithium metal, lithium silicon, lithium ferro silicon, lithium hydride, lithium borohydride, lithium aluminum hydride, lithium acetylide-ethylene diamine complex, aluminum hydride, cesium metal, rubidium metal, and powdered zirconium hydride must be packaged as follows:

(1) Specification 15A, 15B, 19A, or 19B (§§ 178.168, 178.169, 178.190, 178.191 of this subchapter). Wooden boxes must have inside air-tight metal packagings. Each inside air-tight metal packaging must have a closing device securely fastened by positive means (not friction). For shipments of lithium aluminum hydride, each inside metal packaging must not exceed 1 gallon capacity and must be securely closed, positive means not required. Each inside metal packaging contain-

ing lithium aluminum hydride must be cushioned in outside packagings with sufficient incombustible packaging material.

(2) Specification 5, 5C, 6B, or 6C (§§ 178.80, 178.83, 178.98, 178.99 of this subchapter). Metal barrels or drums. Not authorized for lithium aluminum hydride or aluminum hydride.

(3) Spec. 17E, 17H, 37A, or 37B (§§ 178.116, 178.118, 178.131, or § 178.132 of this subchapter). Metal drums (single-trip). Authorized only for lithium metal or sodium, metallic which must be fused solid in the container.

(4) Spec. 37A or 37B (§ 178.131 or § 178.132 of this subchapter). Metal drums (single-trip) not exceeding 6 gallons capacity each, with welded side seams and hermetically sealed closure or closure made fast by positive pressure of the lid against a rubber gasket with edge of the lid crimped over the lip of the drum and a protective metal ring fastened around the crimped edge, cushioned on all sides with incombustible packing material, packed in strong outside wooden boxes (see § 173.25). Not more than four inside metal drums shall be packed in one outside wooden box.

(5) Spec. 17C (§ 178.115 of this subchapter), metal drums (single-trip). Not authorized for lithium aluminum hydride.

(6) Spec. 17H or 37A (§ 178.118 or § 178.131 of this subchapter). Metal drums (single-trip), with air-tight metal inside containers which must have closing device securely fastened by positive means (not friction). Inside metal containers must be cushioned on all sides by incombustible packing material. Authorized for lithium metal or lithium hydride only.

(7) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes constructed of at least 375-pound test (Mullen or Cady) solid fiberboard with inside airtight metal container which must have a closing device securely fastened by positive means (not friction). Each inside metal container must be individually nested into a double-faced corrugated partition of at least 200-pound test (Mullen or Cady) which is in turn surrounded on all sides by a peripheral double-walled corrugated liner of at

least 200-pound test (Mullen or Cady). Authorized gross weight not over 90 pounds.

(8) Spec. 21C (§ 178.224 of this subchapter). Fiber drums constructed for 400 pounds net weight, with the material packed not more than 5 pounds net weight each in not to exceed one-half gallon steel cans equipped with friction-top closures. Authorized for lithium ferro silicon only.

(9) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with non-sparking inside metal cans securely closed by use of plastic tape, or other efficient means to provide moisture tight seal. Authorized only for lithium metal in ribbon form not over ½ inch wide and ¼ inch thick. Lithium metal ribbon must be coated with heavy mineral oil or petrolatum and be wound on motion picture film reels not over 1,600-foot capacity each.

(10) Tubes of stainless steel, or other metals of equivalent strength and non-reactivity, having sealed, welded end caps, and containing not more than 50 grams of metal. Authorized only for metallic sodium, metallic lithium, metallic potassium, and sodium potassium alloy. Each tube must be enclosed within a secondary sealed metallic tube and further enclosed within strong tight outer packaging.

(11) Specification 12B (§ 178.205 of this subchapter). Fiberboard box. Authorized only for lithium metal in wire form. Fiberboard box must have inside nonsparking metal packaging. Each inside nonsparking metal packaging must be tin coated and sealed by rolled-on lids. The contents of each inside packaging must be coated with heavy mineral oil or petroleum and wound on a 3-inch by 3-inch non-sparking metal spool. The net weight of the contents in each inside packaging must not exceed one-fourth pound.

(12) Any packaging as prescribed in § 173.416 or § 173.417(b).

(13) Specification 21C (§ 178.224 of this subchapter). Fiber drums with inside hermetically sealed tin-coated steel cans with a minimum wall thickness of 0.015 inch. Not more than four spools made of non-sparking material may be packed in each inside container with not more than 2½ pounds net weight of product in each inside con-

tainer. Each metal can shall be individually separated with double-faced corrugated partitions and noncombustible packaging material. Authorized only for lithium metal in ribbons.

(b) Sodium or potassium, metallic, sodium amide, and lithium metal, immersed in neutral oil may also be shipped when packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside metal drums, Spec. 37A or 37B (§§ 178.131, 178.132 of this subchapter) having welded side seams, net weight not over 30 pounds, or with inside glass containers, each enclosed in a tin container.

(2) Spec. 17H (§ 178.118 of this subchapter). Metal drum (single-trip). Authorized only for lithium metal in the form of cups or ingots.

(c) Sodium, metallic, may also be shipped when packed in specification containers as follows:

(1) Spec. 105A300-W (§§ 179.100 and 179.101 of this subchapter). Tank cars, having exterior heater coils fusion welded to tank shell and properly stress-relieved, the material to be in molten condition when loaded into the tank and allowed to solidify before car is offered to the carrier. Outage must be 5 percent or more for sodium at fusion temperature of 208° F.

(2) Specifications 17C, 17H, 37A, or 37B (§§ 178.115, 178.118, 178.131, or § 178.132 of this subchapter) metal drums (single-trip). These drums are authorized for cylindrical blocks which must be at least 2 inches in diameter and not less than 6 inches in length, or rectangular blocks not less than 6 inches in length and not less than 2 inches in any other dimension.

(3) Specification MC 330 or MC 331 (§ 178.337 of this subchapter). Cargo tanks having a minimum design pressure of 150 pounds per square inch and having exterior coils fusion-welded to the tank shell and properly stress-relieved. Tanks must be equipped with safety valves having a start-to-discharge pressure not exceeding 150 pounds per square inch. The material must be in molten condition when loaded and solidified before being moved over a public highway.

Outage must be 5 percent or more at a sodium temperature of 208° F.

(4) Specification 51 (§ 178.245 of this subchapter). Portable tank. Each tank must have a minimum design pressure of 150 p.s.i.g. Each tank must be equipped with safety valves having a start-to-discharge pressure of 150 p.s.i.g. If a tank has exterior heating coils these coils must be welded to the tank and must be stress relieved. The material must be in molten condition when loaded and the tank must be held for sufficient time to allow the material to be completely solidified before being offered for transportation. Outage must be five percent or more at sodium fusion temperature of 208° F.

(d) Limited quantities of lithium metal in cartridges or rubidium metal in cartridges is excepted from labeling (except when offered for transportation by air) and specification packaging requirements, when packaged according to the following paragraph. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(1) In inside hermetically sealed metal cartridges not exceeding 18 grams net weight each, packed in strong outside packagings with net weight of lithium or rubidium metal not exceeding one pound; which outside packaging may be further over-packed in strong wooden boxes or fiber drums provided total net weight of lithium or rubidium metal in one outside box or drum does not exceed one pound.

(e) Lithium metal or rubidium metal in cartridges, containing more than 18 grams but not more than 120 grams of lithium or rubidium, must be packed in specification packagings as follows:

(1) Specification 15A, 15B, 19A, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside air-tight copper cartridges having a minimum wall thickness of 0.02-inch. Cartridges having less than 0.022 inch wall thickness must be separated or securely cushioned in the boxes. Gross weight must not exceed 75 pounds.

(f) Lithium batteries comprised of one or more cells are not subject to the requirements of this subchapter, if they meet the following requirements.

(1) Each cell may contain no more than 0.5 gram of lithium or lithium alloy.

(2) Each battery may contain an aggregate quantity of no more than 1 gram of lithium or lithium alloy.

(3) Each cell must be hermetically sealed.

(4) Cells must be separated so as to prevent short circuits.

(5) Batteries must be packed in strong outside packagings except when installed in electronic devices.

(6) If a battery contains more than 0.5 gram of lithium or lithium alloy, it may not contain a liquid or gas that is a hazardous material according to this subchapter unless the liquid or gas, if free, would be completely absorbed or neutralized by other materials in the battery.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.206, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.207 Sulfide of sodium or sulfide of potassium, fused or concentrated, when ground.

(a) Sulfide of sodium or sulfide of potassium, fused or concentrated, when ground, must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside bottles enclosed in tightly closed metal cans, or hermetically sealed (soldered) metal cans.

(2) Specification 6B, or 6C (§§ 178.98, 178.99 of this subchapter). Metal barrels or drums.

(3) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes, with inside containers which must be hermetically sealed (soldered) metal cans of not over 5 pounds capacity.

(b) When fused or concentrated, but not ground (may be chipped, flaked, or broken), may be shipped in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside bottles of not more than 5 pounds capacity each, or tightly sealed metal cans.

(2) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside containers which must be metal cans of not over 5 pounds net weight each or glass bottles of not over 1 pound net weight each. Packages containing glass or earthenware containers must not weigh over 65 pounds gross.

(3) Spec. 17E, 17H, 37A, or 37B (§§ 178.116, 178.118, 178.131, or § 178.132 of this subchapter). Metal drums (single-trip).

(4) Specification 6B or 6C (§§ 178.98, 178.99 of this subchapter). Metal barrels or drums.

(5) Spec. 21C (§ 178.224 of this subchapter). Fiber drums which must be lined or coated, or otherwise treated so as to prevent the entrance of moisture in quantities sufficient to create a hazardous condition in transportation; maximum loaded capacity 250 pounds net.

(6) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes constructed of at least 275-pound test double-faced fiberboard and provided with a perimeter liner and bottom pad of at least 200-pound test fiberboard. Boxes constructed of at least 350-pound fiberboard having top and bottom pads shall not require perimeter liner. Product must be contained within a tightly closed polyethylene or other equally efficient plastic bag constructed of material having minimum thickness of 0.004 inch. Not more than 25 pounds net weight of product may be packed in one outside box.

(7) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 5 pounds capacity each. Not more than four bottles having capacity of 5 pounds each shall be packed in one outside box. Shipper must have established that completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(c) Sulfide of potassium, crystallized, is not subject to Parts 170-189 and 397 of this title.

(d) Sodium sulfide when shipped fused in one solid mass in a metal barrel or drum and sodium sulfide, crystallized, are not subject to Parts 170-189 and 397 of this title.

(e) Sodium sulfide containing 35 percent or more combined water by weight, fused or concentrated but not ground (may be chipped, flaked, or broken), when packed in steel barrels or drums or portable metal tanks that are equipped with moisture-tight closures, or in strong tight fiber drums having a moisture-barrier incorporated in the walls and equipped with moisture-tight closures, is not subject to Parts 170-189 and Part 397 of this Title. Portable tanks filled to gross weight to be shipped must be capable of withstanding a drop from a height of 4 feet onto solid concrete without rupture or serious damage, and must be equipped with lifting devices capable of holding 4 times the gross weight of filled tank.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-14, 45 FR 59890, Sept. 11, 1980; Amdt. 173-142, 45 FR 81571, Dec. 11, 1980; Amdt. 173-149, 46 FR 49897, Oct. 8, 1981]

§ 173.208 Titanium metal powder, wet or dry.

(a) *Titanium metal powder, wet.* Titanium metal powder, wet, with not less than 20 percent water, must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside metal cans not exceeding 1-gallon each, and not more than 12 metal cans in one outside box; or not more than 1 inside metal can of not less than 22-gauge metal and not over 10 gallons capacity. Metal cans must be tightly closed.

(2) Titanium metal powder, wet, with not less than 50 percent water by weight may be packed in any full removable head drum specified in § 173.154.

(b) *Titanium metal powder, dry.* Titanium metal powder, dry, must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.190, 178.191 of

this subchapter). Wooden boxes with inside metal containers, closed by push-in covers, held in place by soldering at least four points, or in screw-cap metal cans. Inside containers must not exceed 10 pounds net weight each and must be cushioned by an incombustible material. Gross weight not to exceed 75 pounds.

(2) Spec. 17H or 37A (§ 178.118 or § 178.131 of this subchapter). Metal barrels or drums (single-trip) with inside metal drum of not less than 20-gauge metal and with closure secured by positive means. The inside container shall be completely surrounded by not less than 1 inch of incombustible cushioning material.

(3) Spec. 5B (§ 178.82 of this subchapter). Metal barrels or drums not over 15 gallons capacity.

(4) Specification 17C (§ 178.115 of this subchapter). Metal drums (single trip) not over 30-gallon capacity.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.208, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.212 Trinitrobenzene and trinitrotoluene, wet.

Trinitrobenzene and trinitrotoluene, wet with not less than 10 percent water, in quantity not exceeding 16 ounces in one outside package, may be shipped as drugs, medicines, or chemicals, when in glass bottles securely stoppered, each bottle inclosed in a strong fiber carton properly cushioned in the outside shipping case and are not subject to any other requirement of Parts 170-189 and 397 of this title.

§ 173.214 Hafnium metal or zirconium metal, wet, minimum 25 percent water by weight, mechanically produced, finer than 270 mesh particle size; hafnium metal or zirconium metal, dry, in an atmosphere of inert gas, mechanically produced, finer than 270 mesh particle size; hafnium metal or zirconium metal, wet, minimum 25 percent water by weight, chemically produced (see Note 1), finer than 20 mesh particle size; hafnium metal or zirconium metal, dry, in an atmosphere of inert gas, chemically produced (see Note 1), finer than 20 mesh particle size.

NOTE 1: Produced by means other than attrition or grinding.

NOTE 2: Any product containing 10 percent or more, particle size specified, shall be subject to this section.

NOTE 3: Any product containing less than 25 percent water by weight is considered dry for purposes of these regulations.

(a) Hafnium metal, wet, mechanically produced finer than 270 mesh particle size or chemically produced finer than 20 mesh particle size with a minimum of 25 percent water by weight (a mixture of water and a suitable antifreeze agent may be used when freezing temperatures may be encountered during transportation) must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 173.168, 173.169, 173.191 of this subchapter). Wooden boxes or Spec. 6B or 6C (§§ 173.98, 173.99 of this subchapter) metal drums with inside glass or noncarbon polyethylene containers having net weight of not over 10 pounds each. Inside glass containers must be equipped with positive type clamp-on closures equipped with rubber gaskets. Inside polyethylene containers must have screw-cap closures equipped with gaskets ahead of thread and shall be of material which will not react with or be decomposed when in contact with contents. Screw-cap closures must be secured in place by suitable tape. Each glass or polyethylene container must be surrounded on all sides with not less than 1-inch of incombustible cushioning material and in an amount sufficient to completely absorb the entire liquid contents of the containers. Each inside glass or polyethylene container must be placed in a strong tight metal can

closed with push-in cover held in place by soldering or crimping at least four points. The authorized net weight of hafnium in one outside container shall not exceed 40 pounds for wooden boxes and shall not exceed 150 pounds for steel drums.

(b) Hafnium metal, dry, in an atmosphere of inert gas, mechanically produced finer than 270 mesh particle size or chemically produced finer than 20 mesh particle size must be packed in specification containers as follows:

(1) Specification 6B or 6C (§§ 173.98, 173.99 of this subchapter) or Spec. 17C, 17H, or 37A (single-trip containers) (§§ 173.115, 173.118, 173.131 of this subchapter). Metal barrels or drums with inside non-carbon polyethylene bottles having positive type clamp on closures equipped with rubber gaskets, or with screw-cap closures having not less than three continuous threads and equipped with gaskets ahead of threads, not over 5 pounds net weight capacity each. Screw-cap closures must be secured in place by suitable tape. Each bottle must be placed in a Specification 2R (§ 173.34 of this subchapter) metal container having a wall thickness of one-fourth inch and be completely surrounded by cushioning material. Specification 2R containers must be separated from one another by incombustible cushioning material. The authorized net weight of metal in one outside container shall not exceed 150 pounds.

(c) Zirconium metal, wet, mechanically produced finer than 270 mesh particle size or chemically produced finer than 20 mesh particle size with a minimum of 25 percent water by weight (a mixture of water and a suitable antifreeze agent may be used when freezing temperatures may be encountered during transportation) must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 173.168, 173.169, 173.191 of this subchapter). Wooden boxes or Spec. 6B or 6C (§§ 173.98, 173.99 of this subchapter) or Spec. 17C or 17H (§§ 173.115, 173.118 of this subchapter) metal drums with inside glass or non-carbon polyethylene containers having net weight of not over 10 pounds each. Inside glass containers must be

equipped with positive type clamp-on closures equipped with rubber gaskets. Inside polyethylene containers must have screw-cap closures equipped with gaskets ahead of the thread and shall be of material which will not react with or be decomposed when in contact with contents. Screw-cap closures must be secured in place by suitable tape. Each glass or polyethylene container must be surrounded on all sides with not less than 1-inch of incombustible cushioning material and in an amount sufficient to completely absorb the entire liquid contents of the containers. Each inside glass or polyethylene container must be placed in a strong metal can closed with push-in cover held in place by soldering or crimping at at least four points. The authorized net weight or zirconium in one outside container shall not exceed 40 pounds in wooden boxes and 150 pounds in steel drums.

(2) [Reserved]

(3) Spec. 37P (§ 178.133 of this subchapter). Steel drums with polyethylene liner of one-piece molded construction (nonreusable container) not over 5 gallons capacity each. Drums exceeding 1 gallon capacity must be constructed of at least 24-gauge metal.

(4) Specification 37M (§ 178.134 of this subchapter). Cylindrical steel overpack with inside specification 2S (§ 178.35 of this subchapter) polyethylene container. Each overpack must be constructed of at least 24-gauge steel. Each packaging may not exceed a capacity of 5 gallons. Net weight of contents may not exceed 50 pounds of dry material.

(5) Specification 6D (§ 178.102 of this subchapter). Cylindrical steel overpack with inside specification 2S (§ 178.35 of this subchapter) noncarbon polyethylene container. Container is limited to single trip only and may not exceed a capacity of 5 gallons. Net weight of contents must not exceed 50 pounds of dry material.

(d) Zirconium metal, dry, in an atmosphere of inert gas, mechanically produced finer than 270 mesh particle size or chemically produced finer than 20 mesh particle size must be packed in specification containers as follows:

(1) Specification 6B or 6C (§§ 178.98, 178.99 of this subchapter) or Specifica-

tion 17C, 17H, or 37A (single-trip containers) (§§ 178.115, 178.118, 178.131 of this subchapter). Metal barrels or drums with inside non-carbon polyethylene bottles having positive type clamp-on closures equipped with rubber gaskets, or with screw-cap closures having not less than three continuous threads and equipped with gaskets ahead of threads, not over 5 pounds net weight capacity each. Screw-cap closures must be secured in place by suitable tape. Each bottle must be placed in a Specification 2R (§ 178.34 of this subchapter) metal container having a wall thickness of one-fourth inch and be completely surrounded by cushioning material. Specification 2R containers must be separated from one another by incombustible cushioning material. The authorized net weight of metal in one outside container shall not exceed 150 pounds.

(e) Mechanically produced hafnium metal, coarser than 270 mesh particle size and chemically produced coarser than 20 mesh particle size in strong tight containers are not subject to Parts 170-189 of this subchapter and Part 397 of this Title.

(f) Mechanically produced zirconium metal, coarser than 270 mesh particle size and chemically produced coarser than 20 mesh particle size in strong tight containers are not subject to Parts 170-189 and 397 of this title. (See § 173.220, zirconium scrap.)

[29 FR 18709, Dec. 29, 1964, as amended by Order 66, 30 FR 5745, Apr. 23, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.216, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.216 Zirconium picramate, wet.

(a) Zirconium picramate must be wet with not less than 20 percent of water by weight and packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass containers of not over 1-quart capacity each, tightly stoppered and cushioned.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17318, May 15, 1974; Amdt. 173-94, 41 FR 16072, Apr. 15, 1976; Amdt. 173-149, 46 FR 49898, Oct 8, 1981]

§ 173.217 Calcium hypochlorite, hydrated, Calcium hypochlorite mixture, dry; lithium hypochlorite mixture, dry; mono-(trichloro) tetra-(monopotassium dichloro)-penta-s-triazinetriene, dry; potassium dichloro-s-triazinetriene, dry; sodium dichloro-s-triazinetriene, dry; trichloro-s-triazinetriene, dry.

(a) Calcium hypochlorite, hydrated, calcium hypochlorite mixture, dry, lithium hypochlorite mixture, dry, mono-(trichloro) tetra-(monopotassium dichloro)-penta-s-triazinetriene, dry, potassium dichloro-s-triazinetriene, dry, sodium dichloro-s-triazinetriene, dry, and trichloro-s-triazinetriene, dry, each containing more than 39 percent available chlorine must be packaged as follows:

(1) Specification 6B, or 6C (§§ 178.98, 178.99 of this subchapter). Metal barrels or drums.

(2) Spec. 17E, 17H, 37A, or 37B (§§ 178.116, 178.118, 178.131, or § 178.132 of this subchapter). Metal drums (single-trip).

(3) Specification 21C (§ 178.224 of this subchapter). Fiber drums with inner ply consisting of a laminated sheet of paper and aluminum foil, internally coated. Cover of drum must be gasketed. Authorized net weight not over 400 pounds.

(4) Specification 21C (§ 178.224 of this subchapter). Fiber drum with commodity packed in securely closed polyethylene bag constructed of polyethylene film not less than 0.004-inch thickness. Not authorized for calcium hypochlorite mixtures and lithium hypochlorite compounds, dry.

(5) Specification 21C (§ 178.224 of this subchapter). Fiber drum must be made with integral inner body ply having 0.003-inch minimum thickness aluminum facing and bottom inner ply having 0.001-inch minimum thickness aluminum facing. Cover of drum must be gasketed. Authorized net weight not over 400 pounds. Authorized only for dry calcium hypochlorite mixtures.

(6) Specification 56 (§§ 178.251, 178.252 of this subchapter). Metal portable tank. Authorized only for cal-

cium hypochlorite, hydrated; mono-(tri-chloro) tetra-(monopotassium dichloro)-penta-s-triazinetriene, dry, potassium dichloro-s-triazinetriene, dry; sodium dichloro-s-triazinetriene, dry; and trichloro-s-triazinetriene, dry. For rail transportation, see § 174.63(b) of this subchapter.

(7) Specification 35 (§ 178.16 of this subchapter) non-reusable, removable head polyethylene drum for use without overpack and not over seven gallons capacity.

(8) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside polyethylene bottles with a minimum wall thickness of 0.015 inch. Not more than 2 polyethylene bottles may be packed in one box and each bottle must not contain more than 20 pounds net weight of the material. Packaging must be such that it will not react dangerously with or be decomposed by the commodity.

(9) Specification 12B (§ 178.205 of this subchapter). Fiberboard box with not more than two inside minimum 30-gauge thick steel pails containing not over 26 pounds net weight each. Each cover must be gasketed.

(b) As prescribed in § 173.163(a)(7). Authorized only for calcium hypochlorite, hydrated.

(c) Limited quantities of these materials in strong outside wooden or fiberboard packages with inside packagings of glass not over 5 pounds capacity each, or with inside metal packagings or plastic bottles or drums not over 10 pounds capacity each, are excepted from labeling and (except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.217, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.218 Isopropyl percarbonate, unstabilized.

(a) Isopropyl percarbonate, unstabilized, must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass, earthenware, or metal containers, of not over 2 gallons capacity each which must be maintained at a temperature below 0° F. Shipments are authorized for transportation by private or contract carrier by motor vehicle only.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16073, Apr. 15, 1976; Amdt. 173-138, 45 FR 32698, May 19, 1980; Amdt. 173-149, 46 FR 49898, Oct. 8, 1981]

§ 173.219 Potassium perchlorate.

(a) Potassium perchlorate must be packed as follows:

(1) As prescribed in § 173.154 (a)(1) to (a)(11) and (a)(14). Plastic bottles may be substituted for the inside glass bottles prescribed in § 173.154(a)(6).

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-104, 42 FR 11239, Feb. 28, 1977]

§ 173.220 Magnesium or zirconium scrap consisting of borings, clippings, shavings, sheets, turnings, or scalplings, and magnesium metallic (other than scrap), powder, pellets, turnings, or ribbon; magnesium aluminum powder.

(a) Magnesium or zirconium scrap consisting of borings, shavings, or turnings, must be packed in closed metal barrels or drums, wooden barrels, metal pails, fiber drums, fiberboard boxes with inside polyethylene bags or liner, or four-ply paper bags. Fiberboard boxes with inside polyethylene bags or liner or paper bags are not authorized for less-than-carload or less-than-truckload shipments.

(1) Magnesium or zirconium scrap consisting of clippings, scalplings, or scrap sheets may be shipped in bulk in carload or truckload quantities. Cars must be tight box cars or tightly closed steel covered gondola cars and trucks or trailers must have closed or completely covered bodies.

(2) Limited quantities of magnesium or zirconium scrap consisting of clippings, scalplings, or scrap sheets in closed metal drums, wooden barrels, or wooden boxes, unless otherwise provided, is excepted from labeling (except when offered for transportation by air) and specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(3) When transported by vessel, magnesium scrap may not be carried in paper bags and zirconium scrap may only be packaged in an hermetically sealed metal drum not exceeding 80 pounds net weight.

(b) Magnesium metallic (other than scrap), powder, pellets, turnings or ribbon, magnesium aluminum powder, must be packed in containers as prescribed in § 173.154.

(1) Limited quantities of magnesium metallic (other than scrap), pellets, turnings, or ribbon in fiberboard boxes with inside glass bottles not over 1 pound capacity each, with not more than 25 pounds net weight of product in each outside fiberboard box, in closed metal drums, metal pails, fiber drums, or wooden boxes with inside packagings are, unless otherwise provided excepted from labeling (except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(2) Specification 56 (§ 178.252 of this subchapter). Portable tank. Not authorized for transportation by water. For magnesium powder or magnesium aluminum powder, the following additional requirements must also be met:

(i) The tank must be pressurized with 2 psig of nitrogen before shipment and the pressure relief valve must have a maximum setting of 3 psig; and

(ii) The tank must have both a sift-proof valve with a locking pin and a plug or blind flange on the bottom opening.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.220, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.221 Liquid organic peroxides, n.o.s., and liquid organic peroxide solutions, n.o.s.

(a) Liquid organic peroxides, n.o.s., and liquid organic peroxide solutions, n.o.s. must be packed in packagings which may be equipped with venting devices wherever necessary to prevent excessive pressure buildup, as follows:

(1) Specification 1A, 1D, or 1M (§§ 178.1, 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Rated capacity may not exceed 5 gallons for Specification 1A. Not authorized for transportation by aircraft.

(2) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass, earthenware, or metal containers, not over 1-gallon each, cushioned with incombustible packing material in sufficient quantity to absorb any leakage. Metal containers authorized only for materials which will not react dangerously with or be decomposed by contact with metal.

(3) Specification 12B (§ 178.205 of this subchapter). Fiberboard box with Specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles, or with glass or metal inside receptacles, not over 1 gallon each. Not more than six 1-gallon polyethylene bottles may be packed in one fiberboard box. Not more than one 1-gallon glass or metal inside receptacle, which must be cushioned with noncombustible packing material in sufficient quantity to absorb the contents of the inner receptacle, may be packed in one fiberboard box. Metal and polyethylene inside receptacles authorized only for material which will not react dangerously with or be decomposed by contact with metal or polyethylene.

(4) Spec. 42B (§ 178.107 of this subchapter). Aluminum drums not over 15 gallons capacity. Authorized only for peroxides which will not react dangerously with the aluminum or be decomposed by contact with it.

(5) Spec. 17C or 17E (§§ 178.115 or 178.116 of this subchapter). Metal drums (single-trip) not over 15 gallons capacity Authorized only for material which will not react dangerously with the drum metal, or be decomposed by contact with it.

(6) Spec. 22C (§ 178.198 of this subchapter). Plywood drum as prescribed by § 178.198-2(a) of this subchapter, with inside spec. 2T (§ 178.21 of this subchapter) polyethylene container. Authorized only for material which will not react dangerously with or cause decomposition of the polyethylene.

(7) Specification 6D or 37M (nonreusable container) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpacks with inside Specifications 2S or 2SL (§§ 178.35, 178.35a of this subchapter) polyethylene containers. Authorized only for materials which will not react dangerously with or cause decomposition of the polyethylene.

(8) Spec. 37P (§ 178.133 of this subchapter). Steel drums, not over 5-gallons capacity, with one-piece seamless molded polyethylene liner (nonreusable container). Drums exceeding 1-gallon capacity must be constructed of at least 24-gauge metal. Authorized only for materials that will not react with polyethylene and result in container failure.

(9) Specification 12P (§ 178.211 of this subchapter). Fiberboard box with one inside specification 2U (§ 178.24 of this subchapter) polyethylene container of not over 6-gallon capacity, or two inside specification 2U polyethylene containers of not over 2½ gallon capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

(10) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside polyethylene bottles, not over 5-gallons capacity each, as specified by § 178.205-34 of this subchapter. Not more than one bottle shall be packed in one outside box. Authorized only for material which will not react dan-

gerously with or cause decomposition of polyethylene.

(11) Specification 16A (§ 178.185 of this subchapter). Wooden boxes with inside Specification 2U, 2S, or 2SL (§§ 178.24, 178.35, 178.35a of this subchapter) polyethylene containers, not over 5-gallon capacity each. Specification 2U container must have a minimum wall thickness of 0.015 inch. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner, top pad, and bottom pad. Authorized only for materials which will not react dangerously with or be decomposed by contact with polyethylene.

