



DEPARTMENT OF TRANSPORTATION  
HAZARDOUS MATERIALS REGULATIONS BOARD

WASHINGTON, D.C. 20590

17313

[Docket No. HM-106; Amdt. Nos. 172-26,  
173-81, 174-22, 178-33, 179-13]

**SHIPMENT OF HAZARDOUS MATERIALS**

On March 23, 1973, the Hazardous Materials Regulations Board published a notice of proposed rulemaking, Docket No. HM-106, Notice No. 73-2 (38 FR 7470), which proposed certain amendments. Interested persons were invited to give their views and several comments were received by the Board.

The purpose of these amendments to the Hazardous Materials Regulations of the Department of Transportation is (1) to identify iodine pentafluoride by name as a hazardous material; (2) to authorize the shipment of iodine pentafluoride in certain packagings; (3) to make certain editorial changes which will group a number of fluoride materials presently covered in different sections into one section; (4) to delete the authorization for 10 pounds or less of certain fluoride materials to be shipped in cylinders approved by the Bureau of Explosives; (5) to delete unnecessary references to DOT-106A500 tanks; (6) to limit the requirement for a reflective exterior surface finish on DOT-51 portable tanks to only those tanks containing compressed gas; (7) to eliminate this reflective exterior surface finish requirement for other substances, such as flammable liquids; (8) to make editorial changes which clarify the reflective exterior surface finish requirements; (9) to prohibit the transportation of flammable liquids, having a Reid vapor pressure between 16 p.s.i.a. and 27 p.s.i.a. at 100° F., in certain tank motor vehicles; (10) to authorize the shipment of specific mercaptan materials and aliphatic mercaptan mixtures in DOT-51 portable tanks; (11) to authorize the shipment of sodium hydrosulfite in DOT-56 portable tanks; (12) to authorize the shipment of lithium metal wire in a DOT-12B fiberboard box with inside air-tight nonsparking metal packagings; (13) to authorize the shipment of certain alkali metal and alkali metal compounds in a DOT-19A or DOT-19B wooden box with inside air-tight metal packagings; (14) to authorize the shipment of wet zirconium metal powder in a DOT-37M nonreusable cylindrical steel overpack with an inside DOT-2S polyethylene container; (15) to change the quantity requirements for bromine authorized in MC 310 and MC 312 cargo tanks; (16) to change the cladding and lining requirements for MC 310 and MC 312 cargo tanks containing

bromine; (17) to make editorial changes in DOT-105A300W tank car requirements for bromine shipments; (18) to authorize the shipment of fluosulfonic acid in MC 310, MC 311, and MC 312 cargo tanks; (19) to provide for the transportation of liquefied petroleum gas in DOT-2P and DOT-2Q containers, without safety relief devices, with slightly increased charging pressures; (20) to authorize DOT-2Q containers, with safety relief devices, as an alternate packaging for the shipment of liquefied petroleum gas; (21) to change the requirements for exemption from specification packaging, marking, and labeling for the shipment of audible fire alarm systems and fire extinguishers; (22) to require the use of safety relief devices on DOT specification multiunit tank car tanks transporting hydrogen sulfide; (23) to delete the shipping container specifications for wooden barrels and kegs made under DOT-10A, 10C, 11A, and 11B designations, and (24) to delete from certain sections the reference to these wooden barrel and keg specifications and to specification DOT-10B.

A number of comments were submitted on these proposals and each comment was given due consideration. The following is a discussion of the comments received and a statement of the changes made as a result of these comments:

*Fluoride materials.* A comment was directed to the proposal which grouped a number of the fluoride materials into one section. This comment questioned why the maximum quantity in one outside container was limited to 25 pounds for antimony pentafluoride for shipment by rail express (cargo aircraft). The present regulations contain this packaging weight restriction for antimony pentafluoride and since this rulemaking did not propose to change the quantity limitation, the comment regarding a higher maximum weight in one outside container for antimony pentafluoride when shipped by rail express (cargo aircraft) is not considered within the scope of the proposed action.

*Flammable liquids in tank motor vehicles.* A commenter requested a clarification of the proposal which requires, when necessary, interior cleaning of cargo tanks between changes in lading. He states that the present regulations only require interior cleaning of MC 330 and MC 331 tanks whereas the proposal requires the interior cleaning of



all tanks authorized in the section. The Board has purposely amended the regulations so that this requirement is applicable to all tank motor vehicles when it is known that a change of lading may cause an unsafe condition.

