DEPARTMENT OF TRANSPORTATION
HAZARDOUS MATERIALS REGULATIONS BOARD
WASHINGTON, D.C. 20590

[49 CFR Parts 173, 179]

[Docket No. HM-100; Notice 72-4]

TRANSPORTATION OF HAZARDOUS MATERIALS

Ethylene Oxide; Opening in Tank Car Heads

The Hazardous Materials Regulations Board is considering amendment of §§ 173.124, 179.102, 179.201, and 179.202 of the Department's Hazardous Materials Regulations to authorize the shipment of ethylene oxide in insulated portable tanks and to upgrade the specifications of tank cars authorized for ethylene oxide. In addition, the Board proposes to remove authorization for the use of certain other tank cars in this service.

The Board has received petitions to make these changes to the regulations. Support for the petition to permit ethylene oxide to be transported in specially modified Specification 51 portable tanks is based on favorable experience data reported to the Board on shipments moving since 1964 under special permit.

The proposed changes for tank cars are based on recommendations by the Manufacturing Chemists Association, Inc. Its petition indicates that the present ethylene oxide tank car specifications warrant revisions for improved safety performance, that some currently authorized tanks cars for this service are obsolete, and that others are inadequate for safe rail transportation.

The Board believes that the adoption of this proposal would provide greater safety in the transportation of ethylene oxide. Also, the Board requests advice on the need for continuing the authorization for "Openings in tank heads to facilitate application of lining" which is found in § 173.124(a)(5) and numerous other sections such as §§ 173.119(a)(12), (e)(2), and (f)(3), 173.314(c) Note 16, 173.354(a)(4), 179.102-12, 179.102-17, 179.102-20, 179.102-6(a)(3), 179.202-1, and 179.202-18. The Board believes that this is an obsolete requirement and is no longer needed.

The Board is developing improved identification requirements for tank cars containing certain hazardous materials such as ethylene oxide. As part of this development, the Board will propose changes to the present marking requirements for tank cars in a separate notice. Any changes resulting from that notice of proposed rule making would be reflected in those sections dealing with marking of ethylene oxide tank cars.

In consideration of the foregoing, it is proposed to amend 49 CFR Parts 173 and 179 as follows:

PART 173—SHIPPERS

In § 173.124 paragraph (a), paragraph (a)(5) would be amended, Note 1 would be canceled, and paragraph (a)(6) would be added; paragraph (b) would be canceled as follows:

§ 173.124 Ethylene oxide.

(a) * * *

(5) Specification 105A100W or 111A-100W4 (§§ 179.100, 179.200 of this chapter) 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. Each tank car must be stenciled, in letters not less than 1½ inches high, "Ethylene Oxide Only" near the car specification number. Outage of each tank must be sufficient to prevent the tank from becoming entirely filled with liquid at 105° F. Each tank, loaded or empty, must be padded with dry nitrogen or other suitable dry inert gas charged to a pressure of 35 to 60 p.s.i.g. at 70° F. The gas must be free of impurities which may cause the ethylene oxide to rearrange chemically or polymerize violently. See §§ 179.102-12 and 179.202-18 of this chapter for special requirements for tank cars authorized for ethylene oxide.

NOTE 1 [Canceled]

(6) Specification 51 (§ 178.245 of this chapter) portable tank. Each tank, loaded or empty, must be padded with dry nitrogen or other suitable dry inert gas charged to a pressure of 35 to 60 p.s.i.g. at 70° F. The gas must be free of impurities which may cause the ethylene oxide to rearrange chemically or polymerize violently. 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.

(ii) The insulating material of the tank must be protected by a steel jacket having a minimum thickness of 14 gage. 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 of this chapter, set to relieve at 75 p.s.i.g.

(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) Each tank must be equipped with a thermometer well.

(vii) Gaskets made of Teflon or interwoven stainless steel and Teflon are required.

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

(b) [Canceled]

PART 179—SPECIFICATIONS FOR TANK CARS

(A) Section 179.102-12 would be amended to read as follows:

§ 179.102 Special commodity requirements for pressure tank car tanks.

§ 179.102-12 Ethylene oxide.

(a) Each tank car used to transport ethylene oxide must be constructed to be in compliance with the following special requirements:

(1) The tank must be constructed in accordance with the DOT-105A * * * W Specification, and its jacket stenciled "DOT-105A100W" and "Ethylene Oxide Only." "Ethylene Oxide Only" must appear on both sides of the tank and in letters not less than 1½ inches high.