(12) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(13) Specification 57 (§ 178.253 of this subchapter). Metal portable tanks. Tanks are authorized only for tert-butyl cumyl peroxide. The tank may not be filled to more than 90 percent capacity.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.221, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.222 Acetyl peroxide and acetyl benzoyl peroxide, solution.

(a) Acetyl peroxide must be shipped in solution in a non-volatile solvent and must contain not more than 25 percent by weight of the peroxide. Acetyl benzoyl peroxide must be shipped in solution in a non-volatile solvent and must contain not more than 40 percent by weight of the peroxide. They must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.163, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-gallon each, cushioned with incombustible packing material in sufficient quantity to absorb any leakage.

(2) Specification 1A, 1D, or 1M (§§ 178.1, 178.4 178.17 of this subchap-

ter). Glass carboys in boxes or expanded polystyrene packagings. Rated capacity may not exceed 5 gallons for Specification 1A. Not authorized for transportation by aircraft.

(3) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside containers which must be glass or earthenware, not over 1 gallon each, cushioned with incombustible packing material in sufficient quantity to absorb the contents of the inner container. Not more than one 1-gallon inside container shall be packed in one outside fiberboard box.

(4) Specification 12P (§ 178.211 of this subchapter). Fiberboard box with one inside specification 2U (§ 178.24 of this subchapter) polyethylene container of not over 5-gallon capacity, or two inside specification 2U polyethylene containers of not over 2½ gallon capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

(5) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside polyethylene bottles, not over 5 gallons capacity each, as specified by § 178.205-34 of this subchapter. Not more than one bottle shall be packed in one outside box. Authorized only for material which will not react dangerously with or cause decomposition of polyethylene.

(6) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18709, Dec. 29, 1964, as amended by Order 66, 30 FR 5745, Apr. 23, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.222, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.223 Peracetic acid.

(a) Peracetic acid must be shipped in solution not exceeding 40 percent

strength and must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass, earthenware, or polyethylene containers not over 1-gallon capacity each, cushioned with sterile absorbent cotton or other cushioning material which will not react with the contents to generate heat. Polyethylene container must have a vented closure capable of preventing leakage of liquid contents. Cushioning material must be in sufficient quantity to absorb any leakage. Boxes with inside polyethylene containers must be marked "Keep This Side Up."

(2) Spec. 12B (§ 178.205 of this chapter). Fiberboard boxes with inside containers which must be glass or earthenware, not over one quart capacity each, cushioned with sterile absorbent cotton or other cushioning material which will not react with the contents to generate heat. Cushioning material must be in sufficient quantity to completely absorb the contents of the inner container.

(3) Specification 1D or 1M (§§ 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Not authorized for transportation by aircraft.

(4) Spec. 22C (§ 178.198 of this subchapter). Plywood drum as prescribed by § 178.198-2(a) of this subchapter, with inside Spec. 2T (§ 178.21 of this subchapter) polyethylene container.

(5) Specification 6D or 37M (nonreusable container) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpacks with inside Specifications 2S or 2SL (§ 178.35 of this subchapter) polyethylene containers not over 55-gallon capacity. Polyethylene container must have a vented closure capable of preventing leakage of liquid contents.

(6) Specification 21P (§ 178.225 of this subchapter). Fiber drum overpack with inside Specification 2SL (§ 178.35a of this subchapter) polyethylene container not over 30-gallon capacity. Container must have a vented closure to prevent accumulation of internal pressure and the head with clo-

sure must be marked "Keep This End Up".

(7) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(b) Limited quantities of peracetic acid solutions not exceeding 40 percent strength packed in strong wooden or fiberboard boxes, with not more than one inside glass packaging not exceeding 1 pint capacity, cushioned with sterile absorbent cotton or other cushioning material which will not react with the contents to generate heat, and with such cushioning material in sufficient quantity to completely absorb the contents of the bottle, are excepted from labeling (except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter, except § 177.817.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5806, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.223, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.224 Cumene hydroperoxide, dicumyl peroxide, diisopropylbenzene hydroperoxide, paramenthane hydroperoxide, pinane hydroperoxide, and tertiary butylisopropyl benzene hydroperoxide.

(a) Cumene hydroperoxide of strength not exceeding 96 percent in a non-volatile solvent, dicumyl peroxide of strength not exceeding 50 percent in a nonvolatile solvent, diisopropylbenzene hydroperoxide of strength not exceeding 60 percent in a non-volatile solvent, paramenthane hydroperoxide of strength not exceeding 60 percent in a non-volatile solvent, and tertiary butylisopropyl benzene hydroperoxide of strength not exceeding 60 percent must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169,

178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers, not over 1-gallon each, cushioned with incombustible packing material in sufficient quantity to absorb any leakage.

(2) Spec. 17E (§ 178.116 of this subchapter). Metal drums (single trip), with interiors so treated that they will be resistant to the contents.

(3) Specification 103,¹ 103W, 103A,¹ 103AW, 111A60F1, 111A60W1, 111A100F2, or 111A100W2, (§§ 179.200, 179.201 of this subchapter). Tank cars. Authorized for 90 percent or less cumene hydroperoxide in a nonvolatile solvent, dicumyl peroxide of strength not exceeding 50 percent in a nonvolatile solvent, paramenthane hydroperoxide of strength not exceeding 60 percent in a nonvolatile solvent and diisopropylbenzene hydroperoxide of strength not exceeding 60 percent in a nonvolatile solvent only. Specifications 103,¹ 103W, 111A60F1 and 111A60W1 tank cars must have bottom outlets effectively sealed from the inside.

(4) Specification MC-310, MC-311 or MC-312 (§ 178.343 of this subchapter). Cargo tanks. Authorized for diisopropylbenzene hydroperoxide of strength not exceeding 60 percent in a nonvolatile solvent. Bottom outlets are not authorized. Authorized for paramenthane hydroperoxide of strength not exceeding 60 percent in a nonvolatile solvent. Authorized for pinane hydroperoxide of strength not exceeding 45 percent in a nonvolatile solvent. Authorized for cumene hydroperoxide of strength not exceeding 90 percent in a nonvolatile solvent in MC-311 or MC-312 cargo tanks only.

[29 FR 18709, Dec. 29, 1964, as amended by Order 73, 32 FR 3455, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.224, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

¹Use of existing tank cars authorized, but new construction not authorized.

§ 173.225 Phosphorus trisulfide; phosphorus sesquisulfide; phosphorus heptasulfide, and phosphorus pentasulfide.

(a) Phosphorus trisulfide, phosphorus sesquisulfide and phosphorus heptasulfide must be packaged as follows.

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside metal containers, hermetically sealed (soldered) or water-tight metal cans with screw-top closures.

(2) Spec. 6B or 6C (§ 178.98 or § 178.99 of this subchapter). Metal barrels or drums, not over 30 gallons capacity each.

(3) Spec. 37A or 37B (§ 178.131 or § 178.132 of this subchapter). Metal drums (single-trip). Gross weight not over 425 pounds.

(b) Phosphorus pentasulfide must be packed as follows:

(1) In any packaging prescribed in § 173.154 which will not permit water to come in contact with the lading.

(2) Specification 53¹ or 56 (§§ 178.251, 178.252 of this subchapter). Metal portable tank.

(3) Metal drum not over 15 gallons capacity. Authorized only for phosphorus pentasulfide fused into a solid mass before transportation.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.225, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.227 Urea peroxide.

(a) Urea peroxide must be packed in specification containers as follows:

(1) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside containers which must be rubber or plastic containers not exceeding 4 ounces each. Gross weight not over 65 pounds.

(2) Spec. 21C (§ 178.224 of this subchapter). Fiber drums completely coated on the inside with a suitable wax, synthetic coating, or metal foil suitable to the lading; or fiber drums having a metal foil (laminated between two sheets of kraft paper with

¹Use of existing tank cars authorized, but new construction not authorized.

thermoplastic adhesive) moisture and water barrier wound into the sidewall of the drum and located not more than 2 plies from the interior of drum but not to be wound as the first ply; a metal foil moisture and water barrier must also be present in the fiber or wood heading; exterior of drum sidewall must be protected with a water resistant coating; in addition to the tests prescribed by § 178.224-2 (a), (b), and (c) of this subchapter, a drum having been given a 4-foot diagonal bottom chime drop must, after being emptied, withstand complete immersion of the bottom in 6 inches of water for 4 hours without leakage to the interior. Authorized net weight not over 225 pounds.

(3) Spec. 22A (§ 178.196 of this subchapter). Plywood drums with paper bags, Spec. 2J (§ 178.28 of this subchapter) coated with suitable wax on the inner surface.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16073, Apr. 15, 1976]

§ 173.228 Zinc ammonium nitrite.

(a) Zinc ammonium nitrite must be packed in specification containers as follows:

(1) Spec. 6B or 6C (§ 178.98, or § 178.99 of this subchapter). Metal barrels or drums.

(2) Spec. 17E, 17H, 37A, or 37B (§§ 178.116, 178.118, 178.131, or § 178.132 of this subchapter). Metal drums (single-trip). Gross weight not over 300 pounds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-14, 45 FR 59891, Sept. 11, 1980]

§ 173.229 Chlorate and borate mixtures or chlorate and magnesium chloride mixtures.

(a) Chlorate and borate mixtures or chlorate and magnesium chloride mixtures containing more than 50 percent chlorate and no other hazardous additives must be packed as follows:

(1) As prescribed in § 173.163.

(b) Limited quantities of chlorate and borate mixtures or chlorate and magnesium chloride mixtures containing no other hazardous additives and containing less than 50 percent chlorate are excepted from labeling

(except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(1) Tight metal or fiber drums.

(2) Wooden boxes with tight inside metal containers.

(3) Multi-wall paper bags, net weight not over 50 pounds, moisture proof and sift proof, and having a strength capable of withstanding four 4-foot drops onto solid concrete.

(4) Strong fiberboard boxes with inside fiber containers having metal tops and bottoms, net weight not over 4 pounds each; gross weight of completed package not over 65 pounds.

(5) Strong fiberboard boxes with not more than 4 inside paper bags Spec. 2D (§ 178.23 of this subchapter), having net weight not over 10 pounds each.

(c) Chlorate and borate mixtures or chlorate and magnesium chloride mixtures containing 28 percent or less chlorate and no other hazardous additives, are not subject to the regulations in Parts 170-189 and 397 of this title.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16073, Apr. 15, 1976; Amdt. 173-94A, 41 FR 40681, Sept. 20, 1976]

§ 173.230 Sodium, metallic, dispersion in organic solvent.

(a) Sodium, metallic, dispersion in organic solvent must be packed in specification containers as follows.

(1) Specification 15A, or 19B (§§ 178.168, 178.191 of this subchapter). Wooden boxes with inside containers which must be metal cans not exceeding one quart capacity, and each such can must be packed in another metal can and cushioned on all sides with at least one inch of incombustible dry nonhygroscopic material which is nonreactive with sodium at temperatures encountered during normal transportation. Both the inner and outer metal cans shall be equipped with an airtight closing

device secured by positive means (not friction). Gross weight of completed package must not exceed 100 pounds.

(2) Spec. 17H (§ 178.118 of this subchapter). Metal drum (single-trip) of not over 55 gallons capacity, with material contained in an inside spec. 17E (§ 178.116 of this subchapter) metal drum (single-trip) of not over 30 gallons capacity. The inside drum shall be snugly packed in the outside drum by completely and evenly surrounding it with incombustible dry nonhygroscopic material which is nonreactive with sodium at temperatures encountered during normal transportation.

(3) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes constructed of at least 375-pound test (Mullen or Cady) solid fiberboard with inside metal cans not exceeding one quart capacity. Each such can must be packed in another metal can and cushioned on all sides with at least one inch of incombustible dry nonhygroscopic material which is nonreactive with sodium at temperatures encountered in normal transportation. Both the inner and outer metal cans shall be equipped with an airtight closing device secured by positive means (not friction) and must be individually nested into a double-faced corrugated partition of at least 200-pound test (Mullen or Cady) which is in turn surrounded on all sides by a peripheral double-walled corrugated liner of at least 200-pound test (Mullen or Cady). Authorized gross weight not over 90 pounds.

(4) Specification 15A, or 19B (§§ 178.168, 178.191 of this subchapter). Wooden boxes with inside polyethylene bottles not exceeding 1-quart capacity each cushioned on all sides with at least 1-inch soda ash and then placed within an airtight metal can closed by a positive means. Metal cans shall be cushioned so as to prevent movement within the outer box. Solvents used must be compatible with the inner polyethylene bottle. Gross weight of the completed package must not exceed 100 pounds.

(5) Specification 17H (§ 178.118 of this subchapter). Metal drum, with one inside Specification, 5, 5C, 6B, or 6C (§§ 178.80, 178.83, 178.98, 178.99 of this subchapter) closed head metal

drum not over 30 gallons capacity. Inside drum must be completely surrounded with incombustible cushioning material.

[29 FR 18709, Dec. 29, 1964, as amended by Order 66, 30 FR 5745, Apr. 23, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16073, Apr. 15, 1976; Amdt. 173-149, 46 FR 49899, Oct. 8, 1981; Amdt. 173-187, 50 FR 11703, Mar. 25, 1985]

§ 173.231 Calcium, metallic, crystalline.

(a) Calcium, metallic, crystalline must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside airtight metal containers not over 1-gallon capacity each.

(2) Spec. 6B or 6C (§§ 178.98, 178.99 of this subchapter). Metal barrels or drums, gross weight not over 350 pounds.

(3) Spec. 17C or 17H (§§ 178.115 or 178.118 of this subchapter). Metal drums (single-trip), gross weight not over 350 pounds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16073, Apr. 15, 1976; Amdt. 173-14, 45 FR 59891, Sept. 11, 1980; Amdt. 173-149, 46 FR 49899, Oct. 8, 1981]

§ 173.232 Aluminum, metallic powder.

(a) Aluminum flake powders which have been rendered nondusting by agglomerating or other treatment of the individual particles, aluminum granules, aluminum atomized powder and aluminum paste are not subject to the requirements of this subchapter.

(b) Limited quantities of metallic aluminum powder, other than the powder described in paragraph (a) of this section in earthenware, glass, metal, or plastic inside packagings of not more than 5 pounds capacity each, in strong outside packaging of not over 25 pounds net weight, is excepted from labeling (except that labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except

§ 174.24 and to Part 177 of this subchapter, except § 177.817.

(c) Metallic aluminum powder, other than the powder described in paragraph (a) of this section, when not packed in accordance with paragraph (b) of this section, must be packaged as follows:

(1) Steel barrel or drum, not over 650 pounds net weight.

(2) Wooden box, not over 125 pounds gross weight.

(3) Moisture and sift-proof bag, not over 100 pounds net weight.

(4) Fiber drum, not over 650 pounds net weight.

(5) Fiberboard box, not over 650 pounds net weight.

(6) Portable tanks, not over 6,500 pounds gross weight.

(7) In bulk in rail cars and cargo tanks.

[Amdt. 173-94, 41 FR 16073, Apr. 15, 1976, as amended by Amdt. 173-94A, 41 FR 40682, Sept. 20, 1976]

EDITORIAL NOTE: For Federal Register citations affecting § 173.232, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.234 Sodium nitrite and sodium nitrite mixtures.

(a) Sodium nitrite and sodium nitrite mixtures must be packed in specification containers as follows:

(1) In containers as prescribed in § 173.154.

(2) Specification 44C (§ 178.237 of this subchapter). Multiwall paper bags. Each bag must be constructed as follows and, in addition, each bag must have one inner ply bonded or coated with polyethylene or other suitable pliable plastic material having a minimum basis weight of 10 pounds, or an additional polyethylene inner ply (free film) of equivalent moisture barrier properties:

(i) At least 5 plies having a minimum total basis weight of 310 pounds, or at least 4 plies of extensible Kraft paper having a minimum basis weight of 240 pounds. Maximum authorized net weight is 100 pounds; or

(ii) At least 3-plies of extensible Kraft paper having a minimum basis weight of 180 pounds. Maximum authorized net weight is 50 pounds.

(3) Spec. 21C (§ 178.224 of this subchapter). Fiber drums: Authorized net weight not over 400 pounds.

(4) Spec. 37A (§ 178.131 of this subchapter). Metal drums constructed of steel having minimum thickness of 24 gauge. Bolted or lever-lock closure rings authorized provided drums withstand test prescribed by § 178.131-11 of this subchapter. Authorized gross weight not over 425 pounds.

(5) Sodium nitrite is authorized for shipment in tight sift-proof covered hopper cars. Cars must be thoroughly cleaned before loading.

(6) Tank cars which must be thoroughly cleaned before loading.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16073, Apr. 15, 1976; Amdt. 173-118, 43 FR 31141, July 20, 1978]

§ 173.235 Ammonium bichromate (ammonium dichromate).

(a) Ammonium bichromate (ammonium dichromate) must be packed in specification containers as follows:

(1) In containers as prescribed in § 173.154.

(2) Spec. 21C (§ 178.224 of this subchapter). Fiber drums. Authorized net weight not over 400 pounds.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16073, Apr. 15, 1976]

§ 173.236 Decaborane.

(a) Decaborane must be packed in specification containers as follows:

(1) Spec. 6B or 6C (§§ 178.98, 178.99 of this subchapter). Metal barrels or drums.

(2) Spec. 17C, 17E, 17H, 37A, or 37B (§§ 178.115, 178.116, 178.118, 178.131, or § 178.132 of this subchapter). Metal drums (single-trip).

(3) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside containers which must be metal cans; sliding-lid wooden boxes; fiber cans or boxes, spec. 2G (§ 178.26 of this subchapter), not over 5 pounds capacity each; or glass bottles not over 1 pound capacity each. Packages containing glass containers must not weigh over 65 pounds gross.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by

§ 173.237

Amdt. 173-94, 41 FR 16073, Apr. 15, 1976;
Amdt. 173-14, 45 FR 59891, Sept. 11, 1980]

§ 173.237 Chlorine dioxide hydrate, frozen; chloric acid.

(a) Chlorine dioxide hydrate, frozen, and chloric acid must be packed in specification packaging as follows:

(1) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes, with inside packages of polyethylene or other suitable material. Fiberboard boxes must be reinforced and insulated and sufficient dry ice must be used to maintain the hydrate or acid in a frozen state during transportation. Shipments are authorized for transportation by private or contract carrier by motor vehicle only.

[Amdt. 173-94, 41 FR 16073, Apr. 15, 1976, as amended by Amdt. 173-138, 45 FR 32696, May 19, 1980]

§ 173.238 [Reserved]

§ 173.239 Barium azide—50 percent or more water wet.

(a) Barium azide—50 percent or more water wet, must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass bottles not over 1-pound capacity each. Bottles shall have rubber stoppers wire tied for securement. If shipment is to take place at a time freezing weather is to be anticipated, a suitable antifreeze solution must be used to prevent freezing.

(2) Specification 21C (§ 178.224 of this subchapter). Fiber drum with inside glass bottle not over 1-pound capacity each. Bottles must have rubber stoppers wire-tied for securement. If shipment is to take place at a time freezing weather is to be anticipated, a suitable antifreeze solution must be used to prevent freezing.

[29 FR 18709, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16074, Apr. 15, 1976; Amdt. 173-107, 42 FR 42207, Aug. 22, 1977; Amdt. 173-149, 46 FR 49899, Oct. 8, 1981]

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§ 173.239a Ammonium perchlorate.

(a) Ammonium perchlorate must be packed in specification containers as follows:

(1) In containers as prescribed in § 173.154.

(2) Specification 53¹ or 56 (§§ 178.251, 178.252 of this subchapter). Metal portable tank. Lower side or hopper-type product discharge openings are not permitted.

[Order 66, 30 FR 5745, Apr. 23, 1965, as amended by Order 71, 31 FR 9070, July 1, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.239a, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

Subpart F—Corrosive Materials: Definition and Preparation

§ 173.240 Corrosive material; definition.

(a) For the purpose of this subchapter, a corrosive material is a liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact, or in the case of leakage from its packaging, a liquid that has a severe corrosion rate on steel.

(1) A material is considered to be destructive or to cause irreversible alteration in human skin tissue if when tested on the intact skin of the albino rabbit by the technique described in Appendix A to this part, the structure of the tissue at the site of contact is destroyed or changed irreversibly after an exposure period of 4 hours or less.

(2) A liquid is considered to have a severe corrosion rate if its corrosion rate exceeds 0.250 inch per year (IPY) on steel (SAE 1020) at a test temperature of 130° F. An acceptable test is described in NACE Standard TM-01-69.

(b) If human experience or other data indicate that the hazard of a material is greater or less than indicated by the results of the tests specified in paragraph (a) of this section, the Department may revise its classification

¹Use of existing tanks authorized. Construction not authorized after May 31, 1972.

or make the material subject to the requirements of Parts 170-189 of this subchapter.

[Amdt. 173-61, 37 FR 5947, Mar. 23, 1972; as amended by Amdt. 173-74, 38 FR 20839, Aug. 3, 1973; Amdt. 173-84, 41 FR 18074, Apr. 15, 1976]

§ 173.241 Outage.

(a) The outage (ullage) for packagings containing corrosive liquids, when offered for transportation, must be in accordance with the following requirements:

(1) *General outage requirements.* Packagings must not be completely filled. The proper vacant space (outage) in a tank car or other shipping container depends on the coefficient of expansion of the liquid and the maximum increase of temperature to which it will be subjected in transit. Outage must be calculated to the total capacity of the container.

(2) *Outage requirements for packagings of 110 gallons or less.* Sufficient outage must be provided so that the packaging will not be liquid full at 130° F. (55° C.).

(3) *Outage requirements for tank cars.* In tank cars, outage must be calculated to percentage of the total capacity of the tank, i.e., shell and dome capacity combined. If the dome of the tank car does not provide sufficient outage, then vacant space must be left in the shell to make up the required outage. The outage for tank cars must not be less than 2 percent, except that outage for Specification 103A, 103B, 103C, 103E, 103A-AL, 103C-AL, 103AW, 103BW, 103CW, 103EW, 103ANW, 103A-ALW, tank cars must not be less than 1 percent.

(4) *Outage requirements for cargo tanks or portable tanks.* No cargo tank or portable tank, or compartment thereof, used for the transportation of any corrosive liquid shall be completely filled. The outage for cargo tanks and portable tanks must be no less than 2 percent.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.241, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.242 Bottles containing corrosive liquids.

(a) Bottles containing corrosive liquids, as defined by § 173.240, may not be packed in the same package with any other hazardous material, except as specifically provided in paragraphs (b) and (c) of this section and §§ 173.25, 173.257, 173.258, 173.259, 173.260, 173.261, or § 173.286.

(b) Bottles containing corrosive liquids cushioned by noncombustible, nonreactive absorbent material and securely packed in tightly closed metal packaging, except hydrofluoric acid which must be overpacked in a packaging other than one made of metal, may be packed with other hazardous materials. This exception does not apply to nitric acid exceeding 40-percent concentration, perchloric acid, hydrogen peroxide exceeding 52-percent strength by weight, or nitrohydrochloric or nitrohydrochloric acid diluted, which may not be packed in the same package with any other article under any circumstances.

(c) Corrosive liquid solutions in securely closed bottles, in quantities necessary for preparing photographic processing mixtures and efficiently cushioned, may be packed in the same outside shipping container with required amounts of packaged chemicals not classed as hazardous materials by these regulations, provided no dangerous reaction would occur should the contents of bottles be mixed with the packaged chemicals. Marking prescribed in Part 172 of this subchapter is not required.

[Amdt. 173-105, 42 FR 28133, June 2, 1977, and Amdt. 173-118, 43 FR 31141, July 20, 1978]

§ 173.243 Closing and cushioning.

(a) All containers must be tightly and securely closed. Inside containers must be cushioned as prescribed or in any case when necessary to prevent breakage or leakage.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

§ 173.244 Limited quantities of corrosive materials.

(a) Limited quantities of corrosive materials for which exceptions are

permitted as noted by reference to this section in § 172.101 of this subchapter are excepted from labeling (except when offered for transportation by air) and specification packaging requirements when packed according to the following paragraphs. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(1) Corrosive liquids in bottles having a rated capacity not over 16 ounces by volume each enclosed in a metal can packed in strong outside packaging.

(2) Corrosive liquids in metal or plastic containers having a rated capacity not over 16 ounces by volume in strong outside packaging.

(3) Corrosive liquids in glass containers having a rated capacity not over 8 fluid ounces by volume in strong outside packaging and cushioned with sufficient absorbent material to completely absorb the liquid contents in the event of breakage, and which will not react chemically with the corrosive material.

(4) Corrosive solids in earthenware, glass, plastic, or paper containers of not more than 5 pounds capacity each packed in metal, wooden or fiberboard outside packaging not exceeding 25 pounds net weight each.

(5) Corrosive solids in metal, rigid fiber or composition cans or cartons or rigid plastic containers; of not more than 10 pounds capacity each, overpacked in metal, wooden or fiberboard outside containers not exceeding 25 pounds net weight each.

(b) Special exceptions for shipment of certain corrosive materials in the ORM-D class are provided in Subpart N of this part.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.244, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.245 Corrosive liquids not specifically provided for.

(a) Corrosive liquids, as defined in § 173.240, other than those for which special requirements are prescribed,

must be packed in specification containers constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein, as follows:

(1) Specification 1A (§ 178.1 of this subchapter). Glass carboys in boxes. Not authorized for transportation by aircraft.

(2) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Specification 1D or 1M (§§ 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Pressure in the carboy may not exceed 10 pounds per square inch at 130°F. (55°C.). If the package is vented, there may be no significant release of contents to the environment. Not authorized for transportation by aircraft.

(4) Specification 5A, 5B, 5C, or 5M (§§ 178.81, 178.82, 178.83, 178.90 of this subchapter). Metal barrels or drums.

(5) Specification 5K (§ 178.88 of this subchapter). Nickel barrels or drums. Authorized only for commodities that will not react with nickel and result in container failure.

(6) [Reserved]

(7) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside containers which must be glass, earthenware, polyethylene or other nonfragile plastic material (bags are not authorized), not over 1-gallon each, except that inside containers up to 3 gallons are authorized when only one is packed in each outside container.

(8)-(11) [Reserved]

(12) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside packagings of metal, polyethylene, or other non-fragile plastic material resistant to the lading, not exceeding 1-gallon each. A metal pack-

aging is authorized only for a material that is not corrosive to metal. Gross weight may not exceed 65 pounds.

(13) Spec. 15P or 22C (§ 178.182 or § 178.198 of this subchapter). Glued plywood or wooden box, or plywood drum as prescribed by § 178.198-2(a) of this subchapter, with Spec. 2T (§ 178.21 of this subchapter) polyethylene container.

(14) Spec. 17C, 17E, or 17F (§§ 178.115, 178.116, or 178.117 of this subchapter). Metal drums (single-trip) with openings not exceeding 2.3 inches in diameter.

(15) Specification 17H (§ 178.118 of this subchapter). Metal drums (single-trip). Authorized only for liquid boiler compounds, liquid water treatment compounds, and viscous cleaning compounds, liquid.

(16) Specification 6D or 37M (non-reusable container) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpacks with inside Spec. 2S, 2SL, or 2U (§§ 178.35, 178.35a, 178.24 of this subchapter) polyethylene packaging.

(17) Specification 17H, 37A or 37B (§§ 178.118, 178.131, or 178.132 of this subchapter), metal drums (single-trip), with welded side seams, not over 5 gallons capacity each. Drums must be lined throughout with a pliable plastic material impervious to the lading. Specifications 37A and 37B metal drums must be at least 24 gauge steel. Not authorized for transportation by air.

(18) Specification 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass, polyethylene, or other nonfragile plastic bottles not over 5-quart capacity each. Not more than 4 inside glass bottles exceeding 5-pint capacity each shall be packed in the outside container. Shipper must have established that the completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(19) Specification 37P (§ 178.133 of this subchapter). Steel drum with polyethylene liner (non-reusable container). Authorized only for materials that will not react with polyethylene and result in container failure. Not authorized for transportation by air.

(20) Specification 16D (§ 178.187 of this subchapter). Wirebound wooden overwrap, with inside Specification 2T, 2TL, 2S, or 2SL (§§ 178.21, 178.27, 178.35, 178.35a of this subchapter) polyethylene container. Not authorized for transportation by air.

(21) Specification 12P (§ 178.211 of this subchapter). Fiberboard box with one inside Specification 2U (§ 178.24 of this subchapter) polyethylene container of not over 5-gallon capacity, or two inside Specification 2U polyethylene containers of not over 2½ gallon capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

(22) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185-22 of this subchapter) with inside Specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

(23) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside polyethylene bottles, not over 5 gallons capacity each, as specified by § 178.205-34 of this subchapter. Not more than one bottle shall be packed in one outside box.

(24) Spec. 21P (§ 178.225 of this subchapter). Fiber drum overpack with inside Spec. 2S, 2SL, or 2U (§§ 178.35, 178.35a, or § 178.24 of this subchapter) polyethylene container.

(25) Specification 12A or 12B (§§ 178.210, 178.205 of this subchapter) fiberboard boxes with inside aluminum packagings which must be compatible with the lading.

(26) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(27) Specification 33A (§ 178.150 of this subchapter). Polystyrene case (nonreusable container) with inside glass bottles not over 5-pint capacity each. Not more than four 5-pint bot-

tles may be packed in one outside packaging.

(28) Specification steel or nickel cylinders prescribed for any compressed gas except acetylene are authorized. All cylinder valves must be protected by one of the methods described in § 173.301(g) (1), (2), or (3) of this part. See § 173.34(e)(16).

(29) Specification MC 303 or MC 304. Cargo tanks meeting § 178.343-2(c) of this subchapter. Specification MC 303 must have tanks fabricated from 12-gauge, Type 316 stainless steel. MC 303 is authorized only for monoethanolamine; *primary amyl alcohol*; and phosphoric acid and solutions thereof.