**Obsolete wooden barrel and keg specifications.** Several commenters objected to the deletion of one specific barrel specification, namely the DOT-10B. The Board's proposal was to eliminate all of the wooden barrel and keg specifications and their authorizations for use. The commenters requested retention of this barrel specification for use in the shipment of alcohol and alcohol-water mixtures. In addition, another commenter suggested that of the two types of wooden barrels (tight and slack) one barrel specification from each type should be retained. Since no response was received to this proposal in the form of a justification to maintain any barrel specification, other than the DOT-10B, the Board has eliminated the remaining wooden barrel specifications and their authorizations from the regulations. The Board has therefore, retained only the DOT-10B specification for alcohol and alcohol-water mixtures. However, a study to change the present requirements of this specification to performance oriented requirements will be under taken by the Board.

**Audible fire alarm systems.** A commenter objected to the proposed burst test requirements for the pressure vessel contained within the fire alarm system. The proposal states that the pressure vessel must be designed and fabricated to withstand a pressure equal to five times its charged pressure at 130°F. The objections were based on the fact that a special permit, presently in effect, authorizes the pressure vessel of a fire alarm system to be constructed with a minimum burst pressure of 850 p.s.i.g. This minimum burst pressure of 850 p.s.i.g. is slightly less than the proposal requirements for the pressure vessel to have a burst pressure of not less than five times its charged pressure at 130°F.

Based on the satisfactory shipping experience under special permit and the fact that the pressure vessel is of a non-refillable type, the Board agrees with the commenter and has provided in this amendment that non-refillable pressure vessels must be designed and fabricated with a burst pressure of not less than four times its charged pressure at 130°F. For fire alarm systems which incorporate refillable pressure vessels, the Board requires that these vessels must have a burst pressure of not less than five times its charged pressure at 130°F.

**Fire extinguishers.** One commenter requested clarification of the marking requirements for fire extinguishers shipped under the proposed exemption provisions. The proposed marking requirement states that each fire extinguisher shipped under the exemption provision must be durably and legibly marked with a required statement. The purpose of the marking is to convey the fact that the

fire extinguisher meets the requirements of the exemption provisions. The Board considers that a label may be recognized as a permanent part of an extinguisher. Therefore, marking of the required statement on the label would be authorized.

Several commenters objected to that portion of the proposal which requires the fire extinguisher to be designed and fabricated with a burst pressure of not less than six times its charged pressure at 70°F. when shipped. Although some of these commenters did not take exception to the existing test pressure provisions that require the extinguisher to be tested to at least three times its charged pressure at 70°F. before initial shipment, they have stated that a burst pressure of " \* \* \* four times the normal charged pressure is adequate and provides a reasonable safety margin when coupled with good engineering design criteria." Close examination of this statement establishes the fact that the burst pressure would be only one and one-third the test pressure which the Board believes is an unacceptable margin of safety for non-specification cylinders. Even for the DOT specification 39 cylinder, a non-refillable pressure container, the burst pressure must be at least two times the test pressure. Also, the reference to "good engineering design criteria" implies certain manufacturing controls over cylinder construction which are not intended in this exemption provision.

Another commenter suggested that the exemption provision for fire extinguishers contain test pressure requirements of only two times the charged pressure at 70°F. and burst pressure requirements of only four times the charged pressure at 70°F. In support of this suggestion, the commenter indicated that a complete review of the stress conditions present in cylinders used for stored fire extinguishers was conducted. The results of this review showed " \* \* \* every cylinder which is currently shipped under the provisions of the existing extinguisher exemption is stressed to levels above those permitted by DOT-4B-XXX when it is tested to three times charged pressure at 70°F." This statement is construed as an admission that the sidewall strength of these cylinders is inadequate since the stress levels of the cylinders were so high. For such reasons, the Board amended § 173.306(c) to include a burst pressure requirement of six times the charged pressure as one means to assure adequate wall strength.

To act otherwise, the Board would be reducing the present requirement of three times charged pressure to two

times without any showing that three times is not required. This is based on fact that the Board has no information indicating that the present safety requirement is not based on a three times charged pressure test. The present test requirement of three times charged pressure not proposed to be changed, and unless persons were not following "good engineering practices" as described above the Board must conclude that the test requirement is valid. Further, the Board notes that although the three times six times tests are in excess of certain cylinder specifications, where special manufacturing controls are prescribed by the regulations, the regulation is for cylinders which are otherwise exempt from specification construction requirements of the Hazardous Materials Regulations. Any manufacturer, wishing to take advantage of lower test pressure may design fire extinguisher unit specification requirements and ship the subject to the regulations applicable to compressed gases. The end use of a packaged gaseous material does not change the gas hazard in transportation therefore, does not warrant special treatment for the cylinder used to contain when considering design criteria.

There were a number of commenters who proposed that the Board consider a new specification cylinder as proposed by the Compressed Gas Association (CGA). The Board in its ongoing study of the present regulations has been working toward a consolidation of present cylinder specifications. This study has generated favorable comments from the general public and many trade associations. It was the Board's understanding that CGA supported this objective. The addition of a new specification would appear to be directed toward proliferation, not consolidation, of present cylinder specifications. In addition, the recommendations for the cylinder specification are not considered within the scope of this rulemaking action.

In consideration of the foregoing CFR Parts 172, 173, 174, 178, and are amended as follows:

**PART 172—LIST OF HAZARDOUS MATERIALS CONTAINING THE SHIPMENT NAME OR DESCRIPTION OF ALL MATERIALS SUBJECT TO PARTS 170-181 THIS SUBCHAPTER**

In § 172.5 paragraph (a), the list of hazardous materials is amended as follows:

**§ 172.5 List of hazardous materials.**  
(a) \* \* \*

Article	Classed as --	Exemption and packing (see sec.)	Label required if not exempt	Maximum quantity per outside container rail exp
(Add)				
Iodine pentafluoride.....	Cor.....	No exemption, 173.246.....	Corrosive.....	100 pounds
(Change)				
Antimony pentafluoride.....	Cor.....	No exemption, 173.246.....	Corrosive.....	25 pounds
Bromine pentafluoride.....	Cor.....	No exemption, 173.246.....	Corrosive.....	100 pounds
Bromine trifluoride.....	Cor.....	No exemption, 173.246.....	Corrosive.....	100 pounds
Chlorine trifluoride.....	Cor.....	No exemption, 173.246.....	Corrosive.....	100 pounds



## PART 173—SHIPPERS

1. In Part 173 Table of Contents, § 173.246 is amended; §§ 173.283, 173.284, and 173.285 are deleted as follows:

Sec.

173.246 Antimony pentafluoride, bromine pentafluoride, iodine pentafluoride, bromine trifluoride, and chlorine trifluoride.

173.283 [Deleted.]

173.284 [Deleted.]

173.285 [Deleted.]

2. In § 173.32, paragraph (a) (3) is added to read as follows:

§ 173.32 Qualification, testing, maintenance, and use of portable tanks.

(a) \* \* \*

(3) Each uninsulated portable tank used for the transportation of compressed gases, as defined in § 173.300, must have an exterior surface finish complying with § 178.245-1(c) of this subchapter.

\* \* \*

3. In § 173.60, paragraph (a) (1) is deleted as follows:

§ 173.60 Black powder and low explosives.

(a) \* \* \*

(1) Deleted.

\* \* \*

In § 173.64, paragraph (a) (3) is deleted as follows:

§ 173.64 High explosives with no liquid explosive ingredient and propellant explosives, Class A.

(a) \* \* \*

(3) [Deleted.]

\* \* \*

5. In § 173.65, paragraphs (a) (3) and (e) (1) are deleted as follows:

§ 173.65 High explosives with no liquid explosive ingredient nor any chlorate.

(a) \* \* \*

(3) [Deleted.]

\* \* \*

(e) \* \* \*

(1) [Deleted.]

\* \* \*

6. In § 173.70, the introductory text of paragraph (b) and paragraph (d) are amended to read as follows:

§ 173.70 Diazodinitrophenol or lead mononitroresorcinate.

\* \* \*

(b) Diazodinitrophenol or lead mononitroresorcinate 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 containers which must be bags made of at least 10-ounce cotton duck, rubber, or rubberized cloth. Each bag must be securely closed. The bags containing diazodinitrophenol or lead mononitroresorcinate must 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 the bag securely closed. The dry weight of diazodinitrophenol in one outside container must not exceed 220 pounds and the dry weight of lead mononitroresorcinate in one outside container must not exceed 100 pounds.

\* \* \*

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

\* \* \*

7. In § 173.71, paragraphs (b) and (d) are amended to read as follows:

§ 173.71 Fulminate of mercury.

\* \* \*

(b) Fulminate of mercury must be packed wet with not less than 25 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 fulminate, 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. The 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 fulminate in one outside container must not exceed 150 pounds.

\* \* \*

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

\* \* \*

8. In § 173.72, paragraphs (b) and (d) are amended to read as follows:

§ 173.72 Guanyl nitrosamino guanylidene hydrazine.

\* \* \*

(b) Guanyl nitrosamino guanylidene hydrazine 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 guanyl nitrosamino guanylidene hydrazine, 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 con-

tents 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 guanyl nitrosamino guanylidene hydrazine in one outside container must not exceed 75 pounds.

\* \* \*

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

\* \* \*

9. In § 173.73, paragraphs (b) and (d) are amended to read as follows:

§ 173.73 Lead azide.

\* \* \*

(b) Lead azide, dextrinated type, or otherwise prepared to effectively control grain size, must be packed wet with not less than 20 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 lead azide, 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 lead azide in one container must not exceed 150 pounds.

\* \* \*

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

\* \* \*

10. In § 173.74, paragraphs (b) and (d) are amended to read as follows:

§ 173.74 Lead styphnate.