(2) Each safety relief valve must be in compliance with the requirements specified in the DOT-105A100W tank car specification. Each safety relief valve must have its discharge piped to the top of the manway bonnet assembly. Vapor exit from the assembly must be provided through a full opening weather cap located directly above the safety valve vent pipe. Compliance with this provision is required after (*effective date of amendment*) except that tank cars which are not in compliance and were built before (*effective date of amendment*) must be in compliance by (*1 year following effective date*).

(3) 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.

(4) Interior pipes of liquid discharge valves, vapor lines, gaging devices (when the device provides a means for passage of the lading from the interior to the exterior of the tank) and sampling lines must be equipped with excess flow valves of an approved design.

(5) Each tank must be equipped with a thermometer well.

(6) Each tank must be insulated with glass fiber except tank cars built before (effective date of amendment) are authorized in this service when insulated with cork.

(7) The manway protective housing and cover must be insulated with glass fiber or other material that will provide protection against heat deterioration of the valves and any resilient material contained within the housing. Compliance with this provision is required after (effective date of amendment) except that tank cars which are not in compliance and were built before (effective date of amendment) must be in compliance by (1 year following effective date).

(8) Gaskets made of Teflon or interwoven stainless steel and Teflon are required.

(B) In § 179.201-1 paragraph (a) table, footnote 2 would be added and reference thereto would replace § 173.314 (c) as the seventh entry in the column headed 111A100W4:

§ 179.201 Individual specification requirements applicable to nonpressure tank car tanks.

§ 179.201–1 Individual specification requirements.

(a) * * *

[2] See § 173.314(c) of this chapter for compressed gases and § 173.116 of this chapter for flammable liquids, unless otherwise specified in Part 173, Subpart C.

* * * * *

(C) Section 179.202–18 would be amended to read as follows:

§ 179.202 Special commodity requirements for nonpressure tank car tanks.

§ 179.202–18 Ethylene oxide.

(a) Each tank car used to transport ethylene oxide must be constructed to be in compliance with the following special requirements:

(1) The tank must be constructed in accordance with the DOT–111A100W4 specification and its jacket stenciled on both sides "ETHYLENE OXIDE ONLY" in letters not less than 1½ inches high.

(2) The safety relief valve, if not located on the manway nozzle, must be protected by an approved and insulated protective housing. Each safety relief valve must have its discharge piped to the top of the manway bonnet assembly or protective housing. Vapor exit from the manway bonnet assembly or protective housing must be provided through a full opening weather cap located directly above the safety valve vent pipe. Compliance with this provision is required after (effective date of amendment) except that tank cars which are not in compliance and were built before (effective date of amendment) must be in compliance by (1 year following effective date).

(3) 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.

(4) Interior pipes of liquid discharge valves, vapor lines, gaging devices (when the device provides a means for passage of the lading from the interior to the exterior of the tank) and sampling lines must be equipped with excess flow valves of an approved design.

(5) Each tank must be equipped with a thermometer well.

(6) Each tank must be insulated with glass fiber except tank cars built before (effective date of amendment) are authorized in this service when insulated with cork.

(7) Manway nozzle, cover plate, and protective housing must be in compliance with the requirements of section 179.100–12. The manway protective housing and cover must be insulated with glass fiber or other material that will provide protection against heat deterioration of the valves and any resilient material contained within the housing. Compliance with this provision is mandatory after (effective date of the amendment) except that tank cars which are not in compliance and were built before (effective date of amendment) must be in compliance by (1 year following effective date).

(8) Gaskets made of Teflon or interwoven stainless steel and Teflon are required.

(9) Vacuum relief valves are prohibited.

Interested persons are invited to give their views on this proposal. Communications should identify the docket number and be submitted in duplicate to the Secretary, Hazardous Materials Regulations Board, Department of Transportation, 400 Sixth Street SW., Washington, D.C. 20590. Communications received on or before July 18, 1972, will be considered before final action is taken on the proposal. All comments received will be available for examination by interested persons at the Office of the Secretary, Hazardous Materials Regulations Board, both before and after the closing date for comments.

This proposal is made under the authority of sections 831–835 of title 18, United States Code, and section 9 of the Department of Transportation Act (49 U.S.C. 1657).

Issued in Washington, D.C., on March 31, 1972.

W. J. BURNS,
Chairman, Hazardous Materials Regulations Board.

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