

MONDAY, DECEMBER 11, 1978
PART IV



**DEPARTMENT OF
TRANSPORTATION**

**Materials Transportation
Bureau, Research and
Special Programs
Administration**



**INTERMODAL PORTABLE
TANKS**

Proposed Packaging Specifications

**Intermodal
Portable
Tanks**

[4910-60-M]

DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration

[49 CFR Parts 107, 173, 176, 178]

[Docket No. HM-167; Notice No. 78-12]

INTERMODAL PORTABLE TANKS**Proposed Packaging Specifications**

AGENCY: Materials Transportation Bureau, Research and Special Programs Administration, DOT.

ACTION: Notice of proposed rulemaking.

SUMMARY: This notice proposes to amend the Hazardous Materials Regulations to include two new packaging specifications for intermodal portable tanks. The new portable tank specifications, which will be designated Specifications IM 100 and IM 101, are intended to facilitate the international transport of hazardous materials by implementing the recognized worldwide standards for portable tank design and construction developed by the Inter-governmental Maritime Consultative Organization (IMCO) and the United Nations Committee of Experts on the Transport of Dangerous Goods. In addition to the new specifications this notice proposes requirements to govern the maintenance and use of such tanks, the hazardous materials to be authorized for carriage in Specification IM 100 and IM 101 portable tanks and, where necessary, proposes additional requirements necessary to insure the requisite level of safety in transporting certain hazardous materials in these portable tanks. Finally, this notice proposes procedures whereby the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau (MTB) may designate qualified, disinterested third parties to approve certain DOT specification packagings.

DATE: Comments by March 15, 1979.

ADDRESS COMMENTS TO: Dockets Branch, Information Services Division, Office of Program Support, Department of Transportation, 2100 Second Street SW., Washington, D.C. 20590. Comments may be reviewed in the Dockets Branch, Room 6500, between 9 a.m. and 5 p.m. weekdays.

FOR FURTHER INFORMATION CONTACT:

Lt. Edward A. Altemos, USCG, International Standards Coordinator, Office of Hazardous Materials Regulation, Materials Transportation Bureau, 2100 Second Street SW., Washington, D.C. 20590, 202-426-0656.

SUPPLEMENTARY INFORMATION: The portable tank has become an increasingly popular method of packaging hazardous materials for international transport. The rapid increase in the use of portable tanks for the international transport of hazardous materials can be attributed, in part, to the advent of containerized transport. When mounted in a frame with dimensions conforming to those of a standard freight container, a portable tank can be readily transported aboard a containership. The loading and unloading of these ships is greatly facilitated through use of the modern cargo handling equipment normally employed in containerized transport, and since the tank can be directly transferred from ship to transport vehicle, lost time in the land-sea interface is minimized. In addition, assuming sufficient demand for a product exists, the portable tank provides an economic advantage over shipping hazardous materials in smaller packages by reducing packaging and handling costs. Safety in handling is enhanced through use of these tanks since direct exposure of operating personnel to the materials being transported is minimized.

Recognizing the inherent advantages of transporting hazardous materials in portable tanks and the increasing popularity of this method of transport, IMCO's Subcommittee on the Carriage of Dangerous Goods undertook the preparation of a recommended standard governing the design and construction of portable tanks intended for the international carriage of hazardous materials by sea. The purpose of this effort was to promote the harmonization of the various national requirements for the design, construction and use of portable tanks in order to facilitate the international transport of hazardous materials in portable tanks. The United States took an active part in the development of these recommendations and, in 1972, an amendment to IMCO's International Maritime Dangerous Goods (IMDG) Code was published which included the newly developed standards for portable tanks.

Shortly after the initial publication of IMCO's standards for portable tanks intended for use in the marine mode, the United Nations Committee of Experts on the Transport of Dangerous Goods began development of a recommended standard for portable tanks which would be acceptable for multimodal transport. The first phase of work on this standard was completed in 1974 with the Committee's adoption of a recommendation for the design and construction of a portable tank suitable for the carriage of flammable liquids by both land and sea modes. Subsequent to this initial

effort, additional standards were developed by the Committee which addressed the carriage of other classes of hazardous materials in these tanks.

While the portable tank standard initially adopted by the Committee of Experts was considered a suitable standard for tanks to be transported by both land and sea modes, it was nevertheless substantially different from that developed by IMCO in that it was based to a great extent on existing European road and rail requirements. Recognizing the need for the harmonization of these two standards, the UN Committee of Experts and IMCO's Subcommittee on the Carriage of Dangerous Goods have worked closely over the past two years in an effort to minimize the difference between their two recommendations. These efforts have been, for the most part, successful and the harmonized standard resulting from this work, as well as experience gained through the Department's exemption program, has provided the basis for the portable tank specifications proposed in this notice.