\* \* \*

(b) Lead styphnate (lead trinitroresorcinate) must be packed wet with not less than 20 percent by weight of water in 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 rubber cloth. The lead styphnate



within this bag should be divided into a number of smaller packages. Inside the bag and over the lead styphnate, 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 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 lead styphnate in one outside container must not exceed 150 pounds.

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

11. In § 173.75, the introductory text of paragraph (b) and paragraph (d) are amended to read as follows:

**§ 173.75 Nitro mannite.**

(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.

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

12. In § 173.76, paragraphs (b) and (c) are amended to read as follows:

**§ 173.76 Nitrosoguanidine.**

(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."

13. In § 173.77, paragraphs (b) and (d) are amended to read as follows:

**§ 173.77 Pentaerythrite tetranitrate.**

(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.

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

14. In § 173.78, paragraphs (b) and (d) are amended to read as follows:

**§ 173.78 Tetrazene.**

(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.

(d) Each barrel or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE

OR LOAD WITH ANY HIGH EXPLOSIVE."

15. In § 173.91, paragraph (a) (1) deleted as follows:

**§ 173.91 Special fireworks.**

(a) \* \* \*  
(1) [Deleted.]

16. In § 173.93, paragraphs (a) (b) (2), and (d) (2) are deleted as follows:

**§ 173.93 Propellant explosives (so for cannon, small arms, rocket guided missiles, or other devices, propellant explosives (liquid).**

(a) \* \* \*  
(1) [Deleted.]

(b) \* \* \*  
(2) [Deleted.]

(d) \* \* \*  
(2) [Deleted.]

17. In § 173.108, paragraph (a) (1) deleted as follows:

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

(a) \* \* \*  
(1) [Deleted.]

18. § 173.119, paragraphs (a) (5) (a) (6) are deleted; paragraphs (b) (e) (1) and (e) (3) are amended to read as follows:

**§ 173.119 Flammable liquids not specifically provided for.**

(a) \* \* \*  
(5) [Deleted.]  
(6) [Deleted.]

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

(e) \* \* \*  
(1) As prescribed in paragraphs (1) to (11) of this section, except specification 17E (§ 178.116 of this subchapter). But labels required, for metal barrels and drums, as prescribed in paragraph (i) of this section.

(3) Specification MC 304, MC 307, MC 330, or MC 331 (§§ 178.340, 178.342, 178.337 of this subchapter). Tank motor vehicles. Necessary interior cleaning of tanks must be performed between changes in lading. Each safety relief valve must have a start-to-discharge pressure of not less than 25 p.s.i.g. Each tank must meet the following requirements applicable:

(i) Bottom outlets on each specification MC 304 cargo tank must be equipped



with valves conforming to the requirements of § 178.342-5(a) of this subchapter; and

(ii) Bottom outlets on each specification MC 330 and MC 331 cargo tank must be equipped with valves conforming to the requirements of § 178.337-11(c) of this subchapter. Safety relief devices on these tanks must be in accordance with specification MC 331 (§ 178.337 of this subchapter) requirements.

19. In § 173.121, paragraph (a)(1) is deleted as follows:

**§ 173.121 Carbon bisulfide (disulfide).**

(a) \* \* \*

(1) Deleted.

20. In § 173.128, paragraph (b)(1) is deleted as follows:

**§ 173.128 Paints and related materials.**

(b) \* \* \*

(1) [Deleted.]

21. In § 173.131, paragraph (a)(2) is deleted as follows:

**§ 173.131 Road asphalt, or tar, liquid.**

(a) \* \* \*

(2) [Deleted.]

22. In § 173.132, paragraphs (a)(1) is ended; Note 1 is deleted as follows:

**173.132 Cement, liquid, n.o.s., container cement, linoleum cement, pyroxylin cement, rubber cement, tile cement, wallboard cement, and coating solution.**

(a) \* \* \*

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

Note 1: [Deleted.]

23. In § 173.141, paragraph (a)(10) is added to read as follows:

**§ 173.141 Amyl mercaptan, butyl mercaptan, ethyl mercaptan, isopropyl mercaptan, propyl mercaptan, and aliphatic mercaptan mixtures.**

(a) \* \* \*

(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) except for paragraph (i)(9), (10), and (11). A tank must not be liquid full at 130°F.

24. In § 173.154, paragraphs (a)(3), (4), and (5) are deleted as follows:

**§ 173.154 Flammable solids and oxidizing materials not specifically provided for.**

(a) \* \* \*

(3) [Deleted.]

(4) [Deleted.]

(5) [Deleted.]

25. In § 173.155, paragraph (a)(2) is deleted as follows:

**§ 173.155 Bags, nitrate of soda, empty and unwashed.**

(a) \* \* \*

(2) [Deleted.]

**§ 173.263 [Amended].**

26. In § 173.163, paragraph (a)(4) is amended by deleting the following words in the first sentence: "or spec. 11A or 11B (§§ 178.160 or 178.161 of this chapter) wooden barrels or kegs."

27. In § 173.184, paragraph (a)(1) is deleted as follows:

**§ 173.184 Nitrocellulose or collodion cotton, wet, or nitrocellulose, colloid, granular, or flake, wet, or nitrostarch, wet, or nitroguanidine, wet.**

(a) \* \* \*

(1) [Deleted.]

28. In § 173.187, paragraph (a)(1) is amended to read as follows:

**§ 173.187 Peroxide of sodium.**

(a) \* \* \*

(1) Specification 15A, 15B, 15C, 16A, or 19A (§§ 178.168, 178.169, 178.170, 178.185, 178.190 of this subchapter). Wooden boxes with inside containers which must be air-tight metal cans.

29. In § 173.188, paragraph (a)(1) is amended to read as follows:

**§ 173.188 Phosphoric anhydride.**

(a) \* \* \*

(1) Specification 15A, 15B, or 15C (§§ 178.168, 178.169, 178.190 of this subchapter). Wooden boxes with inside containers which must be 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. All inside containers must be cushioned with elastic incombustible packing materials.

(Note 1 remains the same.)

30. In § 173.191, paragraph (a)(1) is amended; paragraph (a)(3) is deleted as follows:

**§ 173.191 Phosphorus pentachloride.**

(a) \* \* \*

(1) Specification 15A, 15B, 15C, 16A, or 19A (§§ 178.168, 178.169, 178.170, 178.185, 178.190 of this subchapter). Wooden boxes with inside containers which must be 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 of phosphorus pentachloride not over 50 pounds in each outside container.

(3) [Deleted.]

31. In § 173.195, paragraph (a)(3) is deleted as follows:

**§ 173.195 Pyroxylin plastic scrap, photographic film scrap, X-ray film scrap, motion-picture film scrap, or pieces of exposed or unexposed film.**

(a) \* \* \*

(3) [Deleted.]

32. In § 173.201, paragraph (a)(3) is deleted as follows:

**§ 173.201 Rubber scrap, rubber buffings, reclaimed rubber, or regenerated rubber.**

(a) \* \* \*

(3) [Deleted.]

33. In § 173.204, paragraph (a)(1) is amended; (a)(8) is added to read as follows:

**§ 173.204 Sodium hydrosulfite.**

(a) \* \* \*

(1) Specification 15A, 15B, 15C, 16A, or 19A (§§ 178.168, 178.169, 178.170, 178.185, 178.190 of this subchapter). Wooden boxes with inside glass bottles of capacity not exceeding 5 pounds each, or metal containers.

(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 § 174.534 of this subchapter. Not authorized for transportation by water.

34. In § 173.205, paragraph (a)(2) is deleted as follows:

**§ 173.205 Sodium picramate, wet.**

(a) \* \* \*

(2) [Deleted.]

35. In § 173.206, paragraphs (a)(1) and (c)(4) are amended; paragraph (a)(11) is added to read as follows:

**§ 173.206 Sodium or potassium, metallic, sodium amide, sodium potassium alloys, sodium aluminum hydride, lithium metal, lithium silicon, lithium ferro silicon, lithium hydride, and lithium aluminum hydride.**

(a) \* \* \*

(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 containing lithium aluminum hydride must be cushioned in outside packagings with sufficient incombustible packaging material.

(11) Specification 12B (§ 178.205 of this subchapter). Fiberboard box. Au-



thorized 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 nonsparking metal spool. The net weight of the contents in each inside packaging must not exceed one-fourth pound.

(c) \* \* \*

(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.

36. In § 173.214, paragraphs (a) (2) and (c) (2) are deleted; paragraph (c) (4) is added to read as follows:

§ 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.

(a) \* \* \*

(2) [Deleted.]

(c) \* \* \*

(2) [Deleted.]

(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-gage steel. Each packaging may not exceed a capacity of 5 gallons. Net weight of contents may not exceed 50 pounds of dry material.

37. In § 173.216, paragraph (a) (2) is deleted as follows:

§ 173.216 Zirconium picramate, wet.

(a) \* \* \*

(2) [Deleted.]

38. In § 173.245, paragraphs (a) (5) and (a) (6) are deleted as follows:

§ 173.245 Corrosive liquids not specifically provided for.

(a) \* \* \*

(5) [Deleted.]

(6) [Deleted.]

39. In § 173.246, the heading, paragraph (a), and paragraph (a) (1) are amended; paragraph (a) (2) is added as follows:

§ 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 (§§ 178.36, 178.37, 178.38, 178.39, 178.50, 178.51, 178.61, 178.42 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 110A-500W (§§ 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.

40. In § 173.247, paragraph (a) (2) is deleted as follows:

§ 173.247 Acetic anhydride; Acetyl bromide; Acetyl chloride; Acetyl iodide; Antimony pentachloride; Benzoyl chloride; Boron trifluoride-acetic acid complex; Chromyl chloride; Dichloroacetyl chloride; Diphenylmethyl bromide solutions; Pyro sulfuric chloride; Silicon chloride; Sulfuryl chloride; Thionyl chloride; Tin tetrachloride (anhydrous); Titanium tetrachloride; Trimethyl acetyl chloride.

(a) \* \* \*

(2) [Deleted.]

41. In § 173.252, paragraphs (a) (3) and (a) (4) are amended; paragraph (a) (5) is deleted as follows:

§ 173.252 Bromine.

(a) \* \* \*

(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 application 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 made of metal not subject to deterioration by contact with the lading. All interior welds in nickel cladding must be protected by pure nickel straps. Except as otherwise provided herein, the water weight capacity of a tank must not be more than 60,000 pounds, and the maximum quantity of liquid bromine loaded into the tank must not be more than 60,000 pounds or 3 percent of the water weight capacity of the tank, whichever quantity is less. The total quantity loaded must not exceed 98 percent of the quantity authorized to carry.

(i) A tank constructed and maintained in full compliance with the requirements of a Specification 105A500W is authorized for larger quantities of bromine. However, this tank must be marked DOT-105A300W and equipped with manway cover, safety valves, venting valves, and unloading valves in compliance with the requirements of Specification DOT-105A300W. The water weight capacity of this tank must not be more than 37,400 pounds or the maximum quantity of liquid bromine loaded into the tank must not be more than 110,000 pounds or 3 percent of the water weight capacity of the tank, whichever quantity is less.

(4) Specification MC 310 (Specification 178.343 of this subchapter) motor vehicles. Each tank must have a shell and head thickness of at least three-eighths 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 material must conform to the requirements of ASTM Specification B-16. The composite plate must conform to the requirements of ASTM Specification 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 98 percent of the quantity the tank is authorized to carry.

(5) [Deleted.]

42. In § 173.254, paragraph (a) (2) is deleted as follows:

§ 173.254 Chlorosulfonic acid and esters of chlorosulfonic acid.

(a) \* \* \*

(3) [Deleted.]

43. In § 173.262, paragraph (a) (2) is deleted as follows:

§ 173.262 Hydrobromic acid.

(a) \* \* \*

(3) [Deleted.]

44. In § 173.263, paragraph (a) (8), and (b) (1) are deleted as follows:



§ 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, liquid, containing hydrochloric (muriatic) acid.

(a) \* \* \*

(4) [Deleted.]

\* \* \*

(8) [Deleted.]

(b) \* \* \*

(1) [Deleted.]

\* \* \*

45. In § 173.265, paragraphs (a) (2) and (a) (3) are deleted as follows:

§ 173.265 Hydrofluosilicic acid.

(a) \* \* \*

(2) [Deleted.]

(3) [Deleted.]

\* \* \*

46. In § 173.266, paragraph (d) (1) is deleted as follows:

§ 173.266 Hydrogen peroxide solution in water.

\* \* \*

(d) \* \* \*

(1) [Deleted.]

\* \* \*

47. In § 173.268, paragraphs (d) (1) and (e) (1) are amended to read as follows:

§ 173.268 Nitric acid.

\* \* \*

(d) \* \* \*

(1) Specification 15A, 15B, 15C, 16A, or 19A (§§ 178.168, 178.169, 178.170, 178.185, 178.190 of this subchapter). Wooden boxes with inside containers which must be glass bottles not over 5 pints capacity each, individually enclosed in tightly closed metal cans and cushioned therein with sufficient incombustible mineral material. (See paragraphs (g) and (h) of this section.)

\* \* \*

(e) \* \* \*

(1) Specification 15A, 15B, 15C, 16A, or 19A (§§ 178.168, 178.169, 178.170, 178.185, 178.190 of this subchapter). Wooden boxes with inside containers which must be glass bottles not over 5 pints capacity each. (See paragraphs (g) and (h) of this section.)

\* \* \*

48. In § 173.270, paragraph (a) (2) is deleted as follows:

§ 173.270 Phosphorus tribromide.

(a) \* \* \*

(2) [Deleted.]

\* \* \*

49. In § 173.271, paragraph (a) (3) is deleted as follows:

§ 173.271 Phosphorus oxybromide, phosphorus oxychloride, phosphorus trichloride, and thiophosphoryl chloride.

(a) \* \* \*

(3) [Deleted.]

\* \* \*

50. In § 173.274, paragraph (a) (4) is added to read as follows:

§ 173.274 Fluosulfonic acid.

(a) \* \* \*

(4) Specification MC 310, MC 311, or MC 312 (§ 178.343 of this subchapter). Tank motor vehicles.

§§ 173.283—173.285 [Deleted].

51. Section 173.283 thru 173.285 are deleted.

52. In § 173.289, paragraph (a) (3) is deleted as follows:

§ 173.289 Formic acid and formic acid solutions.

(a) \* \* \*

(3) [Deleted.]

\* \* \*

53. In § 173.291, paragraphs (a) (4) and (a) (5) are deleted as follows:

§ 173.291 Flame retardant compound liquid.

(a) \* \* \*

(4) [Deleted.]

(5) [Deleted.]

\* \* \*

54. In § 173.295, paragraph (a) (2) is deleted as follows:

§ 173.295 Benzyl chloride.

(a) \* \* \*

(2) [Deleted.]

\* \* \*

55. In § 173.304 paragraph (d) (3) (ii), the table is amended to read as follows:

§ 173.304 Charging of cylinders with liquefied compressed gas.

\* \* \*

(d) \* \* \*

(3) \* \* \*

(ii) \* \* \*

Type of container	Maximum capacity		Maximum charging pressure—p.s.i.g.
	Cubic inches	Gallons	
DOT-2P or DOT-2Q (see Note 1).....	31.83	.....	45 p.s.i.g. at 70° F. and 105 p.s.i.g. at 130° F. (see Note 2).
DOT-2P or DOT-2Q (see Note 1).....	31.83	.....	35 p.s.i.g. at 70° F. and 100 p.s.i.g. at 130° F.
DOT-3C or DOT-4C.....	3,881	16+5% tolerance..	145 p.s.i.g. at 130° F.

(Notes 1 and 2 remain the same.)

56. In § 173.306, paragraphs (b) (6) and (c) are amended to read as follows:

§ 173.306 Exemptions from compliance with regulations for shipping compressed gas.

\* \* \*

(b) \* \* \*

(6) Audible firm alarm systems powered by a compressed gas contained in an inside metal container when shipped under the following conditions:

(i) Each inside container must have contents which are not flammable, poisonous, or corrosive as defined under this part:

(ii) Each inside container may not have a capacity exceeding 35 cubic inches (19.3 fluid ounces);

(iii) Each inside container may not have a pressure exceeding 70 p.s.i.g. at 70° F. and the liquid portion of the gas may not completely fill the inside container at 130° F., and

(iv) Each non-refillable inside container must be designed and fabricated with a burst pressure of not less than four times its charged pressure at 130° F. Each refillable inside container must be designed and fabricated with a burst pressure of not less than five times its charged pressure at 130° F.

(c) *Fire extinguishers.* Fire extinguishers charged with a compressed gas to not more than 240 p.s.i.g. at 70° F. are exempt from specification packaging, marking, and labeling requirements when shipped under the following conditions, except that marking name of contents on outside packaging is required for shipments via carriers by water. In

addition to the above exemptions, shipments via highway carriers are exempt from Part 177 of this subchapter, except § 177.817.

(1) Each fire extinguisher must be shipped as an inside packaging.

(2) Each fire extinguisher must have contents which are not flammable, poisonous, or corrosive as defined under this part.

(3) Each fire extinguisher under stored pressure may not have an internal volume exceeding 1,100 cubic inches. For fire extinguishers not exceeding 35 cubic inches capacity, the liquid portion of the gas plus any additional liquid or solid must not completely fill the container at 130° F. Fire extinguishers exceeding 35 cubic inches capacity may not contain any liquefied compressed gas.

(4) Each fire extinguisher must be designed and fabricated with a burst pressure of not less than six times its charged pressure at 70° F. when shipped.

(5) Each fire extinguisher must be tested, without evidence of failure or damage, to at least three times its charged pressure at 70° F. but not less than 120 p.s.i.g. before initial shipment. For any subsequent shipment, each fire extinguisher must be in compliance with the retest requirements of the Occupational Safety and Health Administration regulations of the Department of Labor, 29 CFR 1910.157(d), and

(6) Each fire extinguisher manufactured after January 31, 1975 and filled and shipped under this paragraph must be legibly and durably marked "This extinguisher meets all requirements of 49 CFR 173.306(c)."

(7) When specification 2P or 2Q packagings are used, paragraphs (c) (4)



through (6) of this section are not applicable provided each packaging meets the requirements of paragraph (a)(3) of this section.

\* \* \* \* \*

57. In § 173.314, paragraph (c), Table Note 8 is amended to read as follows:

§ 173.314 Requirements for compressed gases in tank cars.

(c) \* \* \*

NOTE 8: Each tank must be equipped with adequate safety relief devices of the fusible plug type having a yield temperature not over 170° F., nor less than 157° F. Each device must be resistant to extrusion of the fusible alloy and leak tight at 130° F. Each valve outlet must be sealed by a threaded cap or a threaded solid plug. In addition, all valves must be protected by a metal cover.

\* \* \* \* \*

58. In § 173.346, paragraphs (a)(5) and (a)(6) are deleted as follows:

§ 173.346 Poisonous liquids not specifically provided for.

- (a) \* \* \*
- (5) [Deleted.]
- (6) [Deleted.]

\* \* \* \* \*

59. In § 173.351, paragraph (a)(2) is deleted as follows:

§ 173.351 Hydrocyanic acid solutions.

- (a) \* \* \*
- (2) [Deleted.]

60. In § 173.360, paragraph (a)(1) is deleted as follows:

§ 173.360 Perchloro-methyl-mercaptan.

- (a) \* \* \*
- (1) [Deleted.]

\* \* \* \* \*

61. In § 173.365, paragraphs (a)(4) and Note 1, and (a)(5) are deleted as follows:

§ 173.365 Poisonous solids not specifically provided for.

- (a) \* \* \*
- (4) [Deleted.]
- NOTE 1: [Deleted.]
- (5) [Deleted.]

\* \* \* \* \*

62. In § 173.366, paragraph (a)(2) is deleted as follows:

§ 173.366 Arsenic (arsenic trioxide) or arsenic acid (solid).

- (a) \* \* \*
- (2) [Deleted.]

\* \* \* \* \*

63. In § 173.367, Note 1 following paragraph (a)(1) is deleted as follows:

§ 173.367 Arsenical compounds n.o.s., arsenate of lead, calcium arsenate, Paris green, and arsenical mixtures.

- (a) \* \* \*
- (1) \* \* \*

NOTE 1: [Deleted.]

\* \* \* \* \*

64. In § 173.369, paragraphs (a)(2) and (a)(3) are deleted as follows:

§ 173.369 Carbolic acid (phenol), not liquid.

- (a) \* \* \*
- (2) [Deleted.]
- (3) [Deleted.]

\* \* \* \* \*

65. In § 173.370, paragraph (a)(2) is deleted as follows:

§ 173.370 Cyanides, or cyanides mixtures, except cyanides of calcium and mixtures thereof.

- (a) \* \* \*
- (2) [Deleted.]

\* \* \* \* \*

66. In § 173.371, paragraph (a)(2) is deleted as follows:

§ 173.371 Dinitrobenzol.

- (a) \* \* \*
- (2) [Deleted.]

67. In § 173.373, paragraph (a)(2) is deleted as follows:

§ 173.373 Ortho-nitroaniline and paraitraniline.

- (a) \* \* \*
- (2) [Deleted.]

#### PART 174—CARRIERS BY RAIL FREIGHT

In § 174.534, paragraph (c) is added to read as follows:

§ 174.534 Portable containers or tanks.

\* \* \* \* \*

(c) Specifications 52, 53, 56, and 57 (§§ 178.251, 178.252, 178.253 of this subchapter) portable tanks must be shipped only in a rail car that provides specific facilities for bracing and tie down of

these tanks. If TOFC or COFC utilized, tanks must be secured bodies in compliance with Bureau of Explosives' Pamphlet 6C.

#### PART 178—SHIPPING CONTAINER SPECIFICATIONS

1. In Part 178 Table of §§ 178.155, 178.157, 178.160, and 178.161 are deleted.

§ 178.155 [Deleted].

2. § 178.155 is deleted.

§ 178.157 [Deleted].

3. § 178.157 is deleted.

§ 178.160 [Deleted].

4. § 178.160 is deleted.

§ 178.161 [Deleted].

5. § 178.161 is deleted.

6. In § 178.245-1, paragraph (a) is amended as follows:

§ 178.245 Specification 51; stable tanks.

§ 178.245-1 Requirements for construction.

\* \* \* \* \*

(c) Each uninsulated tank used for transportation of compressed gases must have an exterior surface finish significantly reflective such as reflective color if painted, or a reflective metal or other material painted.

#### PART 179—SPECIFICATIONS FOR TANK CARS

In § 179.302 paragraph (a), (b) and (c) are amended; footnote 7 is added as follows:

§ 179.302 Special commodity tanks for multi-unit tank cars.

(a) \* \* \*

Commodity	Safety relief device	Valve protective housing	Miscellaneous
(Change)			
Hydrogen sulfide	Fusible plugs required <sup>1</sup>	Required <sup>2</sup>	

<sup>1</sup> Safety relief devices for hydrogen sulfide must be of the fusible plug type utilizing a fusible alloy with a yield temperature not over 170° F., nor less than 157° F. Each device must be resistant to extrusion of the fusible alloy at 130° F.

This amendment is effective January 31, 1975. However, immediate compliance with the regulations, as amended herein, is authorized.

(Transportation of Explosives Act (18 U.S.C. 831-835), section 6 of the Department of Transportation Act (49 U.S.C. 1655); Title VI and section 902(h) of the Federal Aviation Act of 1958 (49 U.S.C. 1421-1430, 1472(h), and 1655(c)).

Issued in Washington, D.C. on May 14, 1974.

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