(30) Specification MC 307 (§§ 178.340, 178.342 of this subchapter). Cargo tanks meeting § 178.343-2(c) of this subchapter.

(31) Specification MC 306, MC 310, MC 311, or MC 312 (§§ 178.340, 178.341, 178.343 of this subchapter). Cargo tanks. If cargo tank is constructed with bottom outlets, they must meet § 178.343-5 of this subchapter. Specification MC 306 must have tanks fabricated from 12 gauge, Type 316 stainless steel. MC 306 is authorized only for monoethanolamine, *primary amyl alcohol*, phosphoric acid and solutions thereof; MC 306 constructed aluminum is authorized only for monoethanolamine *primary amyl alcohol*.

(32) Specification 103AW, 103A-ALW, 103ANW, 103BW, 103CW, 103EW, 105A100W, 105A200ALW, 109A200ALW, 111A100F2, 111A60ALW2, 111A60W2, 111A60W5, or AAR-201A80W (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars. Specification 105A200ALW tank cars authorized only for acetic anhydride and ammonium hydroxide. Specification 105A100W tank cars authorized only for ammonium hydroxide and dimethyl chlorothiosphosphate. AAR-201A80W and 109A200ALW tank cars authorized only for ammonium hydroxide.

(33) Specification 103ALW, 103DW, 103W, 104W, 111A60ALW1, 111A60W1, 111A100W3, 111A100W6, 115A60W6, or AAR206W (§§ 179.200, 179.201, 179.220 of this subchapter). Tank cars. (See Note 1.)

NOTE 1: Authorized only on an interim basis pending the Department's decision on use of bottom outlets for tank cars containing hazardous materials.

(34) Specification 42B (§ 178.107 of this subchapter). Aluminum drum.

(35) Marine portable tanks meeting the requirements of 46 CFR Part 64 authorized for highway and cargo vessel only when shipped in support of off-shore oil well drilling activities. Tank must be compatible with lading. Not authorized for corrosive materials which also meet the definition of another hazard class. Tanks shall comply with mounting and tie-down requirements of § 178.245-4 of this subchapter when transported by highway.

(36) Ammonium hydroxide containing no more than 30 percent ammonia by weight may be transported by motor vehicle in non-specification cargo and portable tanks that meet the requirements of § 173.24.

(37) Specification IM 101 and IM 102 portable tanks (§§ 178.270, 178.271, 178.272 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(38) Specification 57 (§ 178.253 of this subchapter). Steel portable tank. Authorized for transportation by water when having a minimum design pressure of 9 psig and equipped in accordance with § 178.253-4, except that frangible devices are not authorized. Also, for water transportation, no pressure relief device may open at less than 5 psig.

(b) Except when transportation by aircraft or vessel is involved and except for a hazardous waste or a hazardous substance, a material classed as a corrosive material that is corrosive only to steel and does not meet the definition of any other hazard class defined in this subchapter, is excepted from the requirements of this subchapter for rail or highway when transported in a portable tank, cargo tank, or tank car constructed of materials that will not react dangerously with or be degraded by the material being transported. For hazardous wastes and hazardous substances that would otherwise be subject to this paragraph, only the requirements of Parts 171 and 172 of this subchapter apply.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.245, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.245a Corrosive liquids, n.o.s. shipped in bulk.

(a) Corrosive liquids, n.o.s. which are listed in the following table, may not be shipped in bulk unless they are packaged as follows:

Corrosive liquid	Authorized tank car	Authorized portable tank ^a
Dichlorobutene and Dichlorobutene mixtures. Ethyl chlorothioformate	105A300W, 112A340W	DOT-51 monel or monel-clad. DOT-51.
Ethyl phosphonothioic dichloride, anhydrous. Ethyl phosphonous dichloride, anhydrous. Ethyl phosphorodichloride ² .	103AW, 111A60W2	DOT-51.
Methyl phosphonothioic dichloride, anhydrous. Methyl phosphonous dichloride ¹ . Vanadium oxytrichloride and titanium tetrachloride mixture.	103ANW, 103AW, 111A100F2, 111A100W2 103AW	DOT-51. DOT-51. DOT-51 monel or monel clad. DOT-51.

¹ In an unlined tank, must be loaded and shipped under a blanket of nonflammable, dry, inert gas, adequate to displace any significant amount of air.

² Specification 103ANW tank car tanks must be fabricated of solid nickel at least 95 percent pure and containing not more than 1 percent iron. Metal test coupons for welding procedure qualification must contain not more than 1 percent iron. All cast metal parts of the tank in contact with the liquid must have a minimum nickel content of approximately 99.7 percent. Specification 103A tank car tanks must be lead-lined steel or must be made of steel with at least 10 percent nickel cladding. Specification 103AW, 111A100F2, or 111A100W2 tanks must be lead-lined steel or made of steel with a minimum nickel cladding of 1/16 inch thickness. Nickel cladding in tanks must be low carbon nickel in accordance with ASTM B162-80.

³ Tank must be equipped with a safety-relief valve set at not less than 100 psig. In addition, the relief valve must comply with § 173.315(f)(1).

(b) Corrosive liquids, n.o.s., except those listed in paragraph (a) of this section, when shipped in bulk, must be packaged as prescribed by § 173.245.

[Amdt. 173-57, 36 FR 21288, Nov. 5, 1971, as amended by Amdt. 173-74, 38 FR 20839, Aug. 3, 1973]

EDITORIAL NOTE: For Federal Register citations affecting § 173.245a, see the List of

CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.245b Corrosive solids not specifically provided for.

(a) Corrosive solids, as defined in § 173.240, other than those for which special requirements are prescribed, must be packaged in containers fully complying with § 173.24, as follows:

(1) Metal, wooden, or fiberboard box or case with inside containers which must be earthenware, glass, metal, plastic, or fiber or composition board of not more than 10 pounds net weight capacity each.

(2) Fiberboard box with inside paper bags, not over 50 pounds total net capacity. When shipped by water, each box must include a moisture barrier.

(3) Fiberboard box with one inside plastic bag of not over 120 pounds net weight capacity.

(4) Metal drum.

(5) Fiber drum not exceeding 550 pounds net weight and not over 65-gallon capacity. When shipped by water, each drum must include a moisture barrier.

(6) Open head plastic drum or pail not exceeding 95 pounds net weight and not over 7-gallon capacity or closed head plastic drum not exceeding 550 pounds net weight and not over 55-gallon capacity.

(7) Bag: Each bag filled to weight with product and closed as for shipment must be capable of withstanding four drops from a height of 4 feet onto a solid surface, one drop on each end and one drop on each face, without sifting or rupture. Authorized net weight not to exceed 110 pounds. When shipped by water, each bag must include a moisture barrier.

(8) Metal portable tank or closed bin not over 7,000 pounds gross weight.

(9) Fiberglass or rubber tank or closed bin of not over 74-cubic-foot capacity.

(10) Metal sift-proof cargo tank or tank car, or hopper-type or pneumatic bulk vehicle.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-61, 37 FR 5948, Mar. 23, 1972, as amended by Amdt. 173-74, 38 FR 20839, Aug. 3, 1973]

EDITORIAL NOTE: For Federal Register citations affecting § 173.245b, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.246 Antimony pentafluoride, bromide pentafluoride, iodine pentafluoride, bromine trifluoride, and chlorine trifluoride.

(a) Antimony pentafluoride must be chemically anhydrous. Materials cited in the heading of this section must be packed in specification packagings as follows:

(1) Specification 3A150, 3AA150, 3B240, 3BN150, 4B240, 4BA240, 4BW240, or 3E1800 (§§ 173.36, 173.37, 173.38, 173.39, 173.50, 173.51, 173.61, 173.42 of this subchapter). Cylinders. Each valve outlet must be sealed by a threaded cap or a threaded plug. Cylinder valves must be protected as specified for corrosive gases in § 173.301(g). No cylinder may be equipped with any safety relief device. Specification 3E1800 cylinders must be packaged in accordance with the requirements of § 173.301(k).

(2) Specification 106A500X or 110A500W (§§ 179.300, 179.301 of this subchapter). Tanks. Authorized for iodine pentafluoride and chlorine trifluoride only. Each tank must be equipped with a valve protection cover and with solid steel plugs in place of fusible plug safety devices. No tank may be equipped with any safety relief device.

(3) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[Amdt. 173-81, 39 FR 17318, May 15, 1974, as amended by Amdt. 173-144, 46 FR 9894, Jan. 29, 1981]

§ 173.247 Acetyl bromide; acetyl chloride; acetyl iodide; antimony pentachloride; benzoyl chloride; boron trifluoride acetic acid complex; chromyl chloride; dichloroacetyl chloride; diphenylmethyl bromide solutions; pyrosulfuryl chloride; silicon chloride; sulfur chloride (mono and di); sulfuryl chloride, thionyl chloride; tin tetrachloride (anhydrous); titanium tetrachloride; trimethyl acetyl chloride.

(a) Acetyl bromide, acetyl chloride, acetyl iodide, antimony pentachloride;

benzoyl chloride, boron trifluoride-acetic acid complex, chromyl chloride, dichloroacetyl chloride, diphenylmethyl bromide solutions, pyro sulfuryl chloride, silicon chloride, sulfuryl chloride (mono and di), sulfuryl chloride, thionyl chloride, tin tetrachloride (anhydrous), titanium tetrachloride, and trimethyl acetic chloride must be packaged in specification packagings as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-gallon each, except that inside containers up to 3 gallons each are authorized when only one is packed in an outside box.

(2) Specification 6D (§ 178.102 of this subchapter). Cylindrical steel overpack with inside Specification 2S or 2SL (§§ 178.35, 178.35a of this subchapter) polyethylene packaging. Polyethylene used must be Type III as set forth in Appendix B—Specifications for Plastics to Part 178 of this title. Authorized for acetyl chloride, dichloroacetyl chloride, sulfuryl chloride and trimethyl acetyl chloride only.

(3) Specification 1A, 1D, 1K, or 1M (§§ 178.1, 178.4, 178.14, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings (not permitted for antimony pentachloride or tin tetrachloride, anhydrous). Not authorized for transportation by aircraft.

(4) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only (not permitted for antimony pentachloride or tin tetrachloride anhydrous).

(5) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside aluminum bottles of 99 percent pure aluminum not over 1-gallon ca-

capacity each, having aluminum screw caps with gasket resistant to contents. Authorized for chromyl chloride only.

(6) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside containers of securely closed soft-lead tubes having not more than 65 fluid ounces capacity each, individually packed in securely closed steel tubes, with not more than 3 such steel tubes fastened together as a unit. The inside units shall be cushioned on all sides with an appropriate fire-resistant cushioning material. Authorized only for titanium tetrachloride.

(7) Specification 5, 5A, 5B, or 17C (§§ 178.80, 178.81, 178.82, 178.115 of this subchapter). Metal barrels or drums with openings not exceeding 2.3 inches in diameter.

(8) Spec. 5K (§ 178.88 of this subchapter). Nickel drums, authorized for acetyl chloride, benzoyl chloride, pyrosulfuryl chloride, sulfuryl chloride, and thionyl chloride only. When shipped in unstabilized condition, the lading must be anhydrous and must be free from impurities such as iron.

(9) Spec. 5C (§ 178.83 of this subchapter). Barrels or drums of type 304 stainless steel not over 30-gallon capacity each. Authorized for chromyl chloride and thionyl chloride only.

(10) Spec. 42D (§ 178.109 of this subchapter). Aluminum drums not over 30 gallons capacity each. Authorized for chromyl chloride only.

(11) Spec. 60 (§ 178.255 of this subchapter). Portable tanks.

(12) Specification MC 310, MC 311, MC 312, MC 330 or MC 331 (§§ 178.343, 178.337 of this subchapter). Cargo tanks. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(13) Specification 103A,¹ 103AW, 105A300W, 111A60W2, or 111A100F2 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter) tank cars, except that for tin tetrachloride (anhydrous) specification 105A300W tank cars must be used.

(14) Specification 103A,¹ 103AW, 111A60W2, or 111A100F2 (§§ 179.200, 179.201 of this subchapter). Tank cars. Authorized for titanium tetrachloride, anhydrous only. Tank cars must have safety valves of approved design and not subject to rapid deterioration by the lading.

(15) Sulfur chloride packed in glass or earthenware bottles or carboys must be cushioned in the outside container by means of incombustible elastic packing material of such nature that a mixture of the liquid and the packing material will not cause fires or heating.

(16) Specification 106A500X or 110A500W (§§ 179.300, 179.301 of this subchapter) tanks. Authorized only for antimony pentachloride and titanium tetrachloride (anhydrous). Tanks containing titanium tetrachloride (anhydrous) must not be equipped with safety devices. (See § 177.834(m) of this subchapter for special requirements for highway shipments.)

(17) Specification 4BA240 or 4BW240 (§§ 178.51, 178.61 of this subchapter). Cylinders authorized for titanium tetrachloride or tin tetrachloride, anhydrous, without any compressed gas. Specification 4BW carbon steel cylinders authorized for antimony pentachloride. Safety relief devices are authorized only on cylinders containing titanium tetrachloride.

(18) Specification 3E1800 (§ 178.42 of this subchapter). Cylinder authorized only for thionyl chloride, anhydrous and titanium tetrachloride, anhydrous.

(19) Specification 51 (§ 178.245 of this subchapter). Portable tank authorized only for titanium tetrachloride, anhydrous, without any compressed gas.

(20) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(21) [Reserved]

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

¹The use of existing tanks authorized but new construction not authorized.

EDITORIAL NOTE: For Federal Register citations affecting § 173.247, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.247a Vanadium tetrachloride and vanadium oxytrichloride.

(a) Vanadium tetrachloride and vanadium oxytrichloride must be packed in specification packagings as follows:

(1) Specification 3A, 3AA, 4B240, 4BA240, 4BW240, or 3E1800 (§§ 178.36, 178.37, 178.50, 178.51, 178.61, 178.62 of this subchapter). Cylinders.

(2) Specification 51 (§ 178.245 of this subchapter) portable tanks.

(3) Specification MC 310, MC 311, or MC 312 (§§ 178.340, 178.343 of this subchapter). Cargo tanks. Authorized only for vanadium oxytrichloride with an inert non-soluble gas padding, adequate to exclude the presence of air. Specification MC 310 and MC 311 cargo tanks must be in compliance with § 178.343-2 (b) or (c) as applicable, and §§ 178.340-9(a) and 178.343-4(a) of this subchapter. Not authorized for transportation by water. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(4) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[Amdt. 173-11, 34 FR 12591, Aug. 1, 1969, as amended by Amdt. 173-84, 39 FR 33532, Sept. 18, 1974]

EDITORIAL NOTE: For Federal Register citations affecting § 173.247a, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.248 Spent sulfuric acid, or spent mixed acid.

(a) Spent sulfuric acid, or spent mixed acid, resulting from the use of sulfuric acid in various processes, not containing hydrofluoric acid, must be packaged as follows:

(1) Specification 1A, 1D, or 1M (§§ 178.1, 178.4, 178.17 of this subchapter). Carboys in boxes or expanded polystyrene packagings. Authorized for spent sulfuric acid only. Not authorized for transportation by aircraft.

(2) Spec. 1X (§ 178.5 of this subchapter) Boxed carboys; single-trip for export only. For shipment by common

carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-gallon each, except that inside containers up to 3 gallons each are authorized when only one is packed in each outside box.

(4) Specification 103A,¹ 103AW, 111A60W2, or 111A100F2 (§§ 179.200 and 179.201 of this subchapter). Tank cars, provided the product is sufficiently liquid to be unloaded through the dome or manway. Tanks which do not contain products or contaminants that give off noxious or flammable vapors may be equipped with safety vents incorporating lead discs having a 1/8-inch breather hole in the center thereof.

(5) Spec. 103,¹ 103-W, 111A60-F-1, or 111A60-W-1 (§§ 179.200 and 179.201 of this subchapter). Tank cars, provided the product is too viscous to be unloaded through the dome or manway. Tanks which do not contain products or contaminants that give off noxious or flammable vapors may be equipped with safety vents incorporating lead discs having a 1/8-inch breather hole in the center thereof.

(6) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(7) Spec. 60 (§ 178.255 of this subchapter). Portable tanks.

(8) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

¹The use of existing tanks authorized but new construction not authorized.

[29 FR 18725, Dec. 29, 1964, as amended by Order 71, 31 FR 9070, July 1, 1966; Order 73, 32 FR 3456, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.248, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.249 Alkaline corrosive liquids, n.o.s.; alkaline liquids, n.o.s.; alkaline corrosive battery fluid; potassium fluoride solution; potassium hydrogen fluoride solution; sodium aluminate, liquid; sodium hydroxide solution; potassium hydroxide solution.

(a) Alkaline corrosive liquids, n.o.s.; alkaline liquids, n.o.s.; alkaline corrosive battery fluid; potassium fluoride solution; potassium hydrogen fluoride solution; sodium aluminate, liquid; sodium hydroxide solution and potassium hydroxide solution, when offered for transportation by carriers by rail freight, highway, or water must be packed in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein as follows:

(1) In containers prescribed in § 173.245.

(2) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 2 gallons each, or with metal containers, not over 5 gallons each.

(3) Specification 5 (§ 178.80 of this subchapter) metal drums. Openings must not exceed 2.3 inches in diameter.

(4) [Reserved]

(5) Specification 103,¹ 103W, 103A,¹ 103AW, 103B,¹ 103BW, 104,¹ 104W, 105A100,¹ 105A100W, 111A60F1, 111A60W1, 111A60W2, 111A100F2, 111A60W5, or 111A100W4 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars.

(6) Specification MC 303, MC 310, MC 311 or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Specification MC 303 is authorized for alkaline corrosive liquids, n.o.s., and alkaline

liquids, n.o.s. only and is not authorized for transportation by water. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(7) Specification 57 or 60 (§§ 178.251, 178.253, 178.255 of this subchapter). Portable tanks. Specification 57 portable tank not authorized for transportation by water.

(8) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with glass inside containers of not over 16 ounces capacity each.

(9) [Reserved]

(10) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes, with not more than one glass inside container not over 1 gallon capacity containing sodium hydroxide solution not over 25 percent strength and packed in a strong fiberboard box. Dry chemicals for photographic development process not classed as dangerous articles, contained in suitable inside packages, may be packed in the same outside box. The marking requirements of § 172.312 of this subchapter, shall not apply.

(11) Spec. 29 (§ 178.226 of this subchapter). Mailing tubes, with not more than one inside polyethylene bottle not over 1-quart capacity each.

(12) Spec. 1H (§ 178.13 of this subchapter). Metal crate with inside polyethylene container Spec. 2T (§ 178.21 of this subchapter).

(13) Specification 12B (§ 178.205 of this subchapter). Fiberboard box with inside metal containers. Not more than four 1-gallon or six 1-quart containers may be packed in each box. Maximum gross weight may not exceed 65 pounds and the completed package must meet the test requirements of § 178.210-10 of this subchapter.

(14) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(b) The hazardous materials named in paragraph (a) of this section, when offered for transportation by aircraft, must be packaged as follows (also authorized for transportation by rail freight, highway or water):

(1) In packagings as prescribed in paragraphs (a)(8), (10), and (11) of this section and § 173.245(a)(7) and (12).

¹The use of existing tanks authorized but new construction not authorized.

(2) Spec. 5 or 5A (§ 178.80 or 178.81 of this subchapter). Metal barrels or drums, capacity not exceeding 10 gallons, with openings not exceeding 2.3 inches in diameter.

(3) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-gallon each, or with inside metal cans, not over 5 gallons each.

(c) Limited quantities of alkaline corrosive liquids, n.o.s., alkaline liquids, n.o.s., alkaline corrosive battery fluids, and liquid sodium aluminate in inside packagings of not more than 8 fluid ounces capacity each, packed in strong outside packagings, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are excepted from labeling (except labeling is required for transportation by air) and specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(d) Special exceptions for shipment of certain alkaline in the ORM-D class are provided in Subpart N of this part.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.249, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.249a Cleaning compound, liquid; coal tar dye, liquid; dye intermediate, liquid; mining reagent, liquid; and textile treating compound mixture, liquid.

(a) A liquid cleaning compound subject to this section must not contain any corrosive material specifically named in § 172.101 of this subchapter, except phosphoric acid, acetic acid, and not over 15 percent sodium or potassium hydroxide.

(b) A liquid dye intermediate is a ring compound, containing amino, hydroxy, sulfonic acid, or quinone group or a combination of these groups, used

in the manufacture of dyes, and not otherwise specifically named in § 172.101 of this subchapter.

(c) A liquid textile treating compound mixture is a mixture used to treat woven, knit or otherwise manufactured fabrics. It does not include mixtures used only to treat fibers, filaments, or yarn used in making the fabric.

(d) Liquid coal tar dye, liquid cleaning compound, liquid dye intermediate liquid mining reagent, and liquid textile treating compound mixture must be packaged as follows:

(1) In specification packagings as prescribed in § 173.245.

(2) In packagings meeting all of the specific requirements prescribed in § 173.245 including packaging type and quantity limitations for inside packagings. The packagings are not required to meet the detailed specification requirements of Part 178 of this subchapter except that size and weight limitations for package types as prescribed in Part 178 may not be exceeded. Not authorized for shipment by aircraft.

(3) Removable (open) head fiber drum lined or coated on the inside with a plastic material, not over 55-gallon capacity. Not authorized for shipment by aircraft.

(4) Removable (open) head metal drum, not over 55-gallon capacity. Not authorized for shipment by aircraft.

(5) Removable (open) head polyethylene drum, not over 6.5-gallon capacity. Not authorized for shipment by aircraft.

[Amdt. 173-77, 38 FR 35471, Dec. 28, 1973, as amended by Amdt. 173-121, 43 FR 48644, Oct. 19, 1978]

§ 173.250 Automobiles, other self-propelled vehicles, engines or other mechanical apparatus.

(a) Except as provided in paragraph (b) of this section, automobiles and other self-propelled vehicles equipped with wet electric storage batteries are excepted from all other requirements of this subchapter when shipped as prescribed in paragraph (a)(1) or (2) of this section, unless other hazardous materials are transported on the self-propelled vehicles, in which instance

the regulations covering these other materials apply.

(1) When batteries are removed from the self-propelled vehicles and loaded in the transport vehicle therewith, the batteries must be so loaded, blocked and braced as to prevent short circuits, spillage of battery fluid or movement within the transport vehicle.

(2) When batteries are installed in self-propelled vehicles they must be completely protected against short circuits and so secured that spillage of battery fluid will not occur under conditions normal to transportation.

(b) For transportation by passenger-carrying aircraft, wheelchairs equipped with wet electric storage batteries must be shipped as prescribed in § 175.10 of this subchapter.

(c) When wet electric storage batteries or batteries packed in containers with battery fluid are shipped as part of carload or truckload shipments of automobile parts or assembly materials, they are subject to no other requirements of this subchapter when the batteries and battery fluid are boxed or crated and so loaded, blocked and braced as to prevent short circuits of the batteries, spillage of battery fluid and movement of the materials in the transport vehicle under conditions normal to transportation. When other hazardous materials are included in the shipments, the regulations covering these other materials apply.

(d) Engines or mechanical apparatus of such size or weight as to require securement to skids to facilitate handling may have electric storage batteries, wet, necessary for the operation thereof, either securely fastened in the holder provided on the equipment and protected, including battery terminals, in such manner as to prevent damage thereto or short circuits, or completely boxed in containers of sound lumber and with filling holes upright, securely fastened to the skids upon which the engine or mechanical apparatus is mounted to prevent accidental tipping or looseness in transportation. Electric storage batteries, wet, as described herein are exempt from specification packaging.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by

Amdt. 173-94, 41 FR 16075, Apr. 15, 1976; Amdt. 173-94A, 41 FR 40682, Sept. 20, 1976; Amdt. 173-15, 47 FR 24586, June 7, 1982; Amdt. 173-160, 48 FR 54822, Dec. 6, 1983]

§ 173.250a Benzene phosphorus dichloride and benzene phosphorus thiodichloride.

(a) Benzene phosphorus dichloride and benzene phosphorus thiodichloride must be packaged as follows:

(1) In packagings prescribed in § 173.245 which are made of or lined with materials compatible with the lading.

(2) Spec. MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter) cargo tanks. Corrosion protection must be provided in accordance with spec. MC 312. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(3) Spec. 103AW (§§ 179.200 and 179.201 of this subchapter) tank cars. Tanks must be lined.

(4) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[Amdt. 173-8, 34 FR 9868, June 26, 1969, as amended by Amdt. 173-133, 44 FR 60101, Oct. 18, 1979]

EDITORIAL NOTE: For Federal Register citations affecting § 173.250a, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.251 Boron trichloride and boron tribromide.

(a) Boron trichloride must be packed in specification containers as follows:

(1) Specification steel or nickel cylinders as prescribed for any compressed gas except acetylene.

(2) Specification 105A300W or 106A500X (§§ 179.100, 179.101, 179.300, 179.301 of this subchapter). Tank cars.

(b) Boron tribromide must be packed in specification packagings as follows:

(1) Specification 15A, 15B, 15P, or 19B (§§ 178.168, 178.169, 178.170, 178.182, 178.191 of this subchapter). Wooden or plywood boxes with inside glass receptacles not over 1 quart capacity each. Each glass receptacle must have a positive closure (not friction) and as prepared for shipment must be capable of withstanding an internal gage pressure of at least 15 p.s.i.

The receptacle must be cushioned with sufficient absorbent incombustible material to completely absorb the contents in the event of leakage and must be packed within a securely closed metal can. Each can must then be cushioned with incombustible material within the prescribed outside packaging. Completed packaging for shipment must be capable of passing the tests prescribed in § 178.182-3(a)(1) of this subchapter.

(2) Specification 5C or 5M (§§ 178.83, 178.90 of this subchapter). Metal drums not exceeding 30 gallons capacity. Specification 5C drums must be constructed of at least 14-gauge stainless steel.

(3) Specification 37A (§ 178.131 of this subchapter). Steel drums not over 30-gallon capacity each with inside glass receptacles not over 1-quart capacity each. Inside containers and cushioning must comply with paragraph (b)(1) of this section. Not more than four 8-ounce glass receptacles or two 1-quart glass receptacles may be packed within one 8-gallon 37A drum. Not more than twelve 8-ounce glass receptacles or six 1-quart glass receptacles may be packed within one 30-gallon 37A drum. Completed package must meet test requirements of § 178.131-11 of this subchapter.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register amendments affecting § 173.251, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.252 Bromine.

(a) Bromine must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside glass containers not over 1-quart each; or with stone or earthenware jugs not over 1-gallon each.

(2) [Reserved]

(3) Specification 105A300W (§§ 179.100, 179.101 of this subchapter). Tank car. Each tank must have a nickel cladding material on the inside surface comprising at least 20 percent of the total thickness, or be lined with lead no less than $\frac{3}{16}$ -inch thick. Openings in tank heads to facilitate applica-

tion of lead lining are authorized and must be closed in an approved manner. All closures and appurtenances which are in contact with the lading must be lead lined or must be made of metal not subject to rapid deterioration by contact with the lading. All interior welds in nickel clad tanks must be protected by pure nickel butt straps. Except as otherwise provided herein, the water weight capacity of the tank must not be more than 20,400 pounds, and the maximum quantity of liquid bromine loaded into the tank must not be more than 60,000 pounds or 300 percent of the water weight capacity of the tank, whichever quantity is less. The total quantity loaded must not be less than 98 percent of the quantity the tank is authorized to carry.

(i) A tank constructed and maintained in full compliance with the requirements of a Specification DOT-105A500W is authorized for larger capacities of bromine. However, this tank may be marked DOT-105A300W and may be equipped with manway cover plates, safety valves, venting valves, loading valves, and unloading valves that are in compliance with the requirements of a Specification DOT-105A300W tank. The water weight capacity of this tank must not be more than 37,400 pounds, and the maximum quantity of liquid bromine loaded into the tank must not be more than 110,000 pounds or 300 percent of the water weight capacity of the tank, whichever quantity is less.

(ii) Each tank car must be marked "BROMINE" in accordance with the requirements of § 172.330 of this subchapter.

(4) Specification MC 310 or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Each tank must have a shell and head thickness of at least $\frac{3}{16}$ -inch. Each tank must have a nickel cladding material on the inside surface comprising at least 20 percent of the total thickness or be lined with lead at least $\frac{3}{16}$ -inch thick. The cladding material must conform to requirements of ASTM Specification B-162-69. The composite plate must conform to requirements of ASTM Specification A-265-69. The maximum quantity of liquid bromine loaded into the tank must not exceed 300 percent of the

water weight capacity of the tank. The total quantity loaded must not be less than 92 percent of the quantity the tank is authorized to carry. Bottom outlets are authorized if they meet the requirements of § 173.343-5 of this subchapter.

(5) Specification IM 101 portable tanks (§§ 173.270, 173.271 of this subchapter), under conditions specified in the IM Tank Table. In addition, each tank must have a nickel cladding material on the inside surface comprising at least 20 percent of the total thickness or must be lined with lead at least 5.0 mm thick. The cladding material must conform to requirements of ASTM Specification B-162-69. The composite plate must confirm to requirements of ASTM Specification A-265-69. The total quantity in one tank may not be less than 88 percent nor more than 92 percent of the quantity the tank is authorized to carry.

(b) Outage (vacant space above liquid) for inside containers must be not less than 15 percent of capacity of container.

(c) For other authorized containers an outage of not less than 10 percent is required.

(d) Inside containers must be closed by glass, earthenware, or stone stoppers ground to fit and securely fastened; or bottles may have necks with molded screw threads which must be closed by threaded-type caps with lead or other efficient bromine-resistant gaskets and cushioned by elastic material to insure tight closure. Sealed glass ampoules are also authorized.