Exemptions authorizing the use of portable tanks similar in design and construction to those proposed in this notice have been sought and, where appropriate, granted for over ten years. The exemptions were necessary because the Department's regulations failed, with the exception of DOT Specification 60 portable tank, to provide for portable tanks designed specifically for the transportation of flammable, corrosive, and poisonous and other liquid hazardous materials. The exemptions have been granted for portable tanks generally fulfilling the requirements of both a DOT specification for cargo tanks and earlier versions of the international standards.

The initial effort towards the development of DOT portable tank specifications conforming to the IMCO standards was undertaken by the Chemical Transportation Advisory Committee (CTAC), which is a committee providing advice and guidance to the Commandant of the Coast Guard regarding the transport of hazardous materials in the marine mode. This work was begun shortly after the initial publication of IMCO's portable tank recommendations and the initial draft of the IM 100 and IM 101 portable tank specifications was completed by 1974. However, as a result of several major regulatory projects underway at that time, in particular the consolidation of the Hazardous Materials Regulations under Dockets HM 112 and HM 103, the draft specifications prepared with the assistance of the CTAC were never published as a Notice of Proposed Rulemaking, and, due to the changes in the IMCO standards stemming from the harmo-

nization effort with the UN, the draft required extensive revision to insure conformance with the latest IMCO and draft UN standards.

As the UN/IMCO portable tank standards gain ever increasing worldwide acceptance, it has become imperative for the United States to recognize portable tanks constructed to these standards in order to facilitate the interantional transport of hazardous materials in portable tanks. The two most predominant types of international portable tanks are those designated as IMCO Type 1 and Type 2 tanks. These are low pressure tanks designed specifically for the carriage of hazardous liquids with vapor pressures less than 43 pounds per square inch, absolute, at 150° F. The Type 1 tank must have a maximum allowable working pressure (MAWP) of 25 pounds per square inch, gauge, or greater, while the Type 2 tank must have a MAWP of less than 25 pounds.

Existing DOT regulations currently contain no comparable specifications for portable tanks intended solely for the carriage of flammable, corrosive, poison and various other hazardous liquids and, as a result, the transportation of these liquids within the United States in tanks conforming to IMCO Type 1 or Type 2 standards can presently be authorized only by exemption. The ever increasing demand to transport hazardous materials in these types of tanks, resulting from the general worldwide recognition of the IMCO standards, has necessitated the issuance of dozens of such exemptions. Therefore, by introducing the IM 100 and IM 101 specifications (conforming to the IMCO Type 2 and Type 1 tanks respectively), regulatory recognition of these portable tank types, which are already being widely used in the United States under exemption, is provided. This will serve not only to facilitate the international transport of hazardous materials in portable tanks, but also to eliminate the time constraints and economic burdens inherent in the exemption process.

One of the goals of the efforts underway internationally to develop standards such as the UN/IMCO portable standards is to eliminate a duplicity or redundancy of approval efforts by various national authorities through implementation of widely recognized and mutually acceptable international standards. Implementation of the portable tank specifications proposed in this notice will serve to accomplish this by affording the American importer or exporter the opportunity of shipping in a DOT specification portable tank that is compatible with the accepted international portable tank standards. To promote the acceptance of these tanks without the necessity of additional inspections by

foreign administrations in whose jurisdictions the tanks will also be used, the MTB believes it is necessary that the construction and testing of the tanks be supervised by a disinterested party. This notice proposes that certain qualified, disinterested persons may be designated as approval agencies and that such agencies may approve Specification IM 100 and IM 101 tanks. It is anticipated that many of the parties who will apply for designation as approval agencies will be organizations already recognized by foreign governments to issue approvals for portable tanks on behalf of those governments. The MTB believes that this action will minimize the total number of authorities who must approve a tank to be used in international transport in that one approval agency may be able to issue approvals acceptable to many national administrations and for various modes of transport, with only a single inspection. This should reduce the cost and time required to move these multimodal tanks in international commerce.

The primary drafter of this document is LT Edward A. Altemos, USCG, Office of Hazardous Materials Regulation. The following is an analysis and explanation, by section, of the more significant features of this regulatory proposal.

Section 107.3. This section defines "Approval Agency".