(e) Except as provided in paragraphs (g) (2) and (3) of this section, bottles or jugs must be securely cushioned on all sides with incombustible packaging material, such as whiting, mineral wool, infusorial earth (kieselguhr), sifted ashes, powdered china clay, or similar material, at least 1 inch thick, which will not produce heat when mixed with bromine. The use of hay, sawdust, excelsior, or other organic material, either treated or untreated, as a cushioning or packaging material is prohibited.

(f) Not more than 15 quarts of bromine in bottles, nor more than 12 quarts in jugs, may be packed in one box.

(g) Bromine which has been dried in accordance with good commercial practice may also be packed in specification containers as follows:

(1) Specification 5K (§ 173.88 of this subchapter) nickel drums, of not over 10 gallons capacity each, and containing not more than 225 pounds net weight of bromine, or Specification 5M (§ 173.90 of this subchapter) monel drums, of not over 25 gallons capacity each, and containing not more than 600 pounds net weight of bromine. Drums must be at least 14-gauge throughout and must have chime reinforcement adequate for their protection. All openings must be in one head and the closing parts (plug, cap, flange, etc.) must be of the same metal as the drum. One opening not over 2.3 inches in diameter and one opening not over ¾-inch standard pipe size are permitted. Each drum must be completely emptied and dried before reuse.

(2) Specification 12A (§ 173.210 of this subchapter). Fiberboard boxes, constructed of at least 275 pound test (Mullen or Cady) double-wall corrugated fiberboard having not more than six inside glass bottles of not over 1 quart capacity. Each inside glass bottle must be surrounded by a sheet of polyethylene foam at least ¼¹⁶ inch thick (see Note 1), and approximately the same height as the bottle, and must also be separated by partitions made of corrugated fiberboard at least 275-pound test (Mullen or Cady). The box must be provided with inside top and bottom pads of polyethylene foam at least 1½ inches thick (see Note 1). Shipper must have established that the completed package closed as for shipment, with inside packagings filled with liquid of same specific gravity as bromine, is capable of withstanding tests prescribed by § 173.210-10 of this subchapter. Not authorized for transportation by air.

NOTE 1: Other materials of equal efficiency and compatibility are also authorized.

(3) Specification 12A (§ 173.210 of this subchapter). Fiberboard box with inside glass bottles having a capacity not exceeding one quart with closures meeting the requirements of paragraph (d) of this section. Each bottle

must be enclosed in a strong metal can surrounded with an appropriate fire-resistant cushioning material. Each box may not contain more than four bottles with each having a capacity not exceeding 1 quart or 12 bottles with each having a capacity not exceeding 8 fluid ounces. The shipper must have established that the completed package closed for shipment, with inside bottles filled with a liquid of the same specific gravity and similar viscosity as bromine, is capable of withstanding the tests prescribed in § 178.210-10 of this subchapter. Not authorized for transportation by air.

(4) Specification 33A (§ 178.150 of this subchapter). Polystyrene case (nonreusable container) having not more than four inside glass jugs of not over 80 fluid ounces (2.5 liters) each. The polystyrene case must be further overpacked in a strong fiberboard box of at least 275-pound test and adequately cushioned. Not authorized for transportation by aircraft.

(5) Specification 15A (§ 178.168 of this subchapter). Wooden boxes (having an authorized gross weight of not less than 100 pounds) having not more than four inside glass jugs of not over 80 fluid ounces (2.5 liters) each. Jugs must be cushioned with an appropriate absorbent material. Not authorized for transportation by aircraft.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964, as amended by Order 66, 30 FR 5745, Apr. 23, 1965; Order 73, 32 FR 3456, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.253, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.253 Chloroacetyl chloride.

(a) Chloroacetyl chloride must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside glass containers not over 5 pints capacity each; cushioned by an appropriate fire-resistant cushioning material.

(2) Spec. 1M (§ 178.17 of this subchapter). Glass carboys in expanded

polystyrene packagings. Not authorized for transportation by aircraft.

(3)—(4) [Reserved]

(5) Spec. 5K (§ 178.88 of this subchapter). Nickel drums.

(6) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks having tanks fabricated from Type 316 stainless steel or 99 percent pure nickel. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(7) Specification 103AW, 111A60W2, or 111A100F2 (§§ 179.200, 179.201 of this subchapter). Tanks cars. Tanks must have a nickel cladding of 1/16 inch minimum thickness. Nickel cladding in tanks must be low carbon nickel in accordance with ASTM B162-80.

(8) Specification 103ANW (§§ 179.200 and 179.201 of this subchapter). Tank cars. Tanks must be fabricated of solid nickel at least 95 percent pure and containing not more than 1 percent iron. Metal test coupons for welding procedure qualification must contain not more than 1 percent iron. All cast metal parts of the tank in contact with the lading must have a minimum nickel content of approximately 96.7 percent.

(9) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18725, Dec. 29, 1964, as amended by Order 73, 32 FR 3456, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.253, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.254 Chlorosulfonic acid and mixtures of chlorosulfonic acid-sulfur trioxide.

(a) Chlorosulfonic acid and mixtures of chlorosulfonic acid-sulfur trioxide must be packed in specification containers as follows:

(1) Spec. 5A or 5C (§§ 178.81 or 178.83 of this subchapter). Metal barrels or drums.

(2) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of

this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-gallon each, except that inside containers up to 3 gallons are authorized when only one is packed in each outside box.

(3) [Reserved]

(4) Specification 103A,¹ 103AW, 103 CW, 103EW, 111A60W2, 111A60W7, or 111A100F2 (§§ 179.200, 179.201 of this subchapter). Tank cars.

(5) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(6) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18725, Dec. 29, 1964, as amended by Order 73, 32 FR 3456, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.254, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.255 Dimethyl sulfate.

(a) Dimethyl sulfate must be packed in specification containers as follows:

(1) Spec. 5A or 5C (§§ 178.81 or 178.83 of this subchapter). Metal barrels or drums not over 55 gallons each. Spec. 5C metal barrels or drums must be constructed of Type 304 stainless steel.

(2) Spec. 5 (§ 178.80 of this subchapter). Metal barrels or drums not over 15 gallons each, with openings not exceeding 2.3 inches in diameter, inclosed in strong crates made of lumber at least ½ inch thick.

(3) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with one inside glass container not over 1-quart capacity, closed by ground glass stopper or other equally efficient closure securely fastened in place, and cushioned within a hermetically sealed (soldered) metal can with an appropriate fire-resistant absorbent, cushioning material, the can then being cushioned with an appropriate fire-resistant absorbent cushioning material in the outside box.

ioned with an appropriate fire-resistant cushioning material in the outside box.

(4) Spec. 103A,¹ 103A-W, 111A100-F-2, or 111A100-W-2 (§§ 179.200, 179.201 of this subchapter). Tank cars.

(5) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(6) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with each box containing not more than six inside glass containers not over 1-quart capacity each, closed by plastic screw-cap resistant to the lading, and each completely surrounded by incombustible absorbent cushioning material and enclosed in a metal can having rolled, seamed-on heads of a key-opening type; or in not more than six inside glass containers not over 1-quart capacity each, closed by ground glass stopper, by plastic screwcap resistant to the lading, or by other equally efficient closure securely fastened in place, and cushioned with incombustible absorbent material in hermetically sealed (soldered) metal can, the can then being cushioned with incombustible cushioning material in the outside container.

(7) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18725, Dec. 29, 1964, as amended by Order 73, 32 FR 3456, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.255, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.256 Compounds, cleaning, liquid.

(a) Compounds, cleaning, liquid, containing not more than 60 percent hydrofluoric acid, must be packed in specification containers as follows:

(1) As prescribed in § 173.264(a) (1) and (2).

(2) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside

¹Use of existing tank cars authorized, but new construction not authorized.

¹Use of existing tank cars authorized, but new construction not authorized.

containers of natural rubber, ceresine, lead, or other material of equal strength and not subject to destruction by the lading.

(3) Specification 22B (§ 178.197 of this subchapter) plywood drums equipped with a liner of rubber, polyethylene or other material impervious to the solution.

(4) Spec. 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185-22 of this subchapter) with inside Specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

(5) Spec. 6D or 21P (§ 178.102 or § 178.225 of this subchapter). Cylindrical steel overpack or fiber drum overpack with inside Spec. 2U (§ 178.24 of this subchapter) polyethylene container not over 15-gallons capacity.

(6) Spec. 37M (§ 178.134 of this subchapter) (nonreuseable). Cylindrical steel overpack with inside Specifications 2SL (§ 178.35a of this subchapter) polyethylene container. Maximum net weight shall not exceed 490 pounds. Authorized only for compounds containing not more than 30 percent hydrofluoric acid.

(7) Spec. 37M (§ 178.134 of this subchapter). Cylindrical steel overpack with inside Specification 2U (§ 178.24 of this subchapter) polyethylene container. For compounds containing not more than 7 percent hydrofluoric acid by weight, the steel overpack must be a minimum of 22-gauge. For compounds containing more than 7 percent hydrofluoric acid by weight but not over 14 percent hydrofluoric acid by weight, the steel overpack must be a minimum of 20-gauge body and 18-gauge heads. When a full removable head is used, the bolted type ring closure must be a minimum of 16-gauge.

(8) Specification 12P (§ 178.211 of this subchapter). Fiberboard boxes with one inside Specification 2U (§ 178.24 of this subchapter) polyethylene container of not over 5-gallon capacity or two inside Specification 2U polyethylene containers of not over 2½ gallon capacity each. Wire staples are not authorized for assembly or clo-

sure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

(9) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(b) Compounds, cleaning, liquid containing not more than 20 percent hydrofluoric acid, by weight, may also be shipped in specification containers as follows:

(1) Specification 57 (§ 178.253 of this subchapter). Steel portable tank. Authorized for transportation by water when having a minimum design pressure of 9 psig and equipped in accordance with § 178.253-4, except that frangible devices are not authorized. Also, for water transportation, no pressure relief device may open at less than 5 psig. Tanks must have a polyethylene liner impervious to the solution.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964, as amended by Order 71, 31 FR 9070, July 1, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.256, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.257 Electrolyte (acid) and alkaline corrosive battery fluid.

(a) Electrolyte (acid) may not be over 47 percent strength (39° Baume). Electrolyte or alkaline corrosive battery fluid must be packaged as follows (packaging utilizing a bag to contain the electrolyte or battery fluid is not authorized for transportation by air):

(1) As prescribed in § 173.272 except that unlined tank cars and metal barrels or drums must not be used.

(2) [Reserved]

(3) When the material is alkaline it may also be shipped when packed in containers as prescribed in § 173.249.

(4) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks must be lined with rubber or equally acid-resistant material of

equivalent strength and durability. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(5) Spec. 60 (§ 178.255 of this subchapter). Portable tanks, except that unlined tanks must not be used.

(6) Spec. 12B or 12C (§ 178.205 or § 178.206 of this subchapter). Fiberboard boxes with inside containers of polyethylene or other electrolyte acid resistant nonfragile materials having secure closures capable of withstanding conditions incident to transportation without leakage and unless containers are rigid or semi-rigid in nature they must be contained in other strong inside containers; minimum thickness of polyethylene or other materials shall be not less than 0.003 inch for any film sheet for multi-wall containers or not less than 0.006 inch for single-wall containers; not more than 12 such inside containers shall be packed in one outside box and the marking prescribed in § 172.312 shall not be required. Inside containers shall be packed to prevent movement within the box (see §§ 178.205-34 and 178.206-19 of this subchapter). Dry storage batteries or battery charger device may be packed in the same outside box when adequately separated from other inside containers (see § 178.205-33 of this subchapter); gross weight of completed package shall not exceed 65 pounds, except when acid is packed in individual inside containers the gross weight shall be not over 75 pounds. Complete package, closed as for shipment, with inside containers filled with liquid of same specific gravity as commodity to be shipped, must be capable of withstanding at least 2 drops from a height of 4 feet onto solid concrete without leakage from or rupture of inside containers.

(7) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside polyethylene or other electrolyte acid resistant plastic containers, not over 1-gallon each.

(8) Specification 1EX (§ 178.6 of this subchapter). Carboys in plywood drums. Not authorized for transportation by air.

(9) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes constructed of at least 275-pound test (Mullen or Cady) double-wall corrugated fiberboard or 325-pound test (Mullen or Cady) doublefaced corrugated fiberboard, with not more than 12 inside glass bottles, having acid-proof closures, of not over 32 ounces capacity each. Inside glass bottles must be separated and cushioned by suitable corrugated fiberboard partitions. The box must be equipped with top and bottom pads. (See § 178.205-32 of this subchapter.)

(10) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes having not more than 1 inside glass bottle, with acid-proof closure, not over 1 gallon capacity. Box shall be constructed of at least 350-pound test (Mullen or Cady) doublefaced corrugated fiberboard of full depth telescope type. Cushioning and closure of box (pressure sensitive tape may be used) must be such that a representative box, with inside glass bottle filled with water, shall be capable of withstanding two drops from a height of 4 feet onto solid concrete without breakage of inner bottle or failure of the closure.

(11) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 1 gallon capacity each. Not more than 4 inside containers exceeding 5 pints capacity each shall be packed in the outside container. Shipper must have established that the completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(12) Specification 37P (§ 178.133 of this subchapter). Steel drums with polyethylene liner (non-reusable container). Not authorized for transportation by air.

(13) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum.

(14) Spec. 12B (§ 178.205 of this subchapter). Corrugated fiberboard boxes with plastic bags as defined in § 178.205-37 of this subchapter. Marking prescribed in § 172.312 of this subchapter shall not be required.

(b) Shipments of electrolyte (acid) or corrosive battery fluid with vehicles or engine driven equipment offered for transportation by, for, or to the De-

partments of the Army, Navy, or Air Force of the U.S. Government are exempt from Parts 171-179 and 397 of this title when packed as follows:

(1) In one inside glass or polyethylene bottle of not over 1-gallon capacity, tightly and securely closed in a strong outside container. Inside glass bottle shall be cushioned therein on all sides with incombustible absorbent material in sufficient quantity to absorb liquid contents in event of breakage. When shipped within or on a motor vehicle or with engines or other mechanical apparatus the outside container must be so blocked, braced, or stayed that it cannot change position during transit.

(c) Electrolyte acid or corrosive battery fluid contained in polyethylene containers not over 2 quarts capacity each and packaged not more than three containers in Specification 15A, 15B, 15C, 16A, 19A, or 19B wooden box (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter), or packaged as prescribed in paragraph (a)(6) of this section, and bearing a corrosive label, may be securely attached to self-propelled vehicles or mobile agricultural machinery, or securely braced on a railcar floor.

(d) Strong, tightly closed metal drums not over 15 gallons capacity each, having not to exceed 25 eight-ounce polyethylene, or other suitable plastic bottles, securely cushioned therein. Shipments authorized only by, for, or to the Departments of the Army, Navy, or Air Force of the United States Government. The drum containing the electrolyte acid or corrosive battery fluid may be securely attached to another steel drum containing a dry, charged storage battery or batteries.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964, as amended by Order 66, 30 FR 5745, Apr. 23, 1965; Order 73, 32 FR 3456, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.257, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.258 Electrolyte, acid, or alkaline corrosive battery fluid, packed with storage batteries.

(a) Electrolyte, acid, or alkaline corrosive battery fluid, packed with storage batteries, except as provided in § 173.257(a)(6), must be packed in specification containers as follows:

(1) Spec. 15D or 16B (§ 178.171 or § 178.186 of this subchapter). Wooden boxes with inside containers of glass bottles not over 1 gallon each nor over 2 gallons total in each outside container. Inside containers must be well cushioned and separated from batteries by a strong solid wooden partition.

(2) Electrolyte, acid, or alkaline corrosive battery fluid included with storage batteries and filling kits may be packed in strong plywood or wooden boxes when shipments are made by, for, or to the Departments of the Army, Navy, or Air Force of the United States Government in outside containers of their specifications provided the electrolyte, acid, or alkaline corrosive battery fluid is packed in polyethylene bottles not over 32-ounce capacity each and not more than 24 bottles securely separated from storage batteries and kits may be shipped in one outside package.

(3) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes with not more than 12 inside packagings of polyethylene or other material resistant to the lading, not over 64-ounce capacity each. Polyethylene packagings that are not rigid or semi-rigid in nature must be contained in other strong inside packagings; minimum thickness of polyethylene or other plastic material may be not less than 0.003-inch for any film sheet for multi-wall packagings or not less than 0.006-inch for single-wall packagings. Inside packagings must be adequately separated from the storage battery. Authorized gross weight not over 65 pounds. (See § 178.205-33 of this subchapter.) Not authorized for transportation by air.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16076, Apr. 15, 1976; Amdt. 173-142, 45 FR 81572, Dec. 11, 1980]

§ 173.259 Electrolyte, acid, or alkaline corrosive battery fluid, packed with battery charger, radio current supply device, or electronic equipment and actuating devices.

(a) Electrolyte, acid, or alkaline corrosive battery fluid packed with battery charger, radio current supply device or parts thereof, or electronic equipment and actuating devices, with only one device or outfit in each package, in the amount necessary for operation of the device or equipment, provided the containers of electrolyte, acid, or alkaline corrosive battery fluid, are adequately cushioned to prevent breakage, leakage, or damage to other articles packed therewith, must be packed in specification containers or as otherwise authorized herein, as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes, provided the liquid is in bottles securely closed and cushioned as prescribed in paragraph (a) of this section, and separated from charger supply device, and parts, or electronic equipment, by a strong solid wooden partition.

(2) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes, when the liquid is in a strong bottle not exceeding 16 fluid ounces, which must be securely closed and cushioned as prescribed in paragraph (a) of this section. Not more than 12 such packages may be packed under the provisions of § 173.25.

(3) Electrolyte, acid, or alkaline corrosive battery fluid, in separate inside acid or alkaline fluid resistant containers not over 5 gallons capacity each included with electronic equipment and actuating devices, are authorized in strong, tightly closed steel drums.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16076, Apr. 15, 1976; Amdt. 173-149, 46 FR 49900, Oct. 8, 1981]

§ 173.260 Electric storage batteries, wet.

(a) Electric storage batteries, containing electrolyte acid or alkaline corrosive battery fluid, must be completely protected so that short circuits will be prevented; they must not be packed with other articles except as provided

in §§ 173.250 and 173.258, portable searchlights properly cushioned, battery parts, or hydrometers, securely packed in a separate container. The batteries either with or without other articles must be packed in specification containers as follows:

(1) Spec. 15D or 16B (§ 178.171 or § 178.186 of this subchapter). Wooden or wirebound wooden boxes except as provided in paragraphs (b) and (c) of this section.

(2) Spec. 12B (§ 178.205 of this subchapter). Fiberboard box as authorized by §§ 178.205-25(a), 178.205-28(a), and 178.205-35(a) of this subchapter.

(3) Electric storage batteries with case of asphaltum composition, impregnated rubber, steel case type, synthetic resin (plastic), or wooden battery box type, protected against short circuits and firmly secured to skids or pallets capable of withstanding the shocks normally incident to transportation, are exempt from specification packaging requirements for transportation by rail freight, highway, or water. The height of the completed unit must not exceed $1\frac{1}{2}$ times the width of the skid or pallet. The unit must weigh not less than 300 pounds gross and must not fail under a superimposed weight equal to two times the weight of the unit or a superimposed weight of 4,000 pounds if the weight of the unit exceeds 2,000 pounds. Battery terminals must not be relied upon to support any part of the superimposed weight. Unless specifically exempt from marking and labeling, each pallet or skid must be marked and labeled as required by Part 172.

(4) Electric storage batteries weighing 500 pounds or more, with case of asphaltum composition, impregnated rubber, steel case type, synthetic resin (plastic), or wooden battery box type, consisting of carriers' equipment may be shipped by rail freight when mounted on suitable skids and protected against short circuits. Such shipments must not be offered in interchange.

(b) Electric storage batteries with case of asphaltum composition, impregnated rubber, steel case type, synthetic resin (plastic), or wooden battery box type; packing authorized as follows:

(1) One to three batteries not over 25 pounds each in outside box, gross weight not over 75 pounds; specification container not required.

(2) Not more than four batteries not over 15 pounds each may be packed in strong outside fiberboard or wooden boxes, when securely cushioned and packed to prevent short circuits; specification container not required. Authorized gross weight 65 pounds.

(3) Not more than five batteries not over 10 pounds each may be packed in strong outside fiberboard or wooden boxes, when securely cushioned and packed to prevent short circuits; specification container not required. Authorized gross weight 65 pounds.

(c) Single batteries not exceeding 75 pounds each, in addition to requirements of paragraphs (a) and (b) of this section, may be shipped in 5-sided slip covers or in completely closed fiberboard boxes, of solid or double-faced corrugated fiberboard complying with the following: (See paragraph (a)(1) of this section for more than one battery in an outside container.)

(1) Slip cover or fiberboard box must fit snugly and provide inside top clearance of at least $\frac{1}{2}$ inch above battery terminals and filler caps with reinforcement in place. Assembled for shipment, the bottom edges of the slip cover may extend to the base of the battery but must not expose more than 1 inch thereof.

(2) Top of slip cover or fiberboard box design must comply with the following:

(1) Top of slip cover or fiberboard box must have interior reinforcement (insert or saddle) of fiberboard, wood, or other material of equal strength and rigidity so formed that any superimposed weight will bear only and directly downward on the top edges of the battery case or intercell connectors (straps), or plastic battery terminal covers designed to transmit any superimposed weight directly to the top inner wall of the battery case, or fiberboard boxes with chip board and chip board jute lined tubes which shall fit directly over the terminal posts and rest directly on battery cell covers.

(ii) Or be protected by a scored one piece cover-liner of 200-pound test (Mullen or Cady) double-faced corru-

gated fiberboard extending from the base of the battery on one side, across the top of the battery and to the base of the battery on the opposite side.

(iii) Or a five-sided slip cover having top of only one thickness of fiberboard, with lengthwise inner flaps roll folded to form a reinforcement of such height as to provide clearance required by paragraph (c)(1) of this section which shall rest on the side edges of the battery. Outer end flaps to overlap approximately one inch and shall be butt folded and tucked into a center slot cut in the inner flaps. The requirements of paragraphs (c)(2) (i) and (iv) of this section do not apply.

(iv) When top of slip cover or fiberboard box consists of only one thickness of material, reinforcement must have a plane surface of same interior dimensions and thickness. Reinforcement must be of such height as to provide minimum clearance required above and must be constructed to remain securely in place or be fastened to slip cover or fiberboard box.

(3) All fiberboard must be at least 200 pound test (Mullen) and completed package (battery and slip cover or fiberboard box) must be capable of withstanding top-to-bottom compression test of at least 500 pounds without damage to battery terminals, battery cell covers, and filler caps.

(d) Nonspillable wet electric storage batteries capable of withstanding the tests prescribed in paragraphs (d) (1) and (2) of this section without leakage of battery fluid are excepted from all other requirements of this subchapter when protected against short circuits and securely packaged so as to withstand conditions normal to transportation.

(1) *Vibration test.* Battery is rigidly clamped to the platform of a vibration machine and a simple harmonic motion having an amplitude of 0.03 inches (0.06 inches maximum total excursion) is applied. The frequency is varied at the rate of one cycle per second per minute between the limits of 10 to 55 cycles per second. The entire range of frequencies and return is traversed in $95 \pm$ minutes for each mounting position (direction of vibrator) of the battery. The battery must be tested in three mutually perpendic-

ular positions (to include testing with fill openings and vents, if any, in an inverted position) for equal time periods.

(2) *Pressure differential test.* Following the vibration test, the battery is stored for six hours at 75°F. ± 7°F. under an external partial pressure of 2 pounds per square inch absolute. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for at least six hours in each position.

(e) Electric storage batteries containing electrolyte or corrosive battery fluid are not subject to the requirements of this subchapter for carriage by highway or rail if:

(1) No other hazardous materials are transported in the same vehicle,

(2) The batteries are loaded or braced so as to prevent damage and short circuits in transit,

(3) Any other material loaded in the same vehicle is blocked, braced, or otherwise secured to prevent contact with or damage to the batteries, and

(4) The transport vehicle is carrying no material shipped by any person other than the shipper of the batteries.

(f) [Reserved]

(g) Electric storage batteries, containing electrolyte or corrosive battery fluid in a coil from which it is injected into the battery cells by a gas generator and initiator assembled with the battery, and which are nonspillable and leakproof, are excepted from Parts 170-189 of this title when examined by the Bureau of Explosives and approved by the Director, OEHMT.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.260, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.261 Fire-extinguisher charges.

(a) Fire-extinguisher charges consisting of sulfuric acid in glass inside containers securely closed may be packed with bicarbonate of soda in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of

this subchapter). Wooden boxes with inside glass containers not over 5 pints each, and cushioned with an appropriate cushioning material.

(2) Spec. 21C (§ 178.224 of this subchapter). Fiber drums with a single inside container consisting of a glass bottle not over 64 fluid ounces capacity filled with not over six pounds by weight of sulfuric acid (approximately 50 fluid ounces by volume). Bottle must be suspended in center of outside container by means of adequate supports and surrounded by bicarbonate of soda in sufficient quantity to fill drum and neutralize contents in the event of breakage

(b) Limited quantities of fire-extinguisher charges as described in paragraphs (b) (1) through (3) of this section are excepted from labeling (except labeling is required for transportation by air) and the specification packaging requirements. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter, except § 177.817.

(1) Fire-extinguisher charges consisting of sulfuric acid in strong 8-fluid ounce or smaller bottles, securely closed and packed with bicarbonate of soda completely surrounding the bottles of acid in outside fiberboard or wooden boxes. Closure must consist of a metal cap lined with an acid-resistant washer or a composition stopper of material that will not be attacked by the acid.

(2) Fire-extinguisher charges, consisting of chlorosulfonic acid in a hermetically sealed bottle not exceeding 2 ounces capacity, securely packed in a metal container inclosed in another metal container, the inner metal container being cushioned in the outer metal container with an appropriate fire-resistant cushioning material and the completed package embedded in potassium carbonate in outside fiberboard or wooden boxes.

(3) Fire-extinguisher charges, consisting of sulfuric acid in 10-ounce or smaller bottles, securely closed, packed in a tight fiber carton. Closure must consist of a metal cap lined with an acid-resistant washer or a composition stopper of material that will not

be attacked by the acid. The bottle and carton packed in either potassium carbonate or potassium carbonate and alkali packed in a cylindrical tin can, with slip cover, secured by tape in outside fiberboard or wooden boxes

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5806, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16078, Apr. 15, 1976; Amdt. 173-94A, 41 FR 40682, Sept. 20, 1976; Amdt. 173-141, 45 FR 62082, Sept. 18, 1980; Amdt. 173-149, 46 FR 49900, Oct. 8, 1981]

§ 173.262 Hydrobromic acid.

(a) Hydrobromic acid not over 49 percent strength must be packed in specification containers as follows:

(1) Specification 1A, 1D, or 1M (§§ 178.1, 178.4, 178.17 of this subchapter). Carboys in boxes or expanded polystyrene packagings. Not authorized for transportation by aircraft.

(2) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) [Reserved]

(4) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-gallon each, except that inside containers not over 3 gallons are authorized when only one is packed in each outside box.

(5) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(6) Specification 103B,¹ 103BW, or 111A60W5 (§§ 179.200, 179.201 of this subchapter). Tank cars.

(7) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint glass

bottles may be packed in one outside container.

Shipper must have established that the completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(8) Specification 37P (§ 178.133 of this subchapter). Steel drum, not over 5 gallons capacity, with polyethylene liner (non-reusable container). A drum exceeding 1 gallon capacity must be constructed of at least 24 gauge metal. Not authorized for transportation by air.

(9) Spec. 22C (§ 178.198 of this subchapter). Plywood drum as prescribed by § 178.198-2(a) of this subchapter, with inside Spec. 2T (§ 178.21 of this subchapter) polyethylene container.

(10) Spec. 6D (§ 178.102 of this subchapter). Cylindrical steel overpack with inside Spec. 2S (§ 178.35 of this subchapter) polyethylene container.

(11) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks must be lined with rubber or equally acid-resistant material of equivalent strength and durability. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(12) Specification 37M (§ 178.134 of this subchapter) (non-reusable) cylindrical steel overpack with inside Specification 2SL (§ 178.35a of this subchapter) polyethylene container. Overpack must have rolled hoops and be constructed of 20-gauge body and 18-gauge head.

(13) In IM portable tanks as prescribed in paragraph (b)(5) of this section.

(b) Hydrobromic acid greater than 49 percent strength but not over 63 percent strength must be packed in specification containers as follows:

(1) Spec. 22C (§ 178.198 of this subchapter). Plywood drum as prescribed by § 178.198-2(a) of this subchapter, with Spec. 2T (§ 178.21 of this subchapter) polyethylene container.

(2) Specification 6D (§ 178.102 of this subchapter). Cylindrical steel overpack with inside Specification 2S or 2SL (§§ 178.35, 178.35a of this subchapter) polyethylene container.

(3) Specification 15A or 19B (§§ 178.168, 178.191 of this subchap-

¹ The use of existing tanks authorized but new construction not authorized.

ter). Wooden boxes with one inside polyethylene bottle, with screw-cap closure, not over 1-gallon capacity.

(4) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks must be lined with rubber or equally acid-resistant material of equivalent strength and durability. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(5) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter), under conditions specified in the IM Tank Table.

(6) Specification 12A (178.210 of this subchapter). Fiberboard box with not more than four inside glass bottles not over one-quart capacity each, or 12 inside glass bottles not over eight fluid ounces each. Each bottle must be enclosed in a metal can and surrounded by a noncombustible cushioning material. Box shall be constructed of at least 275-pound test (Mullen or Cady) corrugated fiberboard.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964, as amended by Order 73, 32 FR 3456, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.262, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.263 Hydrochloric (muriatic) acid; hydrochloric (muriatic) acid mixtures; hydrochloric (muriatic) acid solution, inhibited; sodium chlorite solution (not exceeding 42 percent sodium chlorite); and cleaning compounds, liquids, containing hydrochloric (muriatic) acid.

(a) Hydrochloric (muriatic) acid, hydrochloric (muriatic) acid mixtures, hydrochloric (muriatic) acid solution, inhibited, sodium chlorite solution not exceeding 42 percent sodium chlorite, and cleaning compounds, liquid, containing hydrochloric (muriatic) acid must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass, earthenware, polyethylene or other nonfragile plastic containers resistant to the lading (bags

are not authorized), not over 1-gallon each, except that inside containers not over 3 gallons each are authorized when only one is packed in each outside box.

(2)—(4) [Reserved]

(5) Specification 1A or 1K (§§ 178.1, 178.14 of this subchapter). Carboys in boxes. Not authorized for transportation by aircraft.

(6) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(7) Specification 1D, 1EX, (single-trip), or 1M (§§ 178.4, 178.6, 178.17 of this subchapter). Glass carboys in boxes, plywood drums, or expanded polystyrene packagings. Pressure in the carboy may not exceed 10 pounds per square inch gauge at 130°F. (55°C.). If the package is vented, there may be no significant release of contents to the environment. Not authorized for transportation by aircraft.

(8) Specification 57 (§ 178.253 of this subchapter). Steel portable tank. Authorized only for cleaning compounds, liquid, containing hydrochloric (muriatic) acid of not over 20 percent total acid by weight. Tank must have a polyethylene liner impervious to the solution. Authorized for transportation by water when having a minimum design pressure of 9 psig and equipped in accordance with § 178.253-4, except that frangible devices are not authorized. Also, for water transportation, no pressure relief device may open at less than 5 psig.

(9) Specification 103B,¹ 103BW, or 111A60W5 (§§ 179.200, 179.201 of this subchapter) tank cars. These cars are authorized for acid not over 38 percent strength by weight. A safety relief valve or a safety vent of approved design equipped with frangible disc

¹The use of existing tanks authorized but new construction not authorized.

having ¼-inch breather hole in center thereof or a safety vent of approved design equipped with carbon discs permitting continuous venting may be used, but may not be used for hydrochloric (muriatic) acid of 22° Baume strength or greater, and other fuming acids.

(10) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks lined with rubber or equally acid-resistant material of equivalent strength and durability. An unlined specification MC 311 or MC 312 cargo tanks made from Type 304L or 316 stainless steel is authorized for sodium chlorite solutions not exceeding 42 percent sodium chlorite only. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(11) Spec. 60 (§ 178.255 of this subchapter). Portable tanks, rubber-lined.

(12) Specification 103CW, 111A60W7 (§§ 179.200 and 179.201 of this subchapter). Tank cars having tanks of type 304L stainless steel. Authorized for sodium chlorite solution not exceeding 42 percent sodium chlorite only.

(13) Spec. 1H, 15P, or 22C (§§ 178.13, 178.182, or 178.198 of this subchapter). Metal crate with inside polyethylene carboy; or glued plywood or wooden box, or plywood drum as prescribed by § 178.198-2(a) of this subchapter, with inside Spec. 2T or Spec. 2TL (§ 178.21 or § 178.27 of this subchapter) polyethylene container.

(14) Specifications 17H, 37A, or 37B (§§ 178.118, 178.131, 178.132, of this subchapter). Metal drums (single-trip) not over 5 gallons capacity each. Authorized only for 15 percent or less, inhibited hydrochloric (muriatic) acid solution. Drums must be lined throughout with a pliable plastic material impervious to the solution. Specifications 37A and 37B metal drums must be at least 24 gauge steel. Not authorized for transportation by air.

(15) Specification 12A or 12B (§§ 178.210, 178.205 of this subchapter). Fiberboard boxes with inside containers of polyethylene, or other non-fragile plastic material resistant to the lading (bags are not authorized), not over 1-gallon capacity each, or not more than one of 3-gallon capacity,

suitably cushioned to prevent movement within the box. Gross weight of completed package must not exceed 65 pounds.

(16) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint glass bottles may be packed in one outside container. Shipper must have established that the completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(17) Specification 6D or 37M (non-reusable container) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpacks with inside Specifications 2S, 2SL, 2T, 2TL, or 2U (§§ 178.35, 178.35a, 178.21, 178.27, 178.24 of this subchapter) polyethylene container.

(18) Specification 37P (§ 178.133 of this subchapter). Steel drums constructed of at least 24-gauge metal for drums exceeding 1 gallon capacity, with polyethylene liner (nonreusable container). Not authorized for transportation by air.

(19) Spec. 16D (§ 178.187 of this subchapter). Wirebound wooden overwrap, with inside Spec. 2T, 2TL, 2S, or 2SL (§§ 178.21, 178.27, 178.35, or § 178.35a of this subchapter) polyethylene container.

(20) [Reserved]

(21) Spec. 12C (§ 178.206 of this subchapter). Fiberboard boxes with inside 5-gallon nominal capacity polyethylene bottles having minimum wall thickness of 0.015 inch and constructed with screw-type closures. Authorized gross weight not over 65 pounds. (See § 178.206-19 of this subchapter.)

(22) Spec. 21P (§ 178.225 of this subchapter). Fiber drum overpack with inside Spec. 2T, 2S, 2SL, or 2U (§§ 178.21, 178.35, 178.35a, or § 178.24 of this subchapter) polyethylene container.

(23) Specification 12P (§ 178.211 of this subchapter). Fiberboard box with one inside Specification 2U (§ 178.24 of this subchapter) polyethylene container of not over 5-gallon capacity, each or two inside Specification 2U polyethylene containers of not over 2½ gallon capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene con-

tainer is completely enclosed in inside boxes free of wire staples or other projections that could cause failure. Not authorized for transportation by air.

(24) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185-22 of this subchapter) with inside Specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

(25) Spec. 22C (§ 178.198 of this subchapter). Plywood drum as prescribed by § 178.198-2(b), with inside Spec. 2TL (§ 178.27 of this subchapter) polyethylene container not over 5 gallon nominal capacity.

(26) Spec. 33A (§ 178.150 of this subchapter). Polystyrene cases (nonreusable container) with inside glass bottles not over 5 pints capacity each. Not more than four 5-pint bottles may be packed in one outside container.

(27) Specification 12R (§ 178.212 of this subchapter). Paper-faced expanded polystyrene board box with not more than six inside glass bottles or Specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles, not over 5 pints capacity each.

(28) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum.

(29) Specification 12R (§ 178.212 of this subchapter). Paper-faced expanded polystyrene board box with not more than four specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles, not over 1-gallon capacity each.

(30) Marine portable tanks meeting the requirements of 46 CFR Part 64 authorized for highway and cargo vessel only when shipped in support of off-shore oil well drilling activities. Tanks shall comply with mounting and tie-down requirements of § 178.245-4 of this subchapter. Authorized only for mixtures of hydrochloric and hydrofluoric acid containing 2% or less of hydrofluoric acid.

(31) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(b) Hydrochloric acid of not over 20 percent strength (13.25° Baume 1) and other corrosive liquids containing not over 20 percent hydrochloric acid in addition to containers prescribed in paragraph (a) of this section may be shipped in specification containers as follows:

(1) [Reserved]

(2) Limited quantities of these materials in inside packaging of not more than 8 fluid ounces capacity each, packed in strong outside packagings, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are excepted from labeling (except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter, except § 177.817.

(c) When hydrochloric acid contains oils or solvents it must not be shipped in containers or tank cars lined with rubber.

(d) Hydrochloric acid mixtures of not over 28 percent strength, or cleaning compounds, liquid, containing not over 28 percent hydrochloric (muriatic) acid, in addition to the provisions of paragraphs (a) and (b) of this section, may be packed in specification containers as follows:

(1) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes constructed of at least 275-pound test (Mullen or Cady) double-wall corrugated fiberboard or 325-pound test (Mullen or Cady) double-faced corrugated fiberboard, with not more than 12 inside glass bottles, having acid-proof closures, of not over 32 ounces capacity each. Inside glass bottles must be separated and cushioned by suitable corrugated fiberboard partitions. The box must be equipped with top and bottom pads. (See § 178.205-32 of this subchapter.)

(2) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 1 gallon capacity each. Not more than 4 inside containers exceeding 5 pints capacity each shall be in the outside container. Ship-

per must have established that the completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(e) Special exceptions for the shipment of certain dilute hydrochloric acid solutions in the ORM-D class are provided in Subpart N of this part.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5806, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.263, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.264 Hydrofluoric acid; white acid.

(a) Hydrofluoric acid and white acid (ammonium bifluoride and hydrochloric acid mixture), each must be packed in specification packaging as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside containers which are hydrofluoric acid resistant. These containers are authorized only for strengths of acid for which they are adequate, but in no case may the strength of acid exceed 70 percent.

(2) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes with Specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles or inside receptacles of not over 1 pound capacity each, made of natural rubber, lead, or other hydrofluoric resistant plastic. Authorized only for acid not over 70 percent in strength.

(3) Spec. 16D (§ 178.187 of this subchapter). Wirebound wooden overwrap, with inside Spec. 2T (§ 178.21 of this subchapter) polyethylene container. Authorized for hydrofluoric acid not over 70 percent strength.

(4) Specification 12A or 12B (§§ 178.210, 178.205 of this subchapter). Fiberboard boxes with not more than four Specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles, having a minimum thickness of 0.030 inch and not over 1 gallon (nominal) capacity each. Bottle closures must be made secure by sealing with pressure-sensitive plastic tape or other equally efficient means. Authorized for acid not over 70 percent

strength. Authorized gross weight for Specification 12B fiberboard boxes not over 65 pounds; Specification 12A not over 80 pounds.

(5)-(7) [Reserved]

(8) Specification 103AW, 105A100W, 111A100F2, 111A60W2, 111A100W4 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Unlined metal tanks which have been subjected to adequate passivity or neutralization process. Each metal container, before being put into service must be passivated by an efficient method. Authorized only for hydrofluoric acid of 60 to 80 percent strength. If tanks are washed out with water they must be resubjected to passivity before reshipment.

(i) Hydrofluoric acid solutions and concentrations of 60 percent up to 65 percent when shipped in unlined metal tank cars must be inhibited so that the corrosive effect on steel must not be greater than that of hydrofluoric acid of 65 percent concentration.

(ii) Each tank car must be marked "HYDROFLUORIC ACID" in accordance with the requirements of § 172.330 of this subchapter.

(9)-(10) [Reserved]

(11) Specification 103BW, 111A100W4, or 111A60W5 (§§ 179.200, 179.201 of this subchapter). Tank cars, rubber-lined tanks. Authorized only for acid not over 40 percent strength except Specification 111A100W4 tanks are authorized only for acid of 70 percent strength.

(12)-(13) [Reserved]

(14) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks.

NOTE 1: Hydrofluoric acid solutions and concentrations of 60 percent up to 65 percent, when shipped in unlined tank motor vehicles, must be inhibited so that the corrosive effect on steel must not be greater than that of hydrofluoric acid of 65 percent concentration.

(15) [Reserved]

(16) Spec. 15P or 22C (§§ 178.182 or 178.198 of this subchapter). Glued plywood or wooden box, or plywood drum as prescribed by § 178.198-2(a) of this subchapter, with inside Spec. 2T (§ 178.21 of this subchapter) polyeth-

ylene container. Authorized for acid not over 70 percent strength.

(17) Specification 6D (§ 178.102 of this subchapter) or 37M (nonreusable) (§ 178.134 of this subchapter) cylindrical steel overpacks with inside Specifications 2S, 2SL, or 2T (§§ 178.35, 178.35a, 178.21 of this subchapter) polyethylene liners. Specification 37M overpack of over 15-gallon capacity must be constructed of at least 20-gauge steel. Authorized only for acid of not over 70 percent strength.

(18) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. Authorized only for hydrofluoric acid not over 52% strength.

(19) Specification 12P (§ 178.211 of this subchapter). Fiberboard boxes with one inside Specification 2U (§ 178.24 of this subchapter) polyethylene container of not over 5-gallon capacity or two inside Specification 2U polyethylene containers of not over 2½-gallon capacity each. Authorized only for acid of 48 to 52 percent.

(20) Marine portable tanks meeting the requirements of 46 CFR Part 64 authorized for highway and cargo vessel only when shipped in support of off-shore oil well drilling activities. Tanks shall comply with mounting and tie-down requirements of § 178.245-4 of this subchapter when transported by highway. Authorized for hydrofluoric acid mixtures only.

(21) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(b) Hydrofluoric acid, anhydrous (hydrogen fluoride) must be shipped in specification containers as follows:

(1) Specification 3¹, 3A, 3AA, 3B, 3C, 3E, 4, 4A, 25¹, or 38¹ (§§ 178.36, 178.37, 178.38, 178.40, 178.42, 178.48, 178.49 of this subchapter); also Specification 4B, 4BA, 4BW or 4C (§§ 178.50, 178.51, 178.61, 178.52, of this subchapter) if not brazed. Cylinders. Filling density must not exceed 85 percent of the pounds water weight capacity of the cylinder. Cylinders used exclusively in this service may, in lieu of the periodic hydrostatic retest required by § 173.34(e), be given a complete external visual inspection at the time such periodic retest becomes due. Such in-

spection shall be made only by competent persons and shall be made on cylinders cleaned to bare metal and results recorded on a suitable data sheet, completed copies of which shall be kept as prescribed in § 173.34(e)(5). Points to be checked and recorded on these data sheets are: Date of inspection (month and year; DOT specification number; cylinder identification (registered symbol and serial number, date of manufacture, and if needed for adequate identification, ownership symbol); tare weight; physical condition (record specifically, if present; leakage, corrosion, gouges, dents or digs in shell or heads, broken or damaged footing or protective ring or fire damage); disposition of cylinders (returned to service, to cylinder manufacturer for repairs, or scrapped). A cylinder which passes the inspection prescribed shall have the data recorded in the manner presently prescribed for the recording of the retest date except that an "E" is to follow the date (month and year) indicating requalification by the external inspection method. Cylinders removed from this service for any reason must be rendered unfit for any other regulatory service (see § 173.28(1)).

(2) Specification 105A300W, 112A400W, 114A400W, or ARA-V¹ (§§ 179.100, 179.101 of this subchapter). Tank cars equipped with special valves and appurtenances approved for this particular service. Filling density must not exceed 90 percent of the pounds water weight capacity of the tank. For Specification 114A400W tanks, valves and fittings must be located on top of the tank. Bottom openings in tank prohibited.

(i) Each tank car must be marked "HYDROGEN FLUORIDE" in accordance with the requirements of § 172.330 of this subchapter.

(3) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks.

(4) Spec. 51 (§ 178.245 of this subchapter). Portable tanks.

(5) [Reserved]

¹Use of existing tank cars authorized, but new construction not authorized.

(6) Specification 106A500X or 110A500W (§§ 179.300, 179.301 of this subchapter) tanks. Tanks may not be equipped with safety devices of any type and valves must be protected by metal caps. Tanks may not be filled to a density in excess of 85 percent of the water weight capacity of the tank. (See § 177.834(m) of this subchapter for special requirements for highway shipments.)

(c) Containers must not be entirely filled. Unless otherwise provided in this part, sufficient outage (vacant space) must be allowed so that the liquid portion will not completely fill the container at 130° F. in order to prevent leakage or distortion of containers due to the expansion of the contents from increase in temperature during transit.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.264, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.265 Fluosilicic acid (hydrofluorosilicic acid) (hydrofluosilicic acid).

(a) Fluosilicic acid (hydrofluorosilicic acid) (hydrofluosilicic acid) must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside containers of natural rubber, ceresine, or other material of equal efficiency resistant to fluosilicic acid (hydrofluorosilicic acid) (hydrofluosilicic acid).

(2)—(3) [Reserved]

(4) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185-22 of this subchapter) with inside Specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

(5) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this sub-

chapter) are authorized under conditions specified in the IM Tank Table.

(b) Fluosilicic acid (hydrofluorosilicic acid) (hydrofluosilicic acid) of not exceeding 40 percent strength may also be shipped when packed in specification containers as follows:

(1)—(2) [Reserved]

(3) Specification 103B,¹ 103BW, 111A60W5, or 111A100W2 (§ 179.200, 179.201 of this subchapter). Tank cars, rubber-lined or elastomer lined tanks.

(4) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks must be lined with rubber or equally acid-resistant material of equivalent strength and durability. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(c) Fluosilicic acid (hydrofluorosilicic acid) (hydrofluosilicic acid) containing no free hydrofluoric acid or other ingredient that will attack glass, may also be shipped when packed in specification containers as follows:

(1) Specification 1A, 1D, or 1M (§§ 178.1, 178.4, 178.17 of this subchapter). Carboys in boxes or expanded polystyrene packagings. Use of a rubber stopper and gasket is authorized for Specification 1A and 1D carboys only. Not authorized for transportation by aircraft.

(2) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass containers not over 1-gallon capacity each, with rubber or ground-in glass stoppers.

(4) The vacant space in containers of these acids must be sufficient so that

¹ Use of existing tank cars authorized, but new construction not authorized.

when raised to a uniform temperature of 130° F. the vapor pressure shall not exceed 6 pounds per square inch.

(d) Fluosillic acid (hydrofluorosilicic acid) (hydrofluosilicic acid) of not exceeding 32 percent strength may also be shipped when packed in specification containers as follows:

(1) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes with Specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles or other plastic material resistant to the lading, not over 1-quart capacity each, suitably cushioned to prevent movement within the box. Gross weight of complete package must not exceed 65 pounds.

(2) Spec. 15P or 22C (§§ 178.182 or 178.198 of this subchapter). Glued plywood or wooden box, or plywood drum as prescribed by § 178.198-2(a) of this subchapter, with inside Spec. 2T (§ 178.21 of this subchapter) polyethylene container.

(3) Spec. 6D or 37M (nonreusable container) (§ 178.102 or 178.134 of this subchapter). Cylindrical steel overpacks with inside Spec. 2S or 2SL (§ 178.35 or 178.35a of this subchapter) polyethylene container. Spec. 37M overpack shall be constructed of at least 20-gauge steel and steel and shall not exceed 16 gallons capacity each.

(4) Specification 37P (§ 178.133 of this subchapter). Steel drums, not over 5-gallons capacity, with polyethylene liner (non-reusable container). Not authorized for transportation by air.

(5) Spec. 21P (§ 178.225 of this subchapter). Fiber drum overpack with inside Spec. 2S, 2SL or 2U (§§ 178.35, 178.35a, or 178.24 of this subchapter) polyethylene container.

(6) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964, as amended by Order 71, 31 FR 9071, July 1, 1966; Order 73, 32 FR 3456, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.265, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.266 Hydrogen peroxide solution in water.

(a) Hydrogen peroxide solution in water containing over 52 percent hydrogen peroxide by weight must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass bottles not over 1-quart capacity each; bottles must have vented closure and must be packed in metal container vented at bottom, packed in another metal container vented at top; cushioning material shall be used between glass bottle and inner container and between inner and outer metal containers; cushioning material shall be vermiculite or equivalent in an amount at least 10 times the volume of the solution shipped and shall be wet with at least 10 percent water by volume to which has been added a stabilizing agent.

(2) Spec. 42D (§ 178.109 of this subchapter). Aluminum drums with vented closure in top head; not over 30 gallons capacity; side openings not permitted. Top head must be plainly marked "KEEP THIS END UP" or "KEEP PLUG UP TO PREVENT SPILLAGE."

(3) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) under the conditions specified in the IM Tank Table are authorized for shipment of hydrogen peroxide solution in water containing 60 percent or less hydrogen peroxide by weight. Pressure relief devices shall be designed to prevent the entry of foreign matter, the leakage of liquid and the development of any dangerous excess pressure. In addition, the tank shall be designed so that internal surfaces may be effectively cleaned and passivated. The tank shall be clearly marked "FOR HYDROGEN PEROXIDE ONLY." Each tank must be equipped with pressure relief devices conforming to the requirements of the following table:

Concentration of hydrogen peroxide solution	Total venting capacity in standard cubic feet per hour (S.C.F.H.) per pound of hydrogen peroxide solution
52 percent or less	11
Over 52 percent but not greater than 60 percent	22
Over 60 percent but not greater than 70 percent	32

(b) Hydrogen peroxide solution in water containing 52 percent or less hydrogen peroxide by weight must be packaged as prescribed in paragraph (a) or (f) of this section or as follows (vented packagings are not permitted aboard aircraft):

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers of not more than 1-gallon capacity each. Inside containers must be well cushioned with an appropriate fire-resistant cushioning material. Cushioning of inside containers in outside wooden boxes by means of elastic packing, such as wooden strips or large corks fastened securely in position, is authorized if the completed package will pass the swing test prescribed for boxed carboys in Specification 1A (§ 178.1 of this subchapter).

(2) [Reserved]

(3) Spec. 42D (§ 178.109 of this subchapter). Aluminum drums with vented closure in top head; not over 55 gallons capacity. Top heads must be plainly marked "KEEP THIS END UP" or "KEEP PLUG UP TO PREVENT SPILLAGE."

(4) [Reserved]

(5) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes with Specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles having vented screw-cap closures not over 16-ounce capacity each. Each bottle must be completely contained in a securely closed polyethylene bag or tube constructed of material having minimum film thickness of 0.004 inch. Bottles must be separated from each other by use of fiberboard partitions

or other suitable cushioning material. Not more than 12 bottles may be packaged in one box.

(6) Spec. 6D or 37M (nonreusable container) (§ 178.102 or § 178.134 of this subchapter). Cylindrical steel overpacks with inside Spec. 2S or 2SL (§ 178.35 or § 178.35a of this subchapter) polyethylene container. The closure must be located in one head and must be vented to prevent accumulation of internal pressure and head plainly marked "KEEP THIS END UP" or "KEEP PLUG UP TO PREVENT SPILLAGE."

(7) Specification 21P (§ 178.225 of this subchapter). Fiber drum overpack with inside Specification 2SL (§ 178.35a of this subchapter) polyethylene container not over 55-gallon capacity, or specification 2U (§ 178.24 of this subchapter) polyethylene container not over 15-gallon capacity. The closure of the inside 2SL and 2U container must be vented to prevent accumulation of internal pressure and the head with the closure must be marked "KEEP THIS END UP" or "KEEP PLUG UP TO PREVENT SPILLAGE."

(8) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. Each drum must have a vented closure to prevent accumulation of internal pressure and the head with the closure must be marked "Keep This End Up."

(9) Specification 37P (§ 178.133 of this subchapter). Steel drums, not over 15-gallon capacity, with inside Specification 2U (§ 178.24 of this subchapter) polyethylene containers having a minimum thickness of 0.015 mil. The closure of the inside 2U container must be vented to prevent accumulation of internal pressure and the head with the closure must be marked "KEEP THIS END UP" or "KEEP PLUG UP TO PREVENT SPILLAGE."

(10) In IM portable tanks as prescribed in paragraph (a)(3) of this section.

(c) Hydrogen peroxide solution in water containing over 8 percent hydrogen peroxide by weight and not exceeding 37 percent must be packaged as prescribed in paragraph (a), (b), or (f) of this section or as follows (vented

packagings are not permitted aboard aircraft):

(1) Specification 1A (§ 178.1 of this subchapter). Glass carboys. The cushioning must be non-combustible mineral material, elastic wooden-strip packing, or large elastic cushions such as corks fastened securely in position. The use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited. The carboy stoppers must be vented so as to prevent accumulation of internal pressure; use of cork gasket impregnated with paraffin is authorized. Not authorized for transportation by air.

(2) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Specification 1D or 1M (§§ 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Pressure in the carboy may not exceed 10 pounds per square inch gauge at 130°F. (55°C.). If the package is vented, there may be no significant release of contents to the environment. For Specification 1D, the cushioning must be non-combustible mineral material, elastic wooden-strip packaging, or large elastic cushions such as corks fastened securely in position; the use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited. Not authorized for transportation by aircraft.

(4) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside containers of polyethylene, or other plastic material resistant to the lading, not over 1-pint capacity or 16 ounces by weight each. Inside containers must be securely cushioned with an appropriate fire-resistant cushioning material.

(5) Spec. 1E, 15P, or 22C (§§ 178.13, 178.182 or 178.198 of this subchapter).

Metal crate with inside polyethylene carboy; or glued plywood or wooden box, or plywood drum as prescribed by § 178.198-2(a) of this subchapter, with inside Spec. 2T (§ 178.21 of this subchapter) polyethylene container.

(6) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes, with inside aluminum bottles constructed of at least 99 percent pure aluminum of not over 5 pounds or 5 pints capacity each. Each bottle shall be individually partitioned and surrounded by incombustible mineral packing material in the outside shipping container. Bottle closure shall be by means of a threaded aluminum cap, fitted with polyethylene gasket or other equally efficient closing device. A venting device which will not leak liquid under conditions normally incident to transportation is permitted.

(7) [Reserved]

(8) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside polyethylene bottles not over 1 gallon capacity each with vented closures; such bottles over 32 ounces capacity each must be completely contained in a securely closed polyethylene bag or tube constructed of material having minimum film thickness of 0.003 inch. Alkaline solutions containing sodium hydroxide or other alkaline materials packed in glass or polyethylene bottles not over 1 gallon capacity each and with hydrogen peroxide solution contained in polyethylene bottles not over 1 gallon capacity each, when shipped as a wood bleach preparation, may be packed together in inside chipboard or corrugated fiberboard boxes or separated by corrugated fiberboard partitions; not more than six inside chipboard or corrugated fiberboard boxes having inside bottles not over 32 ounces each, or more than 4 one gallon bottles separated by corrugated fiberboard partitions may be packed in one outside box; completed package with mixed contents must be capable of withstanding a drop from a height of four feet onto solid concrete without failure of any inside container.

(9) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass or polyethylene bottles, not over 1-gallon capacity each. Each bottle closure must be vented and each bottle

completely contained in a securely closed polyethylene bag or tube constructed of material having minimum film thickness of 0.003 inch. Shipper must have established that completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

(10) Spec. 16D (§ 178.187 of this subchapter). Wirebound wooden overwrap, with inside Spec. 2T or 2TL (§§ 178.21 or 178.27 of this subchapter) polyethylene container.

(d) Hydrogen peroxide solution in water containing over 8 percent hydrogen peroxide by weight and not exceeding 10 percent must be packaged as prescribed in paragraph (a), (b), (c) or (f) of this section (vented packagings are not permitted aboard aircraft).

(e) Except for transportation by vessel, hydrogen peroxide solution in water not exceeding 52 percent hydrogen peroxide by weight, when shipped in tank cars, cargo tanks, or portable tanks in carload or truckload quantities only, is not subject to any other requirement of Parts 170-189 and 397 of this title.

(f) Hydrogen peroxide solution in water exceeding 52 percent hydrogen peroxide by weight may also be packed in specification containers as follows:

(1) Specification 103A-ALW, 103CW, 111A60ALW2 or 111A60W7 (§ 179.200, 179.201 of this subchapter). Tank cars. The 103CW and 111A60W7 tank cars must be fabricated of Type 304L, 316, or 316L stainless steel. (See §§ 173.31(a)(4) and 179.3(a) for additional requirements).

(i) Each tank car must be marked "HYDROGEN PEROXIDE" in accordance with the requirements of § 172.330 of this subchapter.

(2) Specification MC 310 or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Tanks must be fabricated of aluminum conforming to Aluminum Association Nos. 1080, 1260, 5254, or 5652. Specification MC 312 may be fabricated of Type 304L, 316 or 316L stainless steel. They must be built to a design working pressure of not less than 40 psig and shall be designed so that internal surfaces may be effectively cleaned and passivated. All openings in the tank shall be located

on top of tank. All valves and safety devices shall be provided with over-turn protection and dust covers. The tank metal identification plate required shall be marked "DOT MC 310-H₂O₂" or "DOT MC 312-AL-H₂O₂" or "DOT MC 312-SS-H₂O₂", as appropriate, and in addition, the cargo tank shall be clearly marked in letters not less than one inch high "FOR HYDROGEN PEROXIDE ONLY". Designs for venting and pressure relief devices must be examined by the Bureau of Explosives and approved by the Director, OHMT.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725 Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.266, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.267 Mixed acid (nitric and sulfuric acid) (nitrating acid).

(a) Mixed acid (nitric and sulfuric acid) (nitrating acid), when offered for transportation by carriers by rail freight, highway, or water must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass bottles not over 7 pounds capacity each, individually inclosed in tightly closed metal cans and cushioned therein with incombustible mineral material.

(2) Spec. 5C (§ 178.83 of this subchapter). Metal barrels or drums of Type 304 ELC or 347 stainless steel only. (See paragraph (b) of this section.)

(3) Specification 103A,¹ 103AW, 111A60W2, or 111A100F2 (§§ 179.200, 179.201 of this subchapter). Tank cars. (See paragraph (b) of this section.)

(4) Specification 1A (§ 178.1 of this subchapter). Carboys in boxes. Authorized only for mixed nitric and sulfuric acid containing not over 17 percent nitric acid and containing at least

¹ The use of existing tanks authorized but new construction not authorized.

33 percent water. Straight-sided carboys must be used; cushioning must be incombustible mineral material, elastic wooden-strip packing, or large elastic cushions, such as cork, fastened securely in position. The use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited.