Section 107.401-407. These sections set forth the procedures whereby the Associate Director for Hazardous Materials Regulation (HMR), MTB, may designate qualified persons to approve certain DOT specification packagings on his behalf. The procedure for filing an application for designation as an approval agency would be given as will as the information required to be included in the application. Section 107.403 would provide the criteria by which the Associate Director for HMR selects individuals or organizations to act as approval agencies. The criteria are designed to permit selection of any organization, foreign as well as domestic, that is technically competent for the purpose and free from undue influence by those involved with the fabrication, ownership or movement of the packages it will be called upon to evaluate. The required action on the part of the Associate Director for HMR in processing each application is provided as well as the standard conditions which are a part of each designation issued. Finally the procedures by which the Associate Director for HMR, MTB, may withdraw such designations, or by which an approval agency may voluntarily terminate its designation, would be set forth. The designation could only be withdrawn if:

(1) The application submitted by an approval agency contains misrepresentation of facts relative to the organization;

(2) The approval authority fails to comply with the terms of its designation; or,

(3) The approval authority is incompetent.

Generally, before the Associate Director for HMR could withdraw a designation as an approval agency, the organization concerned must be informed of the reasons for which the withdrawal has been undertaken and must be accorded an opportunity to demonstrate or achieve compliance in the deficient areas.

Section 173.32a. This section would provide the basic procedures by which Specification IM 100 and IM 101 portable tanks could be approved. Applications for approval of portable tanks would be submitted by either the owner of the tanks or the manufacturer. Each application would be required to include all engineering drawings and calculations necessary for the approval agency to ensure that the tank design complies in all respects with the appropriate specification. An incomplete application would be returned to the applicant within thirty days of its receipt by the approval authority with an indication of the reasons for which the application has been deemed to be incomplete. If an application is complete the approval agency would review the design and witness all required tests before issuing the approval certificate. The approval authority would maintain a set of the approved drawings and calculations for each tank design it has approved, as well as a copy of each approval certificate it issues, for a period not less than 15 years. In addition, a copy of each approval issued would be forwarded to the MTB. If an application for approval is denied, the approval authority would inform the applicant of the reasons for which the approval was denied. Denial of an application for approval could be appealed to the Associate Director for HMR.

Existing portable tanks, which are being operated under DOT exemption and which are substantially in conformance with either the IM 100 or IM 101 specifications, could be designated as a specification tank by the Associate Director for HMR. Because many of the portable tanks currently being operated under DOT exemption were designed to comply with either the IMCO standard or the DOT MC 306 or 307 specifications, the MTB believes that a number of exemptions could be designated as IM 100 or IM 101 specification tanks as appropriate.

Finally, procedures are proposed governing the review and approval of

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modifications to existent Specification IM 100 and IM 101 portable tanks. Requirements for retesting of modified tanks and the reissuance of approval certificates, if appropriate, are proposed.

Section 173.32b. This section proposes periodic retesting and reinspection of Specification IM 100 and IM 101 portable tanks. Tanks would be pressure retested at intervals of not more than five years and spring loaded pressure relief devices would be retested at intervals of not more than two and one-half years. In addition each tank would be visually reinspected at least once every two and one-half years. It is proposed that any tank which becomes seriously deteriorated or which is damaged to an extent which may adversely affect the tank's ability to retain its contents, must be pressure retested. All tests and inspections are to be witnessed by one of the authorized approval agencies and records of all tests and inspections conducted would be retained by both the owner of the tank and by the witnessing approval agency.

Section 173.32c. This section proposes basic requirements for the use of Specification IM 100 and IM 101 portable tanks. The majority of the requirements in this section have been derived from § 173.32 and consist of general requirements governing the use of portable tanks. However, one paragraph has been included which would permit the Associate Director for HMR to authorize for transportation in Specification IM 100 or IM 101 portable tanks certain hazardous materials which are not specifically authorized in Part 173. It is anticipated that Part 173 would be periodically updated to reflect the authorizations issued in this manner.

Section 173.116. Outage requirements are proposed for portable tanks containing flammable liquids. The filling relationship proposed is intended to limit the loading of a tank such that the tank is not more than 98 percent full by volume at a temperature of 122° F.

Sections 173.119 through 173.630. Various amendments are proposed to authorize the carriage of hazardous materials in Specification IM 100 or IM 101 portable tanks. The specific materials authorized have been taken either from existing exemptions under which portable tanks have been operating or from the lists of hazardous materials suitable for carriage in such tanks as developed by the UN Committee of Experts or IMCO. The MTB is fully aware that many hazardous materials not proposed for carriage in Specification IM 100 or IM 101 portable tanks by this notice are suitable for carriage in such tanks. Commenters are therefore urged to suggest

amendments to Parts 173 that would authorize additional materials for carriage in these tanks. Such proposals should include sufficient data relative to the properties of the materials to permit the MTB to make a determination regarding the acceptability of the material for bulk transportation as well as the type of tank which should be required.