(5) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(6) Specification 1D or 1M (§§ 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Authorized only for mixed nitric and sulfuric acid, containing not over 17 percent nitric acid and containing at least 33 percent water. Pressure in the carboy may not exceed 10 pounds per square inch gauge at 130°F. (55°C.). If the package is vented, there may be no significant release of contents to the environment. For Specification 1D, cushioning must be incombustible mineral material, elastic wooden strip packing, or large elastic cushions such as cork fastened securely in position; the use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited.

(7) Specifications MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks. (See paragraph (b) of this section.) Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(8) Spec. 60 (§ 178.255 of this subchapter). Portable tanks. (See paragraph (b) of this section.)

(9) Spec. 5A (§ 178.81 of this subchapter). Carbon steel barrels or drums. Authorized only for mixed acids containing less than 80 percent nitric acid. (See paragraph (b) of this section.)

(10) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this sub-

chapter) are authorized under conditions specified in the IM Tank Table.

(b) Mixtures of sulfuric acid and nitric acid (nitrating acid), shipped in tank cars, cargo tanks, tank trucks, or metal barrels or drums, shall contain not less than 10 percent sulfuric acid. These mixtures may contain:

(1) Up to 10 percent water with not less than 10 percent sulfuric acid.

(2) Up to 15 percent water with not less than 15 percent sulfuric acid.

(3) Up to 20 percent water with not less than 20 percent sulfuric acid.

(4) Up to 38 percent water with not less than 62 percent sulfuric acid.

(c) Mixed acid (nitric and sulfuric acid) (nitrating acid), when offered for transportation by air must be packaged as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass bottles with glass stoppers held in place by plaster of Paris covered by strong cloth and securely tied. Glass bottles having necks with molded screw threads must be closed by threaded type acid-resistant plastic caps equipped with an elastic composition cushion and with glass, porcelain or similar liner impervious to the acid. Such caps, when secured in place by at least one complete continuous thread, must be capable of preventing any leakage of the acid.

(2) Or glass bottles having necks with molded screw threads must be closed by threaded-type acid-resistant caps. Caps must be lined with a resilient liner which must be impervious to the acid. Such caps, when secured in place by at least one complete continuous thread, must be capable of preventing any leakage of the acid.

(3) Each bottle must be placed in a tightly closed metal container and well cushioned therein on all sides with an appropriate fire-resistant cushioning material. The metal container must be packed in the outside container, and well cushioned by incombustible mineral packing material.

(4) Not more than 1 quart of mixed acid may be shipped in one outside packaging.

[39 FR 18725, Dec. 29, 1964, as amended by Order 73, 32 FR 3456, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.267, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.268 Nitric acid.

(a) Nitric acid exceeding 40 percent concentration in any quantity must not be packed with any other article.

(1) Each tank car must be marked "NITRIC ACID" in accordance with the requirements of § 172.330 of this subchapter.

(b) Nitric acid in any concentration which does not contain significant quantities of sulfuric acid or hydrochloric acid as impurities, when offered for transportation by carriers by rail freight, highway, or water must be packed in specification containers as follows:

(1) Specification 103CW or 111A60W7 (§§ 179.200, 179.201 of this subchapter). Tank cars.

(2) The use of spec. 103C-AL special aluminum alloy tank cars is authorized for the transportation of 95 percent or greater nitric acid as provided in special orders of November 14, 1939, June 7, 1940, and August 19, 1941.

(3) Specifications MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(4) Specification 5C (§ 178.83 of this subchapter). Metal barrels or drums. Authorized for concentrations of nitric acid as limited by § 178.83-3(c) of this subchapter. Containers weighing less than 85 percent of their original marked weight are not authorized.

(5) [Reserved]

(6) Specification 33A (§ 178.150 of this subchapter). Polystyrene case (nonreusable container) with inside glass bottles not over 5-pint capacity each. Not more than four 5-pint bottles may be packed in one outside packaging.

(c) Nitric acid of 80 percent or greater concentration which does not contain significant quantities of sulfuric acid or hydrochloric acid as impurities, when offered for transportation by carriers by rail freight, highway, or

water, in addition to and within limitations of paragraphs (b), (d), and (e) of this section, may be packed in specification containers as follows:

(1) Spec. 42B (§§ 178.107 of this subchapter). Aluminum drums.

(2) Specification 103A-ALW or 111A60ALW2 (§§ 179.200, 179.201 of this subchapter). Tank cars. Specification 111A60ALW2 tank cars have a safety relief valve start-to-discharge pressure setting of 45 pounds per square inch.

(d) Nitric acid of 90 percent or greater concentration, when offered for transportation by carriers by rail freight, highway, or water, in addition to and within limitations of paragraphs (b) and (c) of this section, may be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass bottles not over 5 pints capacity each, individually enclosed in tightly closed metal cans and cushioned therein with appropriate fire-resistant cushioning material. (See paragraphs (g) and (h) of this section).

(2) Specification 105A100-AL-W (§§ 179.100 and 179.201 of this subchapter). Tank cars. Tanks must be fabricated of aluminum alloy which is compatible with the lading, and must be equipped with safety relief valves made of material which is not adversely affected by the lading.

(e) Nitric acid of concentration of less than 90 percent, when offered for transportation by carriers by rail freight, highway, or water, in addition to and within limitations of paragraphs (b), (c), and (f) of this section, may be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass bottles not over 5 pints capacity each. (See paragraphs (g) and (h) of this section).

(f) Nitric acid of concentration of 72 percent or less, when offered for transportation by carriers by rail freight, highway, or water, in addition to and within limitations of paragraphs (b)

and (e) of this section, may be packed in specification containers as follows:

(1) Spec. 1A or 1K (§§ 178.1, 178.14 of this subchapter). Straight-sided carboys in boxes.

(2) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Specification 1D or 1M (§§ 178.4, 178.17 of this subchapter). Glass carboys in boxes, or expanded polystyrene packagings. Pressure in the carboy may not exceed 10 pounds per square inch gauge at 130°F. (55°C.). If the package is vented, there may be no significant release of contents to the environment.

(4) Cushioning for carboys must be incombustible mineral material, elastic wooden strips, natural cork blocks or rubber blocks. The use of hay, excelsior, loose ground cork, or similar materials, whether treated or untreated, is prohibited.

(5) Spec. 60 (§ 178.255 of this subchapter). Portable tanks, glass-lined.

(6) [Reserved]

(7) Spec. 12R (§ 178.212 of this subchapter). Paper-faced expanded polystyrene board boxes with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint bottles shall be packed in one outside shipping container.

(g) Closures for bottles. Glass stoppers ground to fit and held in place by plaster of Paris covered by a strong cloth securely tied; or:

(1) Threaded-type acid-resistant caps with gasket or lining impervious to the acid and sufficiently resilient, or cushioned, to give an acidproof closure; at least 1 complete continuous thread is required to be engaged when bottle is closed for shipment.

(h) Cushioning inside containers. Inside containers must be well cushioned. Except as provided in paragraph (h)(1) of this section, all material for cushioning must be incombustible

mineral material such as whiting, mineral wool, infusorial earth (Kieselguhr), sifted ashes, etc. The use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited. Where the cushioning material is very fine or powdery, separate partitions for the individual inside containers shall be provided to prevent bottles from shifting and coming in contact with each other, and the box must be tight to prevent sifting of cushioning material.

(1) Cushioning of inside containers in outside specification wooden boxes by means of elastic packings, such as wooden strips, large corks, or pads formed of an expanded polystyrene resin that is resistant to the action of nitric acid, fastened securely in position, is authorized if the completed package will pass the swing test prescribed for boxed carboys.

(i) Nitric acid of any concentration, when offered for transportation by air, must be packaged as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass bottles with glass stoppers held in place by plaster of Paris covered by strong cloth and securely tied. Glass bottles having necks with molded screw threads must be closed by threaded-type acid-resistant plastic caps equipped with an elastic composition cushion and with glass, porcelain or similar liner impervious to the acid. Such caps, when secured in place by at least one complete continuous thread, must be capable of preventing any leakage of the acid.

(2) Or glass bottles having necks with molded screw threads must be closed by thread-type acid-resistant caps. Caps must be lined with a resilient liner which must be impervious to the acid. Such caps, when secured in place by at least one complete continuous thread, must be capable of preventing any leakage of the acid.

(3) Each bottle must be placed in a tightly closed metal container, and well cushioned therein on all sides with an appropriate fire-resistant cushioning material. The metal container must be packed in outside con-

tainers, and well cushioned by incombustible mineral packing material.

(4) Not more than 5 pints of nitric acid shall be shipped in one outside package.

(j) Nitric acid of 50 percent or less concentration, when offered for transportation by air, may in addition to the provisions of paragraph (i) of this section be packaged as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A, 19B or 12B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191, 178.205 of this subchapter). Wooden or fiberboard boxes with not over 12 inside glass ampoules having a capacity of not over 4 fluid ounces each. Each ampoule must be well cushioned with incombustible mineral packing material, such as vermiculite or other equally efficient material, and be packed in a cylindrical cardboard tube having wall thickness of at least $\frac{1}{8}$ inch, with the inside coated with wax, and be equipped with metal bottom and metal screw-cap top. Inside packages must be separated by efficient means.

(k) Specification IM 101 portable tanks §§ 178.270 and 178.271 of this subchapter, under conditions specified in the IM Tank Table. Authorized for nitric acid of any concentration.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5806, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.268, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.269 Perchloric acid.

(a) Perchloric acid in excess of 72 percent must not be shipped. When not exceeding 72 percent strength must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass bottles not over 5 pints capacity each, cushioned with incombustible mineral material in sufficient quantity to absorb any leakage.

(2) Specification 1A, 1D, 1K, or 1M (§§ 178.1, 178.4, 178.14, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Not

authorized for transportation by aircraft.

(3) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possession of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(4) Spec. 33A (§ 178.150 of this subchapter). Polystyrene cases (nonreusable container) with inside glass bottles not over 5 pints capacity each. Not more than four 5-pint bottles may be packed in one outside container.

(5) Spec. 12R (§ 178.212 of this subchapter). Paper-faced expanded polystyrene board boxes with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint bottles shall be packed in one outside shipping container.

(6) Specification 6D (§ 178.102 of this subchapter). Cylindrical steel overpack with inside specification 2S (§ 178.35 of this subchapter) polyethylene container not exceeding 30-gallon capacity. Maximum net weight may not exceed 380 pounds. Not authorized for transportation by air.

(7) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter), under conditions specified in the IM Tank Table. Authorized only for perchloric acid not exceeding 50 percent by weight.

(8) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. Authorized for perchloric acid not exceeding 50% strength only. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(b) Cushioning for carboys must be incombustible mineral material, elastic wooden strips, natural cork blocks or rubber blocks. The use of hay, excelsior, loose ground cork, or similar materials, whether treated or untreated, is prohibited.

(c) Perchloric acid in any quantity must not be packed with any other article.

(d) Closures for bottles. Required as follows:

(1) Glass stoppers ground to fit and held in place by plaster of Paris covered by a strong cloth securely tied.

(2) Threaded-type acid-resistant caps with a gasket or lining impervious to the acid and sufficiently resilient, or cushioned, to give an acid-proof closure: at least one complete continuous thread is required to be engaged when bottle is closed for shipment.

(e) Inside containers must be well cushioned with an appropriate fire-resistant cushioning material. The use of hay, excelsior, ground cork, or similar material either treated or untreated, is prohibited. Where the cushioning material is very fine or powdery, separate partitions for the individual inside containers should be provided to prevent the bottles from shifting and coming in contact with each other, and the box must be tight to prevent sifting of cushioning material.

(1) Cushioning of inside containers in outside wooden boxes by means of elastic packings, such as wooden strips, large corks, or pads formed of an expanded polystyrene resin that is resistant to the action of perchloric acid, fastened securely in position, is authorized if the completed package will pass the swing test prescribed for boxed carboys.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964, as amended by Order 66, 30 FR 5746, Apr. 23, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.269, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.270 Phosphorus tribromide.

(a) Phosphorus tribromide must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-gallon capacity each, except that inside containers up to 3 gallons each are authorized when only one container is packed in an outside box.

(2) Specification 5K or 5M (§§ 178.88, 178.90 of this subchapter). Nickel or monel drums not over 10 gallons capacity each.

(3) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[Amdt. 173-14, 45 FR 59892, Sept. 11, 1980, as amended by Amdt. 173-144, 46 FR 9894, Jan. 29, 1981; 46 FR 24184, Apr. 30, 1981; Amdt. 173-149, 46 FR 49901, Oct. 8, 1981]

§ 173.271 Methyl phosphonic dichloride, phosphorus oxybromide, phosphorus oxychloride, phosphorus trichloride, and thiophosphoryl chloride.

(a) Methyl phosphonic dichloride, phosphorus oxybromide, phosphorus oxychloride, phosphorus trichloride, and thiophosphoryl chloride must be placed in specification containers as follows:

(1) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. Authorized for phosphorus oxychloride only. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(2) Spec. 5K (§ 178.88 of this subchapter). Nickel drums.

(3) Specification 6D (§ 178.102 of this subchapter). Cylindrical steel overpack with inside Specification 2S or 2SL (§§ 178.35, 178.35a of this subchapter) polyethylene packaging. Polyethylene used must be Type III as set forth in Appendix B—Specifications for Plastics to Part 178 of this Title. Authorized for phosphorus oxychloride and thiophosphoryl chloride only.

(4) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-gallon capacity each, except that inside containers not over 3 gallons each are authorized when only one container is packed in an outside box.

(5) [Reserved]

(6) Spec. 60 (§ 178.255 of this subchapter). Portable tanks when tanks are lead-lined.

(7) Specification 103ANW (§§ 179.200, 179.201 of this chapter).

Tank cars. Tanks must be fabricated of solid nickel at least 95 percent pure and containing not more than 1 percent iron. Metal test coupons for welding procedure qualification must contain not more than 1 percent iron. All cast metal parts of the tank in contact with the lading must have a minimum nickel content of approximately 96.7 percent.

(8) Specification MC 310,¹ MC 311,¹ or MC 312 (§§ 178.340, 178.343 of this subchapter). Cargo tanks, subject to the following conditions:

(i) Lead-lined or nickel-lined tanks. If nickel-lined, the lining must consist of at least one thirty-second inch of uncontaminated nickel at all points including rivets, welds and other joints, and edges of tank plates.

(ii) Tanks fabricated from Type 316 stainless steel or clad with Type 316 stainless steel having a minimum thickness of 0.2 times the design thickness of the parent metal, are authorized only for phosphorus oxychloride, phosphorus trichloride and thiophosphoryl chloride.

(iii) Tanks made from mild steel or austenitic stainless steel, without lining or cladding. Authorized only for phosphorus trichloride.

(iv) Specification MC 311 or MC 312 cargo tanks. Tanks must be fabricated of solid nickel at least 95 percent pure and not more than 1 percent iron. Metal test coupons for welding procedure qualification must contain not more than 1 percent iron. All cast metal parts of the tank in contact with the lading must have a minimum nickel content of approximately 96.7 percent. Authorized only for phosphorus oxychloride and phosphorus trichloride.

(9) Specification 103A¹, 103AW, 111A60W2, or 111A100F2 (§§ 179.200, 179.201 of this subchapter). Tank cars. Specification 103A¹, tanks must be lead-lined steel or made of steel with nickel cladding of at least 10 percent of the shell thickness. Specification 103AW, 111A60W2, or 111A100F2 tanks must be lead-lined steel or made of steel with nickel cladding with a minimum thickness of $\frac{1}{16}$ inch. Nickel

cladding in tanks must be low carbon nickel in accordance with ASTM B162-80.

(10) Spec. 103EW (§§ 179.200 and 179.201 of this subchapter). Tank cars made from Type 316 stainless steel. Authorized for phosphorus trichloride and thiophosphoryl chloride only.

(11) Specification 103A,¹ 103AW, 103CW, 111A60W2, or 111A100F2 (§§ 179.200, 179.201 of this subchapter). Tank cars. Specification 103CW must be fabricated from Type 430 stainless steel. Authorized for phosphorus trichloride only.

(12) Spec. 5A or 5C (§ 178.81 or § 178.83 of this subchapter). Metal barrels or drums. Authorized for phosphorus trichloride and thiophosphoryl chloride.

(13)—(15) [Reserved]

(16) Spec. 17C (§ 178.115 of this subchapter). Metal drums (single-trip) with no opening exceeding 2.3 inches in diameter. When drums are not constructed of stainless steel they must be lined with a material impervious to the lading. Authorized for phosphorus trichloride only.

(17) Spec. 5M (§ 178.90 of this subchapter). Monel drums not over 10 gallons capacity each.

(18) Spec. 5B (§ 178.82 of this subchapter). Metal barrels or drums lined with a material which is compatible with the commodity. Authorized for thiophosphoryl chloride only.

(19) Spec. 1M (§ 178.17 of this subchapter). Glass carboys in expanded polystyrene packagings. Authorized only for phosphorus oxychloride. Not authorized for transportation by aircraft.

(20) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.271, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

¹The use of existing tanks authorized but new construction not authorized.

§ 173.272 Sulfuric acid.

(a) Sulfuric acid (oleum, oil of vitriol, etc.) must be packed in specification containers as follows:

(b) Limited quantities of sulfuric acid solutions in concentrations of 25 percent or less, in inside packagings of not over 8 fluid ounces capacity each, packed in strong outside packagings and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in event of breakage, are excepted from labeling (except when offered for transportation by air) and the specification packaging of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(c) *Sulfuric acid concentration of 51 percent or less.* Authorized packaging is described in paragraphs (1) through (16), (24) through (26) of paragraph (i) of this section.

(d) *Sulfuric acid concentration of greater than 51 percent to not over 65.25 percent.* Authorized packaging is described in paragraphs (1) through (16) and (27) through (29) of paragraph (i) of this section.

(e) *Sulfuric acid concentration of greater than 65.25 percent to not over 77.5 percent.* Authorized packaging is described in paragraphs (1) through (16), (20) through (22) and paragraph (29) of paragraph (i) of this section.

(f) *Sulfuric acid concentration of greater than 77.5 percent to not over 95 percent.* Authorized packaging is described in paragraphs (1) through (22) and paragraph (29) of paragraph (i) of this section.

(g) *Sulfuric acid concentration of greater than 95 percent to not over 100.5 percent.* Authorized packaging is described in paragraphs (1) (1) through (4), (6), (9), (14) through (22), and (29) of this section.

(h) *Sulfuric acid concentration of over 100.5 percent.* Authorized packaging is described in paragraphs (1) (1) through (4), (17), and (19) through (23) of this section.

(i) Authorized packagings are described as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169,

178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass containers not over 1-gallon capacity each, except that inside containers not over 3 gallons each are authorized when only one container is packed in an outside box.

(2) Specification 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint glass bottles may be packed in one outside container. Shipper must have established that the completed package meets the test requirements prescribed in § 178.210-10 of this subchapter.

(3) Specification 33A (§ 178.150 of this subchapter). Polystyrene cases (nonreusable container) with inside glass bottles not over 5 pints capacity each. Not more than four 5-pint bottles may be packed in one outside container.

(4) Specification 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(5) Specifications 1H, 15P, or 22C (§§ 178.13, 178.182, 178.198 of this subchapter). Metal crate with an inside polyethylene carboy; or glued plywood or wooden box, or plywood drum as prescribed by § 178.198-2(a) of this subchapter with an inside Specification 2T or 2TL (§§ 178.21, 178.27 of this subchapter) polyethylene container.

(6) Specification 6D or 37M (nonreusable container) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpacks with an inside Specification 2S, 2SL, or 2T (§§ 178.35, 178.35a, 178.21 of this subchapter) polyethylene container. Overpack of over 30-gallon capacity must be constructed of at least 16-gauge steel throughout when used for sulfuric acid of 93 percent or greater concentration.

(7) Specification 16D (§ 178.187 of this subchapter). Wirebound wooden

overwrap, with an inside Specification 2T, 2TL, 2S, or 2SL (§§ 178.21, 178.27, 178.35, 178.35a of this subchapter), polyethylene container.

(8) Specification 21P (§ 178.225 of this subchapter). Fiber drum overpack with an inside Specification 2T or 2U (§§ 178.21, 178.24 of this subchapter) polyethylene container not over 15-gallon capacity.

(9) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum.

(10) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185-22 of this subchapter) with an inside Specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

(11) Spec. 12P (§ 178.211 of this subchapter). Fiber board box with one inside Specification 2U (§ 178.24 of this subchapter) polyethylene container of not over 5-gallon capacity, or two inside Specification 2U polyethylene containers of not over 2½ gallon capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

(12) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes with inside polyethylene containers or other containers of plastic compatible with the chemical, not over 1-gallon capacity each. Inside containers must be cushioned to prevent movement in the outside box. Not more than four 1-gallon inside containers may be packed in one outside container. Authorized gross weight not over 75 pounds.

(13) Specification 12R (§ 178.212 of this subchapter). Paperfaced expanded polystyrene board boxes with inside Specification 2E (§ 178.24a of this subchapter) polyethylene bottles not over 1-gallon capacity each. Not more than four 1-gallon capacity each. Not more than four 1-gallon polyethylene bottles may be packed in one outside packaging.

(14) Specification 12R (§ 178.212 of this subchapter). Paperfaced expanded polystyrene board boxes with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint bottles may be packed in one outside shipping container.

(15) Specification 1A or 1K (§§ 178.1, 178.14 of this subchapter). Carboys in boxes. Not authorized for transportation by aircraft.

(16) Specification 1D or 1M (§§ 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Not authorized for transportation by aircraft.

(17) Specification 5A (§ 178.81 of this subchapter). Metal barrels or drums. Authorized for sulfuric acid of 77.5 percent or greater concentrations, with or without an inhibitor, provided such acid has a corrosive effect on steel no greater than 93.2 percent sulfuric acid, measured at 100° F.

NOTE 1: Tapered steel plugs, without gaskets, for standard Specification 5A flanges are authorized. Threaded length must not be less than 1.5 inches. Major diameter of plug must not be over 2½ inches, and minor diameter not less than 2⅜ inches.

(18) Specification 17F (§ 178.117 of this subchapter). Metal barrels or drums (single-trip only). Authorized for sulfuric acid of 77.5 percent to 98 percent concentrations with or without an inhibitor, provided the acid has a corrosive effect on steel no greater than 93.2 percent sulfuric acid, measured at 100° F.

(19) Specification 5C (§ 178.83 of this subchapter). Metal barrels or drums of Type 304, 316, or 347 stainless steel or other types of stainless steel of at least equivalent corrosion resistance and physical properties. Authorized for sulfuric acid of 93 percent or greater concentrations.

(20) Specification 60 (§ 178.255 of this subchapter). Portable tank. Authorized for sulfuric acid of 65.25 percent of greater concentrations provided the corrosive effect in steel is not greater than that of 65.25 percent sulfuric acid, measured at 100° F.

(21) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Authorized for sulfuric acid of concentrations 65.25 per-

cent or greater concentrations, provided the corrosive effect in steel is not greater than that of 65.25 percent sulfuric acid, measured at 100° F. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(22) Specification 103A,¹ 103AW, 103CW, 105A300W, 111A60W2, 111A100W6, or 111A100F2 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars. Authorized for sulfuric acid of concentrations 65.25 percent or greater, provided the corrosive effect in steel is not greater than that of 65.25 percent sulfuric acid, measured at 100° F. Tank cars used for sulfuric acid, mixed acid (nitric and sulfuric acids) (nitrating acid), and other fuming acids, may be equipped with safety vents incorporating frangible discs having a 1/8-inch breather hole in their center. The 1/8-inch breather hole is not permitted in frangible discs of safety vents on oleum tank cars. Specification 103CW and 111A100W6 tank cars must have tanks constructed of type 304-L stainless steel. Bottom outlets are not authorized.

(23) Specification 115A60W6 (§ 179.220 of this subchapter). Tank cars. Tanks must be constructed of Type 304 or 316 stainless steel. Bottom outlets must be rendered inoperative and blanked off.

(24) Specifications 60 (§ 178.255 of this subchapter). Rubber-lined portable tanks.

(25) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks must be lined with rubber or equally acid-resistant material of equivalent strength and durability. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(26) Specification 103B,¹ 103BW, or 111A60W5 (§§ 179.200, 179.201 of this subchapter). Lined tank cars.

(27) Specification 103AW, 111A100F2, or 111A60W2 (§§ 179.200, 179.201 of this subchapter). Tank cars having tanks equipped with a phenolic lining impervious to the lading.

(28) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks must be lined with rubber or equally acid-resistant material of equivalent strength and durability. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter. Not authorized for transportation by vessel.

(29) Marine portable tanks meeting the requirements of 46 CFR Part 64 authorized for highway and cargo vessel only when shipped in support of off-shore oil well drilling activities. Tanks shall comply with mounting and tie-down requirements of § 178.245-4 of this subchapter when transported by highway. Authorized for sulfuric acid of concentrations up to 65.25 percent. Concentrations up to 100.5 percent are also authorized if the corrosive effect on steel is not greater than that of 65.25 percent sulfuric acid measured at 100° F.

(30) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter), under conditions specified in the IM Tank Table. Sulfuric acid of concentrations greater than 62.5 percent is authorized provided the corrosive effect on steel is not greater than that of 65.25 percent sulfuric acid, measured at 100° F.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.273, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.273 Sulfur trioxide.

(a) Sulfur trioxide, stabilized, must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass containers not over 1-gallon each.

(2) Spec. 5A or 5C (§ 178.81 or § 178.83 of this subchapter). Metal barrels or drums, not over 55 gallons capacity each.

(3) Spec. 17F (§ 178.117 of this subchapter). Metal drums (single-trip).

¹ The use of existing tanks authorized but new construction not authorized.

(4) Specification 103A,¹ 103AW, 105A100W, 111A60W2, or 111A100F2 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars. Authorized only for stabilized sulfur trioxide. Tank cars must have safety valves of approved design and not subject to rapid deterioration by the lading. Cars equipped with interior heater coils not permitted. Specification 103AW tank cars may be equipped with standpipe electrical heaters approved by the AAR Committee on Tank Cars.

(i) Each tank car must be marked "Sulfur Trioxide" in accordance with the requirements of § 172.330 of this subchapter.

(5) Specifications MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Authorized only for stabilized sulfur trioxide. Tanks must be equipped with spring-relief safety valves. Tanks equipped with interior heater coils not permitted. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(b) Sulfur trioxide, unstabilized, must be packed in specification containers as follows:

(1) Cylinders as prescribed for any compressed gas, except acetylene. Cylinders must be closed by metal plugs or valves. If valves are used, they must be protected by a valve protection cap, and each valve outlet must be capped or plugged. Cylinders must have a minimum service pressure of 400 psig and a maximum capacity of one gallon. Safety relief devices are not permitted. Cylinders must be overpacked in strong outside containers.

(2) Specification MC 311 or MC 312 (§ 178.343 of this subchapter). Tank motor vehicles. Tanks must be insulated and equipped with a safety relief valve. If the valve incorporates a rupture disc it may not exceed a maximum pressure of one and one-half times the design pressure of the tank. Tanks equipped with interior heater coils not permitted.

(3) Specification 105A300W (§ 179.100, 179.101 of this subchapter). Tank car. Tank car must be externally coiled and have a safety relief valve

set at not more than 225 psig. Cars equipped with interior heater coils not permitted.

(i) Each tank car must be marked "SULFUR TRIOXIDE" in accordance with the requirements of § 172.330 of this subchapter.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.273, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.274 Fluosulfonic acid.

(a) Fluosulfonic acid must be packed in containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside containers not over 1-gallon each, except that inside containers not over 3 gallons each are authorized when only one container is packed in an outside box, as prescribed in Note 1 and 2 to this section.

NOTE 1: Bottles manufactured of Pyrex glass or glass of equal acid resistance, authorized only for material containing an excess of sulfur trioxide, with Pyrex glass stoppers, or glass stoppers of equal acid resistance, ground to fit and held in place by plaster of Paris covered by strong cloth securely tied; each bottle must be placed in a metal container, well cushioned therein with an appropriate fire-resistant cushioning material.

NOTE 2: Or steel containers, 14 gauge steel throughout, welded heads and side seams, equipped with ¾ inch welded flange and plug. Threads for plug must be 8 or less per inch. Each drum must be tested for leakage with 15 pounds hydrostatic pressure.

(2) Spec. 5A or 17F (single-trip) (§ 178.81 or § 178.117 of this subchapter). Metal barrels or drums not over 55 gallons capacity each.

(3) Specification 103A,¹ 103AW, 111A60W2, or 111A100F2 (§§ 179.200, 179.201 of this subchapter). Tank cars.

(4) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks.

¹The use of existing tank cars authorized, but new construction not authorized.

¹The use of existing tanks authorized but new construction not authorized.

(5) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.274, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.275 Difluorophosphoric acid, anhydrous, monofluorophosphoric acid, anhydrous, hexafluorophosphoric acid, and mixtures thereof.

(a) Difluorophosphoric acid, anhydrous, monofluorophosphoric acid, anhydrous, hexafluorophosphoric acid, and mixtures thereof must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190 of this subchapter) wooden boxes, Spec. 12B (§ 178.205 of this subchapter) fiberboard boxes, or Spec. 21C (§ 178.224 of this subchapter) fiber drums with inside polyethylene or other nonfragile plastic bottles resistant to the lading, not over 2 gallons capacity each, closed by means of threaded acid-resistant caps; caps must have at least one complete continuous thread and be additionally sealed to the bottle to prevent turning of cap after bottle is closed.

(2) Spec. 42B or 42D (§§ 178.107, 178.109 of this subchapter). Aluminum drums not over 55 gallons capacity.

(3) Spec. 22C (§ 178.198 of this subchapter). Plywood drums as prescribed by § 178.198-2(a) of this subchapter, with inside Spec. 2T (§ 178.21 of this subchapter) polyethylene container.

(4) Spec. 60 (§ 178.255 of this subchapter). Portable tanks. Authorized for inhibited acids enumerated in this paragraph only.

(5) Specification 6D (§ 178.102 of this subchapter). Cylindrical steel overpack with inside Specification 2S or 2SL (§§ 178.35, 178.35a of this subchapter) polyethylene packaging. Net weight may not exceed 550 pounds.

(6) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter), under conditions specified in the IM Tank Table. Mixtures of these

materials are not authorized in IM portable tanks.

(b) Inside containers must be packed so they cannot change position in the outside container while in transit and inert absorbent cushioning material must be used where necessary.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.275, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.276 Anhydrous hydrazine and hydrazine solution.

(a) Anhydrous hydrazine and hydrazine solution must be packed in specification containers as follows:

(1) Specification 1D or 1M (§§ 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Not authorized for transportation by aircraft.

(2) Spec. 15A, 15B, 15C, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.190, 178.191, of this subchapter). Wooden boxes with inside glass bottles not exceeding 1-gallon capacity each, cushioned by means of vermiculite within tin cans which shall be tightly closed.

(3) Spec. 5, 5A, 5C, or 17E (single-trip) (§§ 178.80, 178.81, 178.83, or § 178.116 of this subchapter). Metal barrels or drums which shall be of type 304 or 347 stainless steel, with openings not exceeding 2.3 inches in diameter.

(4) Specification 103CW, 111A60W7, or 111A100W6 (§§ 179.200, 179.201 of this subchapter). Tank cars having tanks of Type 304L or 347 stainless steel with molybdenum content not exceeding one-half of 1 percent. The safety relief valve on Specification 103CW tank car tanks may have a start-to-discharge pressure of not more than 45 p.s.i. in place of 35 p.s.i. Specification 111A100W6 tank cars must not be equipped with bottom outlet. Bottom washout permitted. Vapor space in tanks must be filled with nitrogen gas at atmospheric pressure.

(5) Specification 103A-ALW or 111A60ALW2 (§§ 179.200, 179.201 of this subchapter). Tank cars. The safety relief valve on tanks may not

have a start-to-discharge pressure of more than 45 p.s.i. in place of 35 p.s.i. Vapor space in tanks must be filled with nitrogen gas at atmospheric pressure. Authorized for anhydrous hydrazine only.

(6) Specifications MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks having tanks of Type 304L or 347 stainless steel with molybdenum content not exceeding one-half of 1 percent. Vapor space in tank must be filled with nitrogen gas at not less than atmospheric pressure. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(7) Spec. 37M (nonreusable container) (§ 178.134 of this subchapter). Cylindrical steel overpack with inside Spec. 2SL (§ 178.35a of this subchapter) polyethylene container. Authorized for hydrazine solution only

(8) Spec. 42B or 42D (§§ 178.107, 178.109 of this subchapter). Aluminum drums. Authorized for anhydrous hydrazine only.

(9) Specification 12B (§ 178.205 of this subchapter). Fiberboard box with one inside Specification 2E (§ 178.24a of this subchapter) polyethylene bottle not over 4½-quart capacity. Polyethylene bottle must be of Type III high density polyethylene having a minimum wall thickness of 30 mils and bottle must be securely closed with a screw cap. Authorized for hydrazine solution only.

(10) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. Authorized for hydrazine solution only.

(11) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter), under conditions specified in the IM Tank Table. Authorized only for hydrazine solution containing not more than 64 percent hydrazine by weight.

(12) Specification 57 (§ 178.253 of this subchapter). Stainless steel portable tank. Authorized for hydrazine, aqueous solution only. Authorized for transportation by water when having a minimum design pressure of 9 psig and equipped in accordance with § 178.253-4, except that frangible devices are not authorized. Also, for water transportation, no pressure

relief device may open at less than 5 psig.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.276, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.277 Hypochlorite solutions.

(a) Hypochlorite solutions containing more than 7 percent available chlorine by weight must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 19A or 19B (§§ 178.166, 178.169, 178.170, 178.190, 178.191 of this subchapter) wooden boxes or Spec. 12A or 12B (§§ 178.210, 178.205 of this subchapter) fiberboard boxes with inside glass, earthenware or polyethylene packagings of not more than 1 gallon capacity each. Gross weight must not exceed 65 pounds nor contain more than 4 glass or earthenware inside packagings if their capacity is greater than 5 pints each, or more than six such polyethylene packagings.

(2) Specification 1A, 1D, or 1M (§§ 178.1, 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Not authorized for transportation by aircraft.

(3) Spec. 1H, 15P, or 22C (§§ 178.13, 178.182, or § 178.198 of this subchapter). Metal crate with inside polyethylene carboy; or glued plywood or wooden box, or plywood drum as prescribed by § 178.198-2(a) of this subchapter, with inside Spec. 2T (§ 178.21 of this subchapter) polyethylene container. Spec. 15P glued plywood or wooden box may contain Spec. 2S (§ 178.35 of this subchapter) polyethylene drum. Authorized for not over 16 percent sodium hypochlorite solution only.

(4) Specification 6D or 37M (nonreusable container) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpacks with inside Specification 2S or 2SL (§§ 178.35, 178.35a of this subchapter) polyethylene liners. Authorized for not over 16 percent sodium hypochlorite solution only.

(5) Spec. 12P (§ 178.211 of this subchapter). Fiberboard boxes with inside Specification 2U (§ 178.24 of this subchapter) polyethylene container of not over 5-gallon capacity or two inside Specification 2U polyethylene containers of not over 2½-gallon capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

(6) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. Authorized for not over 16% sodium hypochlorite solution only. Vented closures are authorized if head with closure is marked "Keep This End Up."

(7) Specification 21P (§ 178.225 of this subchapter). Fiber drum overpack with inside Specifications 2S, 2SL, 2T, or 2U (§§ 178.35, 178.35a, 178.21, 178.24 of this subchapter) polyethylene container. Authorized for not over 16 percent sodium hypochlorite solutions only.

(8) Specification 37P (§ 178.133 of this subchapter). Steel drums with polyethylene liner (nonreuseable container). Containers must be vented to prevent accumulation of pressure and the head with closure must be marked "KEEP THIS END UP." Authorized for not over 16 percent solutions of sodium hypochlorite only.

(9) Specification MC 310, MC 311 or MC 312 (§ 178.243 of this subchapter). Cargo tanks. Tanks must be lined with rubber or other materials resistant to the lading. Continued use of nonspecification cargo tanks used to transport hypochlorite solutions prior to January 1, 1983, is authorized.

(10) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(b) Closures for inside containers and carboys must be vented and must be of a material resistant to the lading and capable of preventing leakage of liquid contents.

(c) Specification 57 (§ 178.253 of this subchapter). Steel portable tank. Authorized for not over 15 percent solutions of sodium hypochlorite only. Authorized for transportation by water

when having a minimum design pressure of 9 psig and equipped in accordance with § 178.253-4, except that frangible devices are not authorized. Also, for water transportation, no pressure relief device may open at less than 5 psig. Tanks constructed of a steel other than stainless steel must have a polyethylene liner impervious to the solution. Vented closures are authorized.

(d) Limited quantities of this material in glass inside packaging of not more than 4 fluid ounces capacity each, packed in strong outside packaging, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are excepted from labeling (except when offered for transportation by air) and the specification packaging requirements of this subchapter.

(1) [Reserved]

(e) Limited quantities of this material in polyethylene pouches not over 2½ ounces capacity each, heat sealed, and formed of polyethylene, or other suitable plastic, not less than 0.0035-inch in thickness to which must be laminated a 0.0015-inch, 25-pound basis weight white sulphate paper, when securely packed not more than 144 pouches in a strong fiberboard box, are excepted from labeling (except when offered for transportation by air) and the specification packaging requirements, of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter, except § 177.817.

(f) Special exceptions for shipment of certain hypochlorite solutions in the ORM-D class are provided in Subpart N of this part.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.277, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.278 Nitrohydrochloric acid.

(a) Nitrohydrochloric acid, which is a mixture of nitric acid not over 1.42 specific gravity and hydrochloric acid not over 1.19 specific gravity in the approximate proportions of one part nitric acid and three parts hydrochloric acid, must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass containers of not over 5 pints capacity each, individually enclosed in tightly closed metal cans and cushioned therein with sufficient incombustible mineral material.

(2) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(b) Nitrohydrochloric acid diluted, is a solution of nitrohydrochloric acid as described in paragraph (a) of this section, which has been diluted to not less than five times the volume of water and must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass containers of not over 5 pints capacity each, individually enclosed in tightly closed metal cans and cushioned therein with sufficient incombustible mineral material.

(2) Specification 1A, 1D, or 1M (§§ 178.1, 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Rated capacity may not exceed 5 gallons for Specification 1A and not over 6.5 gallons nominal capacity for Specifications 1D and 1M. Not authorized for transportation by aircraft.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.278, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.279 Anisoyl chloride.

(a) Anisoyl chloride must be packed in specification containers as follows:

(1) Spec. 5C (§ 178.83 of this subchapter). Metal barrels or drums.

(2) Spec. 5 (§ 178.80 of this subchapter). Metal barrels or drums of stainless steel only, with flanges for closures welded in place and having no opening exceeding 2.3 inches in diameter.

(3) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(b) Limited quantities of this material in inside packagings of not over 8 fluid ounces capacity each, packed in strong outside packaging, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are excepted from labeling (except that labeling is required for transportation by air) and specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.279, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.280 Trichlorosilanes.

(a) Allyl trichlorosilane, amyl trichlorosilane, butyl trichlorosilane, chlorophenyl trichlorosilane, cyclohexenyl trichlorosilane, cyclohexyl trichlorosilane, dichlorophenyl trichlorosilane, diphenyl dichlorosilane, dodecyl trichlorosilane, ethyl phenyl dichlorosilane, hexadecyl trichlorosilane, hexyl trichlorosilane, nonyl trichlorosilane, octadecyl trichlorosilane, octyl trichlorosilane, phenyl trichlorosilane, and propyl trichlorosilane must be packaged as follows:

(1) Specification 15A, 16B or 19B (§§ 178.168, 178.186, 178.191 of this subchapter). Wooden boxes with inside glass containers not over 1-gallon capacity each, securely closed and cushioned with incombustible absorbent material.

(2) Spec. 17H or 37A (§ 178.118 or § 178.131 of this subchapter). Metal drums (single-trip), with glass inside containers not over 1 gallon capacity each securely closed and cushioned with incombustible absorbent material.

(3) Spec. 5A (§ 178.81 of this subchapter). Metal drums not over 55 gallons capacity.

(4) [Reserved]

(5) Specification 5, 5B, 5C, and 17E single-trip (§§ 178.80, 178.82, 178.83, 178.116 of this subchapter). Metal drums. Not authorized for shipment by air.

(6) Specification steel or nickel cylinders as prescribed for any compressed gas except acetylene.

(7) Specification 103W, 103A,¹ 103AW, 105A100,¹ 105A100W, 111A60F1, 111A60W1, 111A60W2, 111A100F2, or 111A100W4 (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars.

(8) Specifications MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks of steel or stainless steel construction. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(9) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18725, Dec. 29, 1964, as amended by Order 73, 32 FR 3457, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.280, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.281 Benzyl bromide (bromotoluene, alpha).

(a) Benzyl bromide (bromotoluene, alpha) must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, or 19B (§§ 178.168, 178.169, 178.170, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass bottles not over 1-gallon capacity each, closed by means of screw caps which are resistant to action of the contents. Bot-

ties must be packed in metal cans having slip-on or friction closures and cushioned in outside boxes with incombustible material.

(2) Spec. 5K or 5M (§ 178.88 or 178.90 of this subchapter). Nickel or monel barrels or drums. Spec. 5M drums shall not be over 10 gallons capacity.

(3) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18725, Dec. 29, 1964, as amended by Order 66, 30 FR 5746, Apr. 23, 1965; Order 67, 30 FR 7422, June 5, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.281, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.282 Isopropyl percarbonate, stabilized.

(a) Isopropyl percarbonate, stabilized, must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 2 gallons capacity each which must be maintained at a temperature below 75°F. Shipments are authorized only by private or contract motor vehicle.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16079, Apr. 15, 1976; Amdt. 173-149, 46 FR 49902, Oct. 8, 1981]

§ 173.283 Fluoboric acid.

(a) Fluoboric acid exceeding 50 percent concentration must be packed as prescribed in § 173.264(a) for hydrofluoric acid.

(b) Fluoboric acid of 50 percent concentration or less must be packed as follows:

(1) In specification packaging as prescribed in paragraph (a) of this section.

(2) In specification packaging as prescribed in § 173.245(a) (12), (16), (18), (19), (21), (24), and (26).

[Amdt. 173-86, 39 FR 37062, Oct. 17, 1974, as amended by Amdt. 173-94, 41 FR 16079,

¹ The use of existing tank cars authorized, but new construction not authorized.

§ 173.284

Apr. 15, 1976; Amdt. 173-16, 48 FR 50480, Nov. 1, 1983

§ 173.284 Tungsten hexafluoride.

(a) Tungsten hexafluoride must be packed in specification containers as follows:

(1) Specification 3A, 3AA, 3BN, or 3E (§§ 178.36, 178.37, 178.39, 178.42 of this subchapter). Cylinders. Cylinders shall be equipped with a valve protection cap or be packed in a strong outside container adequate to protect valves. Outlets of any valves must be capped or plugged. As an alternate, the cylinder opening may be closed by the use of a metal plug. Specification 3E cylinders must be shipped in an overpack.

[Amdt. 173-126, 43 FR 57893, Dec. 11, 1978]

§ 173.286 Chemical kits.

(a) Chemical kits, except as otherwise provided in Parts 170-189 of this subchapter, must be packed, marked, and labeled as prescribed by this part for the specific corrosive materials contained therein.

(b) Chemical kits containing limited quantities of corrosive liquids in inside packagings of not over 6 fluid ounces capacity each are excepted from labeling (except when offered for transportation by air) and the specification packaging requirements of this subchapter if all of the following requirements are complied with. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter, to Part 174 of this subchapter except § 174.24 and to Part 177 of this subchapter except § 177.817.

(1) The kit may not contain any corrosive liquid for which no exception from packaging requirements of this Part 173 is permitted by the commodity list in § 172.101 of this subchapter.

(2) The kit must be a strong wooden or metal container, or must be packed in a strong wooden or metal container.

(3) The corrosive liquids must be cushioned with sufficient absorbent cushioning material to completely absorb the contents of the individual containers, and must be protected from injury by other materials in the kit.

(4) The contents of the kit must be of a nature and packed so there will be

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no possibility of the mixture of contents causing dangerous evolution of heat or gas.

(c) Chemical kits containing corrosive liquids and other chemicals not classed as hazardous materials used for photographic processing, except as otherwise provided for in Parts 170-189 of this subchapter, must be packed in specification containers as follows:

(1) Spec. 12A (§ 178.210 of this subchapter). Fiberboard boxes with inside glass bottles not over 32 ounces capacity each, securely cushioned and separated from other inside containers. The contents of the kit must be of such nature and so packed that there will be no possibility of the mixture of contents causing dangerous evolution of heat or gas. Shipper must have established that the completed package meets test requirements prescribed by § 178.210-10 of this subchapter.

[29 FR 18725, Dec. 29, 1964, as amended by Order 66, 30 FR 5746, Apr. 23, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.286, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.287 Chromic acid solution.

(a) For the purposes of the regulations in this part, a chromic acid solution is a solution of chromic acid (chromium trioxide) in water, with or without other acids, containing 35 percent or more of chromic acid by weight. (For solutions containing less than 35 percent chromic acid, see paragraph (c) of this section.) Packagings authorized must be of a design and be constructed of materials that will not react dangerously with or be decomposed by the chemical solution packaged therein.

(b) Chromic acid solutions must be packaged in specification containers as follows:

(1) Specification 1A (§ 178.1 of this subchapter). Glass carboy in a box. Not authorized for transportation by air.

(2) Specifications 5, 5A, 5B (§§ 178.80, 178.81, 178.82 of this subchapter). Metal barrel or drum with openings not exceeding 2.3 inches in

diameter. Authorized for solutions containing chromic acid only.

(3) Specification 17E (§ 178.116 of this subchapter) steel drum. Authorized for solutions containing chromic acid only.

(4) Specification 12A or 12B (§§ 178.210 or 187.205 of this subchapter). Fiberboard box with one inside glass container not over 4-fluid ounce capacity, packed in a wax-lined cylindrical fiber carton with metal ends. The bottle closure must consist of a tightly secured, fitted, ground glass stopper. Space between the bottle and the inner surface of the fiber cylinder must be filled with an appropriate fire-resistant cushioning material in sufficient quantity to completely absorb the contents of the bottle in the event of breakage. Not authorized for solutions containing nitric acid.

(5) Specification 12R (§ 178.212 of this subchapter). Paper-faced expanded polystyrene board box with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint bottles may be packaged in one box. Each bottle must be well cushioned. Partitioning and cushioning must be provided to prevent bottles from shifting, or coming in contact with each other, the box wall, or the bottom. Each bottle closure must consist of a tightly secured, fitted, ground glass stopper, or a threaded-type, acid-resistant cap with a gasket or lining impervious to the acid, sufficiently resilient or cushioned to give an acidproof, leakproof closure.

(6) Specification 33A (§ 178.150 of this subchapter). Polystyrene case (nonreusable container) with inside glass bottles not over 5 pints capacity each. Not more than four 5-pint bottles may be packaged in one outside container. Each bottle closure must consist of a tightly secured, fitted, ground glass stopper, or a threaded-type, acid-resistant cap with a gasket or lining impervious to the acid, sufficiently resilient or cushioned to give an acidproof, leakproof closure.

(7) Specification 29 (§ 178.226 of this subchapter). Mailing tube with glass bottles not over 1 ounce capacity each. Each bottle must be well cushioned. Partitioning and cushioning must be provided to prevent bottles from shift-

ing or coming in contact with each other or the tube wall, bottom, or top.

(8) Specification MC 312 (§§ 178.340, 178.343 of this subchapter). Cargo tanks. Authorized for solutions containing chromic acid only. Not authorized for transportation by water.

(9) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum. The shipper shall assure conformance with the requirements of § 173.24(d) of this part prior to first shipment.

(c) Solutions containing chromic acid in water in concentration not exceeding 35 percent by weight, with or without other acids, and which are not otherwise regulated by Subpart E of this part, must be described as "Corrosive liquids, n.o.s." In addition to the packaging and the limitations prescribed therefor in paragraph (b) of this section, solutions of this composition may also be packaged as follows:

(1) In packaging as prescribed in § 173.245, except (a)(4), (14), (15), (18), (19), and (24).

(2) Specification 21P (§ 178.225 of this subchapter). Fiber drum overpack with inside Specification 2S or 2SL (§§ 178.35, 178.35a of this subchapter) polyethylene container.

(3) Specifications 5, 5A, 5B (§§ 178.80, 178.81, 178.82 of this subchapter). Metal barrel or drum with openings not exceeding 2.3 inches in diameter. Authorized for solutions containing chromic acid only.

(4) Specification 17E (§ 178.116 of this subchapter) steel drum. Authorized for solutions containing chromic acid only.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-57, 36 FR 21289, Nov. 5, 1971, as amended by Amdt. 173-94, 41 FR 16079, Apr. 15, 1976; Amdt. 173-111, 42 FR 58938, Nov. 14, 1977]

EDITORIAL NOTE: For Federal Register citations affecting § 173.287, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.288 Chloroformates.

(a) Allyl chloroformate, benzyl chloroformate, ethyl chloroformate, and methyl chloroformate must be packaged as follows:

(1) Specification 15A, 15B, 15C, or 19B (§§ 173.168, 178.169, 178.170,

178.191 of this subchapter). Wooden boxes with inside glass containers of not over 1-pint capacity each, cushioned with incombustible mineral material.

(2) Specification 1A (§ 178.1 of this subchapter). Boxed carboys. Glass bottles having nominal capacity of 3 gallons also authorized when packed and tested in accordance with requirements of Specification 1A (§ 178.1 of this subchapter); necks must be protected during shipment. Not authorized for transportation by air.

(b) [Reserved]

(c) Spec. 16D (§ 178.187 of this subchapter). Wooden wirebound overwrap having one inside Spec. 2SL (§ 178.35a of this subchapter) polyethylene container not over 55 gallons capacity. Authorized for ethyl chloroformate or methyl chloroformate only.

(d) Specification 6D or 37M (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpack with inside Specifications 2S, 2SL, or 2T (§§ 178.35, 178.35a, 178.21 of this subchapter) polyethylene container. Authorized for ethyl chloroformate and methyl chloroformate only.

(e) Specification 34 (§ 178.19 of this subchapter). Polyethylene drum.

(f) Specification 111A100W2, 111A100W4, 112A200W, or 112A400F (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Tank cars. Authorized only for ethyl chloroformate and methyl chloroformate.

(g) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter), under conditions specified in the IM Tank Table. Authorized only for allyl chloroformate and benzyl chloroformate.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5608, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.288, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.289 Formic acid and formic acid solutions.

(a) Formic acid and formic acid solutions must be packed in specification containers as follows:

(1) In containers prescribed in § 173.245, except Spec. 5A, 17C, 17E or 17F (§§ 178.81, 178.115, 178.116 or 178.117 of this subchapter). Metal barrels or drums.

(2) Specification 103ALW, 103CW, 103EW, 111A60ALW, or 111A100W6 (§§ 179.200, 179.201 of this subchapter). Tank cars. Specification 103EW tanks must be of Type 316 stainless steel. Specification 111A100W6 tanks must be of Type 304L or 316L stainless steel. Specification 103ALW tanks without bottom outlets and Specification 111A60ALW tanks are authorized only for concentrations of 97 percent or greater and must be equipped with top loading and unloading devices. Specification 111A100W6 tanks are authorized only for concentrations of 80 percent or greater, must have bottom outlets effectively sealed, and must be equipped with top loading and unloading devices. Specifications 103ALW and 111A60ALW are not authorized for transportation by water.

(i) Each tank car authorized under this section must be marked "FORMIC ACID" in accordance with the requirements in § 172.330 of this subchapter.

(3) [Reserved]

(4) Specifications MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(5) [Reserved]

(6) Spec. 5 (§ 178.80 of this subchapter). Metal barrels or drums of stainless steel only, with flanges for closures welded in place and having no opening exceeding 2.3 inches in diameter.

(7) Specification 17H (§ 178.118 of this subchapter). Metal drums (single-trip) equipped with bag type liners of material and construction approved by the Department. Each drum must have two diametrically opposite vent holes ¼ inch diameter in the side wall at each end in close proximity to the top curl and bottom chime. Interior of welded side seam must be covered or otherwise treated to provide a non-abrasive surface. Not authorized for transportation by air.

(8) Spec. 60 (§ 178.255 of this subchapter). Portable tanks, marked "FOR FORMIC ACID ONLY".

(9) Specification 1EX (§ 178.6 of this subchapter). Carboys in plywood drums. Not authorized for transportation by air.

(10) Spec. 1H (§ 178.13 of this subchapter). Metal crate with inside polyethylene carboy.

(11) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter), under conditions specified in the IM Tank Table. The tank must be marked "FOR FORMIC ACID ONLY."

[29 FR 18725, Dec. 29, 1964, as amended by Order 73, 32 FR 3457, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.289, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.290 Mixtures of hydrofluoric and sulfuric acid.

(a) Mixtures of hydrofluoric acid and sulfuric acid, containing not more than 80 percent by weight and not less than 70 percent by weight of hydrofluoric acid and sulfuric acid combined, with the hydrofluoric acid content not less than 25 percent by weight in any case, must be packed in specification containers as follows:

(1) Spec. 5A (§ 178.81 of this subchapter). Unlined metal barrels or drums which have been subjected to an adequate passivation or neutralization process (see Note 1). Containers must be filled to not over 80 percent of capacity at 68° F. If containers are washed out with water, they must be repassivated before shipment.

NOTE 1: Each metal container, before being put into this service, must be passivated by the following or an equally efficient method: By filling drum to 90 percent of capacity with hydrofluoric acid of 58 percent strength and allowing drum to stand 48 hours at a temperature of 80° F., and then 7 hours at 140° F., the internal pressure maintained at atmospheric pressure by means of a ventilated bung.

(2) Containers not exceeding 55 gallons capacity each are authorized for carload, truckload, less-than-carload, and less-than-truckload shipment. Containers exceeding 55 gallons capac-

ity each are authorized for carload or truckload shipments only but they must be loaded by consignor and unloaded by consignee.

(3) For less-than-carload or less-than-truckload shipments, containers must be of metal at least as heavy as 14 gauge United States standard for not over 20 gallons capacity each or 12 gauge for not over 55 gallons capacity each. Each container must be subjected to at least one of the following tests before shipment: By interior pressure of at least 15 pounds per square inch before filling or by holding for inspection for at least 24 hours after filling. In either case, each container must be vented prior to shipment.

(4) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.290, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.291 Flame retardant compound, liquid.

(a) Flame retardant compound, liquid, must be packaged as follows:

(1) Specification 1A (§ 178.1 of this subchapter). Carboys in boxes which must be closed, and when reused must be reconditioned and tested, as provided in the specification. Not authorized for transportation by aircraft.

(2) Specification 1D or 1M (§§ 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Pressure in the carboy may not exceed 10 pounds per square inch gauge at 130° F. (55° C.). If the package is vented, there may be no significant release of contents to the environment. Not authorized for transportation by aircraft.

(3) Spec. IX (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be

transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(4)–(5) [Reserved]

(6) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-gallon capacity each, except that containers not over 3 gallons are authorized when only one is packed in an outside box.

(7) [Reserved]

(8) Specification 103B,¹ 103BW, or 111A60W5 (§§ 179.200, 179.201 of this subchapter). Tank cars.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.291, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.292 Hexamethylene diamine solution.

(a) Hexamethylene diamine solution must be packed in specification containers as follows:

(1) In containers prescribed in § 173.249.

(2) Specifications MC 300, MC 301, MC 302 or MC 305. Cargo tanks.

[29 FR 18725, Dec. 29, 1964, as amended by Order 73, 32 FR 3457, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.292, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.293 Iodine monochloride.

(a) Iodine monochloride must be packed in specification containers as follows:

(1) Specification 15A, 15B, or 19B (§§ 178.168, 178.169, 178.191 of this subchapter). Wooden boxes with inside containers not over 1-quart capacity each; or with stone or earthenware jugs not over 1-gallon capacity each.

(2) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this sub-

chapter) are authorized under conditions specified in the IM Tank Table.

(b) Outage (vacant space above liquid) for inside containers must be not less than 15 percent.

(c) Inside containers must be securely closed by hermetical sealing or by glass or stone stoppers ground to fit and securely fastened or by screw caps fitted with gaskets of suitable material resistant to the contents.

(d) Inside containers must be securely cushioned on all sides with incombustible cushioning material which will not produce heat when in contact with iodine monochloride.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.293, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.294 Chloroacetic acid, liquid or solution.

(a) Chloroacetic acid, liquid or solution, must be packed in specification containers as follows:

(1) In containers prescribed in § 173.245(a) (1), (2), (3), or (7).

(2) Specification 103ANW, 103AW, 111A60W2, or 111A100F2 (§§ 179.200, 179.201 of this subchapter). Tank cars. Specification 103AW, 111A60W2, or 111A100F2 tanks cars must be nickel clad with a nickel thickness of at least 20 percent of the shell thickness. Nickel cladding in tanks must be low carbon nickel in accordance with ASTM B162-80.

(3) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this chapter). Cargo tanks. Tanks must be fabricated of solid nickel at least 95 percent pure and containing not more than 1 percent iron, Type 304 or 316 stainless steel or be suitably lined. Nickel metal test coupons for welding procedures qualification must contain no more than 1 percent iron.

(4) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(b) Chloroacetic acid, anhydrous, when shipped as a liquid must be shipped in Specification 103ANW tank cars fabricated of nickel containing

¹The use of existing tanks authorized but new construction not authorized.

not more than 1 percent iron or in Specification 103AW or 111A60W2 tank car tanks with nickel cladding of at least 20 percent of the shell thickness or be provided with a suitable corrosive resistant coating or lining. Nickel cladding in tanks must be low carbon nickel in accordance with ASTM B162-80.

[29 FR 18725, Dec. 29, 1964, as amended by Order 73, 32 FR 3457, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.294, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.295 Benzyl chloride.

(a) Benzyl chloride must be packed in specification containers as follows:

(1) Specification 15A, 15B, 15C, 16A, 19A or 19B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.191 of this subchapter). Wooden boxes with inside glass or earthenware containers not over 1-gallon capacity each, except that inside containers not over 3 gallons each are authorized when only one is packed in an outside box.

(2) [Reserved]

(3) Specifications 1A, 1D, or 1M (§§ 178.1, 178.4, 178.17 of this subchapter). Glass carboys in boxes or expanded polystyrene packagings. Not authorized for transportation by aircraft.

(4) Spec. 1X (§ 178.5 of this subchapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(5) Spec. 5A or 17C (single-trip) (§ 178.81 or § 178.115 of this subchapter). Metal barrels or drums with openings not exceeding 2.3 inches in diameter. Authorized for stabilized benzyl chloride only.

(6) Spec. 5K (§ 178.88 of this subchapter). Nickel drums. When shipped in unstabilized condition, the lading must be anhydrous and must be free from impurities such as iron.

(7) [Reserved]

(8) Spec. 60 (§ 178.255 of this chapter). Portable tanks. Benzyl chloride must be stabilized when loaded in unlined tanks.

(9) Specifications MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Authorized for stabilized benzyl chloride only. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(10) Specifications MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Tank motor vehicles fabricated from 99 percent pure nickel plates. All cast metal parts of the tank in contact with the lading must have a minimum nickel content of 96.7 percent. When shipped in unstabilized condition, the lading must be anhydrous and must be free from impurities such as iron. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(11) Specification 103A,¹ 103AW, 111A60W2, or 111A100F2 (§§ 179.200, 179.201 of this subchapter). Tank cars.

(12) Specification 103ANW (§§ 179.200, 179.201 of this subchapter). Tank cars. All cast metal parts of the tank in contact with the lading must have a minimum nickel content of approximately 96.7 percent. When shipped in unstabilized condition, the lading must be anhydrous and must be free from impurities such as iron.

(13) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18725, Dec. 29, 1964, as amended by Order 73, 32 FR 3457, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.295, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.296 Di iso octyl acid phosphate.

(a) Di iso octyl acid phosphate must be packed in specification containers as follows:

(1) Spec. 17E (§ 178.116 of this subchapter). Metal drums (single-trip)

¹The use of existing tanks authorized but new construction not authorized.

with openings not exceeding 2.3 inches in diameter.

(2) Specifications MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(3) Specification 103AW, 103CW, 103EW, 111A60W2, 111A60W7, or 111A100F2 (§§ 179.200, 179.201 of this subchapter). Tank cars.

(4) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

[29 FR 18726, Dec. 29, 1964, as amended by Order 73, 32 FR 3457, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.296, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.297 Titanium sulfate solution containing not more than 45 percent sulfuric acid.

(a) Titanium sulfate solution containing not more than 45 percent sulfuric acid must be packed in specification containers as follows:

(1) Specifications MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Cargo tanks, rubber-lined. Bottom outlets are authorized if they meet the requirements of § 178.343-5 of this subchapter.

(2) Specification 103E,¹ 103BW, or 111A60W5 (§§ 179.200, 179.201 of this subchapter). Tank cars.

(3) Spec. 15A, 15B, 15C, 16A or 19A (§§ 178.168, 178.169, 178.170, 178.185 or § 178.190 of this subchapter). Wooden boxes with inside glass or earthenware containers, not over 1 gallon capacity each.

(4) Specification 6D (§ 178.102 of this subchapter). Cylindrical steel overpack with inside Specification 2S (§ 178.35 of this subchapter) polyethylene container not over 30-gallons capacity. Overpack of over 15 gallons must be constructed of at least 18-gauge steel throughout.

(5) Specification 21P (§ 178.225 of this subchapter). Fiber drum overpack

¹Use of existing tank cars authorized, but new construction not authorized.

with inside Specification 2U (§ 178.24 of this subchapter) polyethylene container not over 15-gallon capacity or Specification 2SL (§ 178.35a of this subchapter) polyethylene container not over 55-gallon capacity. Authorized only for solutions containing not over 20 percent sulfuric acid.

(6) Specification IM 101 portable tanks (§§ 178.270, 178.271 of this subchapter) are authorized under conditions specified in the IM Tank Table.

(7) Specification 34 (§ 178.19 of this subchapter). Polyethylene container without overpack, not over 30-gallon capacity.

[29 FR 18726, Dec. 29, 1964, as amended by Order 73, 32 FR 3457, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.297, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.299 Etching acid liquid, n.o.s.

(a) Etching acid liquid shall be a mixture of nitric acid, hydrofluoric acid, having nitric acid in concentrations of not more than 60 percent by weight, hydrofluoric acid in concentrations of not less than 4 percent by weight and water not less than 24 percent by weight, and may contain acetic acid. These mixtures must be packed in specification containers as follows:

(1) Specification 12A (§ 178.210 of this subchapter). Fiberboard boxes with Specification 2E (§ 178.24a of this subchapter) inside polyethylene bottles having a minimum wall thickness of 0.030 inch and screw-cap closures. Net weight per bottle may not be over 10 pounds each. The net weight per package may not be more than 40 pounds.

(2) Specification 6D or 37M (non-reusable) (§§ 178.102, 178.134 of this subchapter). Cylindrical steel overpack with inside Specification 2S or 2SL (§§ 178.35, 178.35a of this subchapter) polyethylene container not over 55-gallon capacity. Specification 37M overpack of over 30-gallon capacity must be constructed of at least 20-gauge steel throughout.

(b) All outside shipping containers must be plainly marked "NONREUSABLE"

CONTAINER." All components of the package must not be reused.

[29 FR 18725, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.299, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.299a Tris-(1-aziridinyl) phosphine oxide.

(a) Tris-(1-aziridinyl) phosphine oxide must be packed in specification containers as follows:

(1) In containers as prescribed in § 173.245, not over 5 gallons capacity each.

[29 FR 18743, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

Subpart G—Gases; Definition and Preparation

§ 173.300 Definitions.

For the purpose of Parts 170-189 of this subchapter, the following terminology is defined:

(a) *Compressed gas*. The term "compressed gas" shall designate any material or mixture having in the container an absolute pressure exceeding 40 p.s.i. at 70° F. or, regardless of the pressure at 70° F., having an absolute pressure exceeding 104 p.s.i. at 130° F.; or any liquid flammable material having a vapor pressure exceeding 40 p.s.i. absolute at 100° F. as determined by ASTM Test D-323.

(b) *Flammable compressed gas*. Any compressed gas as defined in paragraph (a) of this section shall be classed as "flammable gas" if any one of the following occurs:

(1) Either a mixture of 13 percent or less (by volume) with air forms a flammable mixture or the flammable range with air is wider than 12 percent regardless of the lower limit. These limits shall be determined at atmospheric temperature and pressure. The method of sampling and test procedure shall be acceptable to the Bureau of Explosives and approved by the Director, OHMT.

(2) Using the Bureau of Explosives' Flame Projection Apparatus (see Note 1), the flame projects more than 18 inches beyond the ignition source with

valve opened fully, or, the flame flashes back and burns at the valve with any degree of valve opening.

(3) Using the Bureau of Explosives' Open Drum Apparatus (see Note 1), there is any significant propagation of flame away from the ignition source.

(4) Using the Bureau of Explosives' Closed Drum Apparatus (see Note 1), there is any explosion of the vapor-air mixture in the drum.

NOTE 1: A description of the Bureau of Explosives' Flame Projection Apparatus, Open Drum Apparatus, Closed Drum Apparatus, and method of tests may be procured from the Bureau of Explosives.

(c) *Non-liquefied compressed gas*. A "non-liquefied compressed gas" is a gas, other than gas in solution, which under the charged pressure is entirely gaseous at a temperature of 70° F.

(d) *Liquefied compressed gas*. A "liquefied compressed gas" is a gas which, under the charged pressure, is partially liquid at a temperature of 70° F.

(e) *Compressed gas in solution*. A "compressed gas in solution" is a non-liquefied compressed gas which is dissolved in a solvent.

(f) *Cryogenic liquid*. A "cryogenic liquid" is a refrigerated liquefied gas having a boiling point colder than -130°F. (-90°C.) at one atmosphere, absolute. A material meeting this definition is subject to requirements of this subchapter without regard to whether it meets the definition of a compressed gas in paragraph (a) of this section. The material is partially described as " * * *, refrigerated liquid (*cryogenic liquid*)" in § 172.101 of this subchapter.

(g) *Flammable range*. The term "flammable range" shall designate the difference between the minimum and maximum volume percentages of the material in air that forms a flammable compressed gas.

(h) *Service pressure*. The term "service pressure" shall designate the authorized pressure marking on the container. For example, for cylinders marked "DOT 3A1800", the service pressure is 1800 psig (pounds per square inch gauge).

(i) *Refrigerant gas or Dispersant gas*. The term "Refrigerant gas" or "Dispersant gas" applies to all flammable

or nonflammable, nonpoisonous refrigerant gases, dispersant gases (fluorocarbons) listed in §§ 172.101, 173.304(a)(2), 173.314(c), 173.315(a)(1) and 173.315(h), and mixtures thereof, or any other compressed gas meeting one of the following:

(1) A nonflammable mixture containing not less than 50% fluorocarbon content, having a vapor pressure not exceeding 260 psig at 130° F.

(2) A flammable mixture containing not less than 50% fluorocarbon content, not over 40% by weight of a flammable component, having a vapor pressure not exceeding 260 psig at 130° F.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18743, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.300, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.300a Approval of independent inspection agency.

(a) Any person who (1) does not manufacture cylinders for use in the transportation of hazardous materials and (2) is not directly or indirectly controlled by any person or firm which manufactures cylinders for use in the transportation of hazardous materials, may apply to the Department of Transportation for approval as an independent inspection agency for the purpose of performing cylinder inspections and verifications required by Part 178 of this subchapter.

(b) Each application filed under this section for approval as an independent inspection agency must:

(1) Be submitted in writing to: Office of Hazardous Materials Transportation, U.S. Department of Transportation, Washington, D.C. 20590;

(2) State the name, address, principal business activity, and telephone number of the applicant and the name and address of each facility where tests and inspections are to be performed;

(3) State the name, address and principal business activity of each person having any direct or indirect ownership interest in the applicant greater

than three percent and of each subsidiary or division of the applicant;

(4) If the applicant is not a permanent resident of the United States, include a designation of a permanent resident of the United States as his agent for service of process in accordance with § 107.7 of this title;

(5) Set forth a detailed description of the inspection and testing facilities to be used by the applicant and the applicant's capability to perform the inspections and verify the tests required by Part 178 of this subchapter;

(6) Identify by name each individual whom the applicant proposes to employ as an inspector responsible for certifying inspection and test results and a statement of that person's qualifications; and

(7) Specify the identification or qualification number assigned to each inspector who is supervised by a certifying inspector identified in § 173.300a(b)(6).

(c) Upon the request of the Director, OHMT the applicant shall allow the Director to inspect the applicant's inspection and testing facilities. In the case of inspection and testing facilities located outside the United States, the applicant shall bear the cost of the inspection.

(d) If, on the basis of information submitted in the application and his own investigation, the Director, OHMT finds that the applicant is qualified to perform the inspections and verifications required by Part 178 of this subchapter for cylinders to be used in the transportation of hazardous materials, he issues an approval subject to such terms and conditions as he considers necessary. After approval, the Director, OHMT, may authorize, upon request, the independent inspection agency to perform other inspections and functions for which the Director, OHMT, finds the applicant to be qualified. Such additional authorizations will be noted on each inspector's approval documents.

(e) The Director, OHMT will issue an approval as an independent inspection agency for the purpose of performing inspections and verifications within the United States to any competent and disinterested inspector of cylinders so designated by the Bureau

of Explosives before May 1, 1976, who submits a copy of that designation by July 15, 1976, together with the name, the assigned identification or qualification number, and a statement of the qualifications of each person employed as an inspector under that designation to: Office of Hazardous Materials Transportation, U.S. Department of Transportation, Washington, D.C. 20590.

(f) Notwithstanding any requirement of this subchapter to the contrary, between May 30, 1976, and August 15, 1976, inspections and verifications required by Part 178 of this subchapter may be performed within the United States by any competent and disinterested inspector so designated by the Bureau of Explosives prior to May 1, 1976.

(g) An approval issued under this section is not transferable and is effective until surrendered or withdrawn or otherwise terminated by the Director, OHMT.

(h) The holder of an approval issued under this section shall notify the Director, OHMT within 20 days after the date there is any change in the information submitted in the application for the approval.

(i) Upon the request of the Director, OHMT the holder of an approval issued under this section shall allow the Director to inspect the holder's inspection and testing facilities and shall make available for inspection the holder's records pertaining to inspections and verifications required by Part 178 of this subchapter. In the case of inspection and testing facilities located outside the United States and records made available for inspection outside the United States, the holder shall bear the costs of inspection.

[Amdt. 173-97, 41 FR 18414, May 4, 1976, as amended by Amdt. 173-142, 45 FR 81572, Dec. 11, 1980; Amdt. 173-158, 47 FR 43085, Sept. 30, 1982; Amdt. 173-194 50 FR 46058, Nov. 8, 1985]

§ 173.300b Approval of non-domestic chemical analyses and tests.

(a) Any person who manufactures cylinders outside the United States may apply to the Department for approval to have the chemical analyses and tests of those cylinders required

by Part 178 of this subchapter performed outside the United States for the purpose of qualifying them for use in the transportation of hazardous materials to, from or within the United States.

(b) Each application filed under this section for approval to perform chemical analyses and tests of cylinders outside the United States must:

(1) Be submitted in writing to: Office of Hazardous Materials Transportation, U.S. Department of Transportation, Washington, D.C. 20590;

(2) State the name, address, and telephone number of the applicant and the name, address and a description of each facility at which cylinders are to be manufactured and chemical analyses and tests are to be performed;

(3) If the applicant is not a resident of the United States, include a designation of a permanent resident of the United States as his agent for service of process in accordance with § 107.7 of this title;

(4) Set forth complete details concerning the dimension, materials of construction, wall thickness, water capacity, shape, type of joints, location and size of openings and other pertinent physical characteristics of each specification cylinder for which approval is being requested, including calculations for cylinder wall stress and wall thickness which may be shown on a drawing or on separate sheets attached to a descriptive drawing. If units of weights and measures are expressed in the metric system, they must also be stated in the English system equivalents; and

(5) Identify the independent inspection agency to be used.

(c) Upon the request of the Director, OHMT the applicant shall allow the Director to inspect the applicant's cylinder manufacturing and testing facilities and shall provide such materials and cylinders for analyses and tests as the Director may specify. The applicant shall bear the cost of the inspections, analyses, and tests.

(d) If, on the basis of the information submitted in the application and his own investigation, the Director, OHMT finds that the applicant has the proper manufacturing equipment

and facilities and is otherwise capable of insuring the proper performance of the chemical analyses and tests required by Part 178 of this subchapter for cylinders to be used in the transportation of hazardous materials, he issues an approval, subject to such terms and conditions as he considers necessary.

(e) An approval issued under this section is not transferable and is effective until surrendered or withdrawn or otherwise terminated by the Director, OHMT.

(f) The holder of an approval issued under this section shall notify the Director, OHMT within 20 days after the date there is any change in the information submitted in the application for the approval.

(g) Upon the request of the Director, OHMT the holder of an approval issued under this section shall allow the Director to inspect the holder's cylinder manufacturing and testing facilities, any cylinder manufactured under that approval, the holder's inspection and test records, and technical data files pertaining to any cylinder manufactured under that approval. In the case of facilities located outside the United States, or cylinders, records or files made available for inspection outside the United States, the holder shall bear the costs of inspection.

[Amdt. 173-97, 41 FR 18415, May 4, 1976, as amended by Amdt. 173-142, 45 FR 81572, Dec. 11, 1980; Amdt. 173-158, 47 FR 43065, Sept. 30, 1982]

§ 173.300c Termination of approval.

(a) The Director, OHMT may terminate an approval issued under § 173.300a or § 173.300b of this subpart if he determines:

(1) That information upon which approval was based is fraudulent or substantially erroneous;

(2) That the holder has not complied with Subchapter C of this chapter;

(3) That, in the case of an independent inspection agency, the agency or an employee thereof is or appears to be controlled or improperly influenced by cylinder manufacturing interests;

(4) That the holder is subject to an outstanding final judgment of a Federal court which concerns the enforce-

ment of Subchapter C of this chapter and which has not been satisfied within a reasonable period of time; or

(5) That continuation of the approval is not consistent with the requirements of transportation safety.

(b) The Director, OHMT, before he terminates an approval issued under § 173.300a or § 173.300b of this subpart, notifies the holder in writing of the reasons therefor and provides the holder an opportunity to show why the approval should not be terminated.

[Amdt. 173-97, 41 FR 18415, May 4, 1976, as amended by Amdt. 173-142, 45 FR 81572, Dec. 11, 1980]

§ 173.301 General requirements for shipment of compressed gases in cylinders.¹

(a) *Gases capable of combining chemically.* A cylinder charged with compressed gas must not contain gases or materials that are capable of combining chemically with each other or with the cylinder material so as to endanger its serviceability. See § 173.34(e)(16) regarding the requalification of a cylinder that previously contained a corrosive liquid.

(b) *Ownership of container.* A container charged with a compressed gas must not be shipped unless it was charged by or with the consent of the owner of the container.

(c) *Retest of container.* A container for which prescribed periodic retest has become due must not be charged and shipped until such retest has been properly made.

(d) *Manifolding containers in transportation.* No means of interconnecting such as manifolding of individual containers may be employed for the transportation of compressed gases, except as hereinafter authorized. Containers so manifolded shall be supported and held together as a unit by structurally adequate means. Safety relief devices on manifolded horizontal containers charged with flammable compressed gas shall be arranged to discharge upward and unobstructed to the open air in such a manner as to

¹ Requirements covering cylinders are also applicable to spherical pressure vessels.

prevent any impingement of escaping gas upon the containers.

(1) Manifolding is authorized for containers of the following gases: argon, air, carbon dioxide, helium, neon, nitrogen, nitrous oxide, oxygen or sulfur hexafluoride provided that each container is individually equipped with pressure relief devices as required by § 173.34(d) or § 173.315(i).

(2) Manifolding is authorized for specification cylinders containing the following nonliquefied gases: boron trifluoride, carbon monoxide, ethylene, hydrogen, hydrocarbon gases, methane, nitrogen trifluoride, and tetrafluoroethylene, inhibited, except that aluminum cylinders are not authorized for boron trifluoride or nitrogen trifluoride service. Individual cylinders must be equipped with approved pressure relief devices as required by § 173.34(d) or § 173.315(i) of this Part. Each cylinder must be equipped with an individual shutoff valve that must be tightly closed while in transit. Manifold branch lines of these individual shutoff valves must be sufficiently flexible to prevent damage to the valves which otherwise might result from the use of rigid branch lines. A temperature measuring device may be inserted in one cylinder of a manifold installation in place of the shutoff valve.

(3) Manifolding is authorized for specification cylinders containing the following gases: ethane, ethylene, hydrogen chloride, liquefied hydrocarbon gas, liquefied petroleum gas and propylene, except that aluminum cylinders are not authorized for hydrogen chloride service, provided each cylinder is equipped with approved pressure relief devices as required by § 173.34(d) or § 173.315(i) of this part: *and provided further*, that each cylinder is equipped with an individual shutoff valve that must be tightly closed while in transit. Each cylinder must be separately charged and means must be provided to insure that no interchange of cylinder contents can occur during transportation. Manifold branch lines to these individual shutoff valves must be sufficiently flexible to prevent injury to the valves which

otherwise might result from the use of rigid branch lines.

(4) Manifolding is authorized for containers of acetylene, provided that each container is individually equipped with approved safety relief devices as required by § 173.34(d): *And further provided*, That each container is equipped with an individual shutoff valve, or valves, which shall be tightly closed while in transit. Manifold branch lines to these individual shutoff valves shall be sufficiently flexible to prevent injury to the valves which otherwise might result from the use of rigid branch lines. All manifold containers shall be transported in a vertical position. For the checking of tare weights or for replacement of solvent the container shall be removed from the manifold. This requirement is not intended to prohibit the charging of the acetylene cylinders while manifolded.

(5) Manifolding is authorized for cargo tanks of the following gas provided individual cargo tanks are equipped with the safety relief valves and gaging devices, as required by § 173.315(h) and (i): *And further provided*, That each cargo tank is equipped with individual valve, or valves, which shall be tightly closed while in transit and that each such container must be separately charged: Anhydrous ammonia.

(e) *Container pressure.* The pressure in the container at 70° F. must not exceed the service pressure for which the container is marked or designated, except as provided in § 173.302(c).

NOTE 1: In certain cases with liquefied gases the pressure at 70° F. must be lower than the marked service pressure to avoid having a greater pressure at a temperature of 130° F. than is permitted.

(1) For authorized containers not marked with a service pressure, the service pressure is designated as follows:

Specification marking	Service pressure—psig
DOT 3.....	1,800
3E.....	1,800
4.....	300
8.....	250
9.....	200

Specification marking	Service pressure—psig
25.....	300
33.....	480
38.....	250
40.....	200
41.....	240

(2) For containers made prior to the effective date of specifications, the service pressure is designated as the same as for the same type of container made in accordance with current specifications.

(f) *Container pressure at 130° F.* The pressure in the container at 130° F. shall not exceed 5/4 times the service pressure, except:

(1) Containers charged with acetylene, liquefied nitrous oxide and liquefied carbon dioxide.

(2) When a cylinder is charged in accordance with § 173.302(c), the pressure in the cylinder at 130° F. must not exceed 5/4 times the filling pressure authorized therein.

(g) *Container valve protection.* Containers charged with flammable, corrosive, or noxious gases, must have their valves protected by one of the following methods.

(1) By equipping the containers with securely attached metal caps of sufficient strength to protect the valves from injury during transit.

(2) By boxing or crating the containers so as to give proper protection to the valves.

(3) By so constructing the containers that the valve is recessed into the container or otherwise protected so that it will not be subjected to a blow when the container is dropped on a flat surface.

(4) By loading the containers compactly in an upright position and securely bracing in cars or motor vehicles, when loaded by the consignor and to be unloaded by the consignee.

(5) By equipping with valves strong enough to avoid injury during transit for containers containing non-liquefied gas under pressure not exceeding 300 psi at 70° F.

(h) *Compressed gas containers.* Compressed gases must be in metal containers built in accordance with the DOT specifications, as shown below, in effect at the time of manufacture, and marked as required by the specification and the regulation for retesting if applicable;

PACKAGINGS

DOT-2P.....	DOT-3D.....	DOT-4BW.....	DOT-8AL.....
2Q.....	3E.....	4B240ET.....	9. ¹
ICC-3 ¹	3HT.....	4C.....	1CC-25. ¹
DOT-3A.....	DOT-3T.....	4D.....	26. ¹
DOT-3AL.....			
DOT-3AX.....	4.....	4DA.....	33. ¹
3A480X.....	4A.....	4DS.....	38. ¹
3AA.....	4AA.....	4E.....	DOT-39.
DOT-3AAX.....	4B.....	4L.....	40. ¹
3B.....	4B240FLW.....	5.....	41. ¹
3BN.....	4B240X ¹	5F.....	
3C.....	4BA.....	8.....	

¹ Use of existing cylinders authorized, but new construction not authorized.

(i) *Foreign cylinders in domestic use.* Except as provided in paragraph (j) of this section, a charged cylinder manufactured outside the United States may not be offered for transportation to, from, or within the United States unless it has been manufactured, inspected, and tested in accordance with the applicable DOT specification set forth in Part 178 of this subchapter.

(j) *Charging of foreign cylinders for export.* Unless it has been manufactured, inspected, and tested in accordance with the applicable DOT specification set forth in Part 178 of this subchapter, a cylinder manufactured outside the United States and received in the United States for charging with compressed gas may be charged and shipped for export only.

(1) Provided that they are retested in accordance with § 173.34(e). This retest may be omitted only if the container can be definitely identified as having been retested under this provision within the prescribed retest period, and

(2) Provided further that the maximum filling density and service pressure for each container shall be in accordance with all packing requirements of this part for the compressed gas involved.

(3) Records showing the results of the tests made on all foreign containers must be preserved for inspection until the next scheduled retest date.

(4) Bill of lading or other shipping paper shall, when possible, identify the containers and shall carry the following certification: "These containers have been retested and refilled in accordance with the DOT requirements for export"

(k) *Outside packagings.* Specifications 2P, 2Q, 3E, 3HT, 4BA spherical type, 4D, 4DA, 4DS, 9¹, 39, 40¹, and 41¹ must be shipped in strong outside packagings, except that the 4BA spherical type may be securely mounted on pallets to provide protection for the spheres and any attachments.

(1) Outside packaging must provide protection for the cylinder. Unless the cylinder has a protective collar or neck ring, the outside packaging must provide protection to the valve against accidental functioning and damage.

(l) Specifications 3AX, 3AAX, and 3T cylinders are authorized for transportation only when horizontally mounted on a motor vehicle and when valves and safety devices are protected, as follows:

(1) Each cylinder must be fixed at one end of the vehicle with provision for thermal expansion at the opposite end attachment.

(2) The valve and safety relief device protective structure must be sufficiently strong to withstand a force equal to twice the weight involved with a safety factor of four, based on the ultimate strength of the material used; and

(3) Each discharge for a safety relief device on a cylinder containing a flammable gas must be upward and unobstructed.

[29 FR 18743, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.301, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.302 Charging of cylinders with nonliquefied compressed gases.

(a) *Detailed requirements.* Nonliquefied compressed gases (except gas in solution or poisonous gas) for which charging requirements are not definitely prescribed in § 173.304(a)(2) must be shipped, subject to § 173.301, and § 173.305 in specification containers as follows:

(1) Specification 3,¹ 3A, 3AA, 3B, 3C,¹ 3D,¹ 3E, 4,¹ 4A,¹ 4B, 4BA, 4BW, 4C,¹ 25,¹ 26,¹ 33,¹ or 38,¹ (§§ 178.36, 178.37, 178.38, 178.42, 178.50, 178.51, 178.61 of this subchapter). See §§ 173.34 and 173.301(e).

NOTE 1: Authorized cylinders containing oxygen which is continuously fed to tanks containing live fish may be shipped irrespective of the provisions of § 173.24.

(2) Specification 3HT (§ 178.44 of this subchapter) cylinders for aircraft use only, having a maximum service life of 24 years. Authorized only for nonflammable gases. Cylinders must be equipped with safety relief devices only of the frangible disc type which meet the requirements of § 173.34(d). Each frangible disc must have a rated bursting pressure which does not exceed 90 percent of the minimum required test pressure of the cylinder. Discs with fusible metal backing are not permitted. Spec. 3HT cylinders may be shipped only when packed in strong outside packagings.

(3) Specification 3AX, 3AAX, or 3T (§§ 178.36, 178.37, 178.45 of this subchapter) cylinders are authorized only for the following nonliquefied gases: Air, argon, boron trifluoride, carbon monoxide, ethane, ethylene, helium, hydrogen, methane, neon, nitrogen, or

¹Use of existing cylinders authorized, but new construction not authorized.

¹Use of existing cylinders authorized, but new construction not authorized.

oxygen, except that specification 3T is not authorized for hydrogen. As used in this paragraph methane is a nonliquefied gas which has a minimum purity of 98.0 percent methane and which is commercially free of corroding components.

(4) Specification 39 (§ 178.65 of this subchapter) cylinder. For flammable gases, internal volume may not exceed 75 cubic inches. Aluminum cylinders are authorized for oxygen only under the following conditions:

(i) Cylinder threads must be straight threads;

(ii) Cylinder must be equipped only with brass or stainless steel valve; and

(iii) Each cylinder must be cleaned in compliance with the requirements of Federal Specification RR-C-901b, dated August 1, 1967, paragraphs 3.7.2 and 3.8.2. Cleaning agents equivalent to those specified in RR-C-901b, may be used; however any cleaning agent must not be capable of reacting with oxygen. One cylinder selected at random from a group of 200 or less cleaned at the same time, must be tested for oil contamination in accordance with specification RR-C-901b paragraph 4.4.2.3 and meet the standard of cleanliness specified.

(5) Specification 3AL (§ 178.46 of this subchapter) cylinders are authorized only for the following nonliquefied gases: air, argon, carbon monoxide, diborane, ethylene, helium, mercury free hydrogen, krypton, methane, nitrogen, neon, oxygen and xenon. Flammable gases shipped in 3AL cylinders are authorized only when transported by highway, rail and cargo-only aircraft. When used in oxygen service, aluminum cylinders must be in compliance with the following conditions:

(i) Cylinder must be equipped only with brass or stainless steel valve;

(ii) Cylinder must have only straight threads in the opening;

(iii) Each cylinder must be cleaned in compliance with the requirements of Federal Specification RR-C-901b, dated August 1, 1967, paragraphs 3.7.2, and 3.8.2. Cleaning agents equivalent to those specified in RR-C-901b may be used; however, any cleaning agent must not be capable of reacting with oxygen. One cylinder selected at

random from a group of 200 or less, cleaned at the same time, must be tested for oil contamination in accordance with Specification RR-C-901b, paragraph 4.4.2.3, and meet the standard of cleanliness specified; and

(iv) The pressure in the cylinder may not exceed 3,000 psig at 70° F.

(b) *Filling limits.* (See § 173.301(e).)

(c) *Special filling limits for Specifications 3A, 3AX, 3AA, 3AAX, and 3T cylinders.* Specifications 3A, 3AX, 3AA, 3AAX, and 3T (§§ 178.36, 178.37, 178.45 of this subchapter) cylinders may be charged with compressed gases, other than liquefied, dissolved, poisonous, or flammable gases to a pressure 10 percent in excess of their marked service pressure, provided:

(1) That such cylinders are equipped with frangible disc safety relief devices (without fusible metal backing) having a bursting pressure not exceeding the minimum prescribed test pressure.

(2) That the elastic expansion shall have been determined at the time of the last test or retest by the water jacket method.

(3) That either the average wall stress or the maximum wall stress shall not exceed the wall stress limitation shown in the following table (see Notes 1 and 2):

Type of steel	Average wall stress limitation	Maximum wall stress limitation
Plain carbon steels over 0.35 carbon and medium manganese steels.....	53,000	58,000
Steels of analysis and heat-treatment specified in spec. 3AA.....	67,000	73,000
Steel of analysis and heat treatment specified in Spec. DOT-3T.....	87,000	94,000
Plain carbon steels less than 0.35 carbon made prior to 1920.....	45,000	48,000

NOTE 1: The average wall stress shall be computed from the elastic expansion data using the following formula:

$$S = 1.7EE/KV - 0.4P$$

where:

S = wall stress, pounds per square inch;

EE = elastic expansion (total less permanent) in cubic centimeters;

K = factor $\times 10^{-7}$ experimentally determined for the particular type of cylinder being tested;