The maximum allowable working pressures required for tanks carrying particular materials have, in most instances, been specified according to the pressure ratings suggested for these materials in the international standards. In general, these standards make use of four basic pressure ratings for portable tanks. These pressure ratings approximately correspond to the maximum allowable working pressures of 14.2 psig, 25 psig, 38 psig and 58 psig which are utilized extensively throughout this notice. In other cases maximum allowable working pressures proposed for particular materials in this notice have been based upon successful experience gained in transporting the material in similar tanks under exemption. In general, higher working pressure tanks are required for more dangerous materials or for materials transported under the generic shipping descriptions from which the severity of the hazards of the particular materials cannot be readily ascertained. Similarly, other requirements such as increased minimum shell thickness or prohibition of bottom outlets, are based upon the severity of hazard of the material. For hazardous materials possessing significantly high vapor pressures, the maximum allowable working pressures proposed are no less than the sum of the vapor pressure of the material at 150° F. plus an allowance of 5 psig for dynamic loadings. The 150° F. reference temperature has been taken from the UN/IMCO recommendations.

Section 176.340. A new § 176.340 is proposed which lists the types of portable tanks acceptable for the carriage of combustible liquids in the water mode. Except for the Specification IM 100 and IM 101 portable tanks, all other tanks listed are currently authorized for carriage of combustible liquids under 46 CFR 90.05-35. The MTB believes that there will be benefit to the user of the regulations if this list is reproduced in the regulations dealing solely with the transportation of packaged hazardous materials. Finally, it is proposed that portable tanks of types other than those listed may be used provided they are approved by the Commandant (G-MHM).

Section 178.270. Proposes general design and construction requirements applicable to both Specification IM 100 and IM 101 portable tanks. These

tanks are intended for the carriage of liquids having a vapor pressure less than 43 psia at a temperature of 150° F. and are basically equivalent to the IMCO Type 2 and Type 1 tanks respectively.

A basic requirement proposed for all tanks is that they be designed to retain contents under all normal conditions incident to transportation. In addition, they would be required to have a cross section that is capable of being analyzed, either mathematically or experimentally, to insure that the maximum stress levels prescribed will not be exceeded in normal service. It is proposed that the center of gravity of all filled tanks be approximately centered within the points of attachment of lifting devices to insure that the loads imposed during lifting are evenly distributed throughout all lifting attachments. Insulation, when installed, would be jacketed to prevent damage or other conditions which would reduce its effectiveness. All tanks would be constructed of steel and the chemical and physical properties of the materials of construction would meet the minimum requirements established in Section VIII, Division 1 of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (ASME Code).

Maximum permissible stress levels for tanks, at the hydrostatic test pressure and under specified dynamic loadings, are proposed in § 178.270-4. Some difficulty exists in adhering to the IMCO and draft UN standards in this regard in that both of these recommendations contain a provision that tanks should be constructed to a recognized pressure vessel code but then proceed to specify maximum permissible stress levels that are inconsistent with the ASME Code which is the most widely recognized pressure vessel design code used in the United States. In particular, the ASME Code limits the maximum permissible stress at test pressure to the lower of 93.75 percent of the specified minimum yield strength or 37.5 percent of the specified minimum tensile strength, while the international standards limit stress at the test pressure to the lower of 75 percent of the specified minimum yield strength (which for austenitic steels would be determined at the 1.0 percent offset) or 50 percent of the specified minimum tensile strength. The ASME Code stress levels insure, at all times, a minimum factor of safety of 4:1 against ultimate strength (at the maximum allowable working pressure) while the UN/IMCO stress levels would, for certain materials, permit a minimum 3:1 factor of safety against ultimate strength at that pressure. For the purpose of this notice, stress levels conforming to those prescribed in the ASME Code are pro-

posed. The MTB recognizes, however, that inconsistency between domestic regulations and the international standards of a matter as fundamental as maximum permissible stress levels could, conceivably, adversely affect free movement of portable tanks in international commerce. For this reason, commenters are specifically requested to comment on the relative merits of both approaches to limitation of stress levels (i.e. ASME Code method and UN/IMCO method) devoting particular attention to:

(a) The potential that safety would be compromised if a 3:1 factor of safety was to be applied in certain cases;

(b) Any potentially significant barriers to trade that could result from the use of the stress level limitations proposed herein that are inconsistent with those in the international standards; and,

(c) The extent to which tanks constructed to a 3:1 factor of safety are actually in use throughout the world and reports of relevant transportation experience concerning such tanks.

Minimum thicknesses for heads and shells are proposed in § 178.270-5. The values specified assume tank construction is of mild steel which has been defined as a steel with a guaranteed minimum tensile strength of 52,500 pounds per square inch and a guaranteed minimum percentage elongation of 27, as recommended in the UN/IMCO standards. For tanks constructed of other than mild steel as defined, the required minimum thickness could be reduced by use of a mathematical equivalence relationship. The tensile strength of the material of construction as determined through actual testing could be used in place of the guaranteed minimum tensile strength tabulated for the material in the ASME Code.

In § 178.270-6 it is proposed that the stress in tank supports, frameworks or lifting attachments should not exceed 80 percent of the specified minimum yield strength of the materials of construction under specified conditions of dynamic loading. Furthermore, framework on tank containers would fully comply with the requirements of 49 CFR Parts 451 and 452 (43 FR 16948-16951, April 20, 1978) issued to implement the International Convention for Safe Containers.

Requirements for joints in tank shells are proposed in § 178.270-7. All joints would be made by fusion welding. Joint preparation, welding procedures and efficiencies would be as prescribed in the ASME Code. If they are not ASME Code qualified, welders would have to be qualified by the approval agency using the procedures provided in the ASME Code.

General requirements concerning the protection of valves and accessories are proposed in § 178.270-8.

In § 178.270-9 it is proposed that all tanks be provided with inspection openings of adequate size to allow for complete internal inspection. For tanks with a capacity exceeding 500 gallons a manhole of specified minimum dimensions would have to be provided.

Tanks not fitted with vacuum relief devices would be required by § 178.270-10 to be designed to withstand a positive external pressure differential of 6 pounds per square inch. When vacuum relief valves are installed, tanks would have to be designed to withstand an external pressure not less than the set pressure of the relief device.

Requirements for pressure and vacuum relief devices are proposed in § 178.270-11. The requirements for the number and type of relief devices required as well as the pressure setting of these devices are based on the provisions of the UN and IMCO portable tank standards. It is proposed that each portable tank be fitted with at least one pressure relief device and that at least one spring loaded pressure relief device be provided for tanks with capacities of 500 gallons or greater. General requirements governing the location, arrangement and construction of relief devices are proposed in § 178.270-11(b). The spring loaded relief device required on tanks with capacities of 500 gallons or greater, or frangible discs fitted on tanks with lesser capacities that have no spring loaded device installed, would be required to function at a pressure of 125 percent of the maximum allowable working pressure. Additional frangible pressure relief devices installed to insure adequate venting capacity in fire situations, would be required to function at a pressure of 150 percent of the maximum allowable working pressure. Any fusible element installed would be required to have a fusing temperature of not more than 250° F. Vacuum relief devices, if fitted, would be required to open at a nominal overpressure of not less than 3 pounds per square inch.

Requirements for minimum total venting capacity of relief devices are proposed in § 178.270-11(d). A minimum relieving capacity of one standard cubic foot of air per minute per 30 square feet of tank area is prescribed for each spring loaded pressure relief device. In addition, the total required venting capacity for all installed pressure relief devices is presented in a tabular format as a function of tank surface area. The values for venting capacities proposed were obtained using the venting capacity relationship presented in Pamphlet S-1.2, published by the Compressed Gas Associ-

ation, assuming hexane as the fluid vented. It is further proposed that the required venting capacity determined according to the proposed table for insulated tanks be permitted to be reduced in proportion to the efficiency of the installed insulation subject to a maximum reduction to 25 percent of the venting capacity specified in the table. General requirements relating to the survivability of insulation under fire conditions are also proposed. These requirements, as well as those proposed for markings on pressure relief devices, are as provided in the latest IMCO portable tank standards.

Requirements for the construction and arrangement of valves, piping and other accessories are proposed in § 178.270-12. It is proposed that all tank nozzles be fitted with manually operated stop valves with the exception of nozzles installed in the vapor space which are closed by a blank flange during transport. Valves on filling and discharge connections must be fitted as close to the shell as practicable and filling and discharge connections must be fitted with a secondary means of closure such as a blank flange. It is proposed that valves be rated at a pressure not lower than the maximum allowable working pressure of the tank, and that they be closed by a clockwise motion of the handwheel when screwed spindles are employed. Internal stop valves, when installed, would be required to be self-closing and to be fitted entirely within the shell or the welded discharge flange. Piping would be required to have a bursting strength not less than four times the maximum allowable working pressure of the tank and to be adequately supported to prevent damage due to jarring or vibration. It is proposed that all nozzles and shell penetrations be designed in accordance with the ASME Code. Glass or other easily destructible gauging devices would be prohibited.

Requirements for the initial test and inspection of specification IM 100 and IM 101 portable tanks are proposed in § 178.270-13. Each tank would be required to be subjected to a pressure test at a pressure of 150 percent of the maximum allowable working pressure of the tank. Leakage, undue distortion, or other conditions that indicate a weakness which might, in the opinion of the witnessing approval authority, render the tank unsafe for transportation services, would constitute failure of the test. Internal heating coils, if installed, would be required to be hydrostatically tested to a pressure not less than the greater of 200 psig or 150 percent of the rated pressure of the coils.

A prototype tank of each portable tank design would be required to undergo inertial restraint tests to insure

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PART 107—HAZARDOUS MATERIALS
PROGRAM PROCEDURES

1. In the table of sections for Part 107, a new subpart E heading and entries would be added to read as follows:

Subpart E—Designation of Approval Agencies

- 107.401 Purpose and scope.
- 107.402 Application for designation as an approval agency.
- 107.403 Criteria for selection of approval agencies.
- 107.404 Designation of approval agencies.
- 107.405 Conditions of designation.
- 107.406 Termination of designation.
- 107.407 Withdrawal of designation.

AUTHORITY: 49 U.S.C. 1803, 1804, 1808, 49 CFR 1.53(e) and paragraph (a) of App. A to Part 106.

2. In § 107.3 a new definition would be added after the definition of "Act" to read as follows:

§ 107.3 Definitions.

"Approval Agency" means a person designated by the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau, who is authorized, in accordance with procedures set forth at Subpart E of this part, to approve certain packagings as having been designed and manufactured in compliance with applicable DOT specifications.

3. Part 107 would be amended by adding a new Subpart E, to read as follows:

Subpart E—Designation of Approval Agencies

§ 107.401 Purpose and scope.

This subpart establishes procedures for the designation of approval agencies (see § 107.3).

§ 107.402 Application for designation as an approval agency.

(a) Any person seeking designation as an approval agency shall apply in writing to the Associate Director for Hazardous Materials Regulation, Department of Transportation, 2100 Second Street, SW., Washington, D.C. 20590. Each application must be signed and certified by the applicant or, if the applicant is an organization, by an authorized officer of the organization. A false statement or representation or the knowing and willful concealment of a material fact subjects the applicant to the provisions of 18 U.S.C. 1001.

(b) The application must include the following information:

- (1) Name and address, including place of incorporation if a corporation. If the applicant is not a resident of the

United States, the name and address of a permanent resident of the United States designated in accordance with § 107.7 to serve as agent for service of process must be provided.

(2) For organizational applicants, a description of the organization, including the ownership, managerial structure, organizational components and directly affiliated agencies and their functions utilized for supporting technical services;

(3) A listing, by DOT specification number, of the types of packagings for which approval authority is sought.

(4) A list of the basic technical services offered;

(5) A general description of the geographic area to be served;

(6) A general description of the clients intended to be served;

(7) A general description of the work performed in the past which is relevant to the application, noting the amount and extent of such work performed within the previous three years;

(8) A description of the personnel to be utilized, indicating general background and qualifications, particularly for the technicians or surveyors to be used if plan review or witnessing of tests, or both, is required;

(9) Identification by name of 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 specific qualifications;

(10) A description of the means to be employed to assure the continued competence of the technical personnel who will be involved in the approval process;

(11) A detailed schedule of the fees proposed to be charged for the approval service;

(12) Evidence of financial stability;

(13) At least three business references who will furnish information regarding work performed by the applicant; and

(14) A statement that the Materials Transportation Bureau may inspect the applicant's facilities and records of all approvals issued under these regulations.

(c) The applicants may also contain any other information deemed pertinent by the applicant.

(d) The applicant must furnish any additional information necessary to evaluate the applicant's qualifications if requested by the Associate director for Hazardous Materials Regulation, Materials Transportation Bureau.

§ 107.403 Criteria for selection of approval agencies.

(a) The Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau, will select

that the design and construction of the tank supports in adequate to preclude separation of the tank from the framework or skids which would secure the portable tank to the transport vehicle or vessel, under the inertial loads encountered in transportation. Furthermore, a prototype of any tank design which is to be authorized for rail transport would be required to pass a series of rail impact tests based upon tests prescribed by the Association of American Railroads.

Requirements for marking certain information on a metal identification plate are proposed in § 178.270-14. These markings would be in addition to those currently required by § 172.326. Information required to be shown is based upon that suggested in the IMCO and UN standards. Additional information required by other national authorities or international organizations would be permitted to be displayed on the same metal plate.

Section 178.271. Section 178.271 proposes additional requirements applicable only to Specification IM 100 portable tanks. The maximum allowable working pressure of these tanks would be less than 25 psig but not less than 14.2 psig. Except as limited or modified in the proposed specification, IM 100 portable tanks with pressure greater than or equal to 15 psig would be designed and constructed in accordance with the ASME Code. It would not be required that these tanks be inspected by an ASME Code inspector or that a Manufacturer's Data Report (ASME Form U-1) be issued for the tanks. Provisions are proposed by which the approval agency may authorize a reduction in the minimum shell thickness required under § 178.270-4 provided additional protection against puncture of the tank is provided. Guidelines concerning the acceptable means of providing additional external protection are proposed.

Section 178.272. Section 178.272 proposes additional requirements applicable only to specification IM 101 portable tanks. It is proposed that the maximum allowable working pressure of these tanks be 25 psig or greater. In addition such Specification IM 101 portable tanks would be designed and constructed in accordance with the ASME Code except as limited or modified in the specification. It would not be required that these tanks be inspected by an ASME Code inspector or that a Manufacturer's Data Report (ASME Form U-1) be issued for the tanks.

In consideration of the foregoing, it is proposed to amend Parts 107, 173, 176, and 178 of 49 CFR as follows:

persons to act as approval agencies in accordance with the following criteria:

(1) The person is independent of manufacturers and owners in that:

(i) It has sufficient breadth of interest or activity, so that the loss or award of a specific contract to approve DOT specification packagings would not be a substantial factor in the person's financial well-being.

(ii) The employment security status of the person's employees is free from the influence of the manufacturers, owners, operators, carriers or lessors of the packagings concerned.

(2) The person has demonstrated the ability to competently carry out the procedures required for the approval of the packagings concerned.

(3) The person has an acceptable degree of financial security.

§ 107.404 Designation of approval agencies.

(a) The Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau, will act on all applications for designation as an approval agency.

(1) If an application for designation does not provide sufficient information with regard to all the criteria for designation, the application is denied. A denial on this basis is without prejudice to the submission of a new or amended application.

(2) If an application satisfies all criteria for designation, the applicant is sent a letter of designation and assigned an identification code.

(3) If an applicant fails to satisfy all the criteria, the applicant is given written notice of denial of its application. The notice contains all the reasons for the denial. The applicant may file a completed appeal of the denial with the Director, Materials Transportation Bureau, within 60 days of receipt of the denial. Thereafter, the Director, Materials Transportation Bureau, will render a final decision.

§ 107.405 Conditions of designation.

(a) The following conditions are part of every designation:

(1) The approval agency shall use only testing equipment that it has determined, through personal inspection, to be suitable for the purpose.

(2) All approval certificates issued by the approval agency must contain the name and identification code of the approval agency and must be in a format acceptable to the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau.

(3) Each approval agency shall maintain the following records for a period of at least 15 years from the date of approval. (When the approval agency's designation is withdrawn before such time, the records relating to each

approval issued within the prior 15 years must be forwarded to the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau):

(i) Each approval certificate issued.

(ii) A copy of the application and final approved drawings to which each approval refers.

(iii) The manufacturer's serial numbers of all packagings covered by each approval.

(4) Each approval agency shall establish and make available to the public a schedule of fees for the approval services performed under these regulations. The fees must not be disproportionate to the costs actually incurred.

(5) The approval agency shall notify the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau, within 20 days after the date there is any change in the information submitted in the § 107.402 application.

(6) The approval agency shall grant the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau, or his representative, the right to inspect its records and shall cooperate in the conduct of such inspections.

(7) The approval agency shall comply with any other terms or condition stated in the letter of designation.

§ 107.406 Termination of designation.

(a) The Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau, may withdraw a designation if:

(1) It is determined that the application for designation contained a misrepresentation.

(2) An approval agency fails to comply with a condition of designation.

(3) An approval agency is incompetent.

(b) Before a designation is withdrawn, the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau, gives to the approval agency:

(1) Written notice of the facts or conduct believed to warrant the withdrawal;

(2) Opportunity to submit oral or written evidence; and

(3) Opportunity to demonstrate or achieve compliance with the applicable requirement.

(c) If, in the opinion of the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau, exigent safety reasons require, an approval agency's designation may be withdrawn effective immediately upon written receipt of such notification. In such circumstances, the procedures at paragraph (b)(2) and (3) of this section need not be pro-

vided prior to the withdrawal of designation, but shall be provided as soon as practicable thereafter.

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

4. In the table of Sections to Part 173, the entry for § 173.32 would be amended and new entries for §§ 173.32a, 173.32b and 173.32c would be added as appropriate.

5. Section 173.32 would be amended by revising the heading as follows:

§ 173.32 Qualification, maintenance and use of portable tanks other than Specification IM 100 and IM 101 portable tanks.

6. Sections 173.32a, 173.32b, and 173.32c would be added to read as follows:

§ 173.32a Approval of Specification IM 100 and IM 101 portable tanks.

(a) *Application for approval.* (1) An owner or manufacturer of an IM 100 or IM 101 (§§ 178.270-272 of this subchapter) portable tank may apply for approval to any approval agency designated to approve that tank in accordance with the procedures in Subpart E, Part 107 of this subchapter.

(2) Each application for approval must contain the following information:

(i) Two complete copies of all engineering drawings and calculations necessary to insure that the design complies with the relevant specification.

(ii) The manufacturer's serial number that will be assigned to each portable tank.

(iii) Any other relevant information requested by the approval agency.

(b) *Action by approval agency.* (1) The approval agency shall review the application for approval to determine whether it is complete and conforms with the requirements of paragraph (a) of this section. This determination will be made within 30 days of the receipt of an application. If an application is incomplete it will be returned to the applicant and the applicant will be informed in what respects the application is incomplete.

(2) The approval agency shall review all drawings and calculations to insure that the design is in full compliance with the relevant specification. If the application is approved, one set of the approved drawings and calculations shall be returned to the applicant. The second set of approved drawings and calculations shall be retained by the approval agency as required in § 107.405(a)(3) of this chapter.

(3) The approval agency shall witness all tests required in § 178.270-13 of this subchapter. In addition, the approval agency shall ensure through appropriate inspection and supervision

of manufacture that each portable tank is fabricated in all respects in conformance with the approved drawings and calculations.

(4) Upon successful completion of all requirements of this subpart, the approval agency shall:

(i) Apply its name, identifying mark or number, and the date upon which the approval was issued, to the metal identification plate required by § 178.270-14 of this subchapter.

(ii) Issue an approval certificate for each portable tank, or, in the case of a series of identical tanks manufactured to a single design, for the series of portable tanks. The approval certificate must include all information required to be displayed on the required metal identification plate. A copy of each approval certificate shall be retained by the approval agency and by the owner of each portable tank, and a copy shall be forwarded by the approval agency to the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau.

(c) *Denial of application for approval.* If an approval agency finds that a portable tank cannot be approved for any reason, he shall so notify the applicant in writing and shall provide the applicant with the reasons for which the approval is denied. An applicant aggrieved by a decision of an approval agency may appeal the decision within 90 days of receipt to the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau. The decision of the Associate Director is final.

(d) *Approval of existing portable tanks.* A portable tank constructed on or before (day before the effective date of this amendment) which is being operated under DOT exemption and which conforms to the basic provisions of Specification IM 100 or IM 101 may be designated as a Specification IM 100 or IM 101 portable tank as appropriate, by the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau.

(e) *Modifications to approved portable tanks.* (1) Prior to modification of any approved portable tank, the owner or manufacturer desiring to effect such modification shall inform the approval agency that issued the initial approval of the portable tank of the nature of the modification, and shall supply the approval agency with two sets of all revised drawings and calculations relative to the intended modification.

(2) *Action by approval agency.*

(i) The approval agency shall review the request for modification to ensure that the modified design is in full compliance with the relevant specification. If the request for modification is approved, one set of the approved re-

vised drawings and calculations shall be returned to the applicant. The second set of the approved, revised drawings and calculations shall be retained by the approval agency as required in § 107405(a)(3) of this chapter. In the event of a denial of request for modification, the procedures of paragraph (c) of this section shall apply.

(ii) The approval agency shall, through appropriate supervision, ensure that all modifications are made in conformance with the approved revised drawings and calculations.

(iii) The approval agency shall, based on the nature of the proposed modification, determine the extent to which retesting of the modified tank is necessary and ensure that all required retests are performed in accordance with § 178.270-13.

(iv) The approval agency shall, in any case where modifications to an approved tank alters any information on the approval certificate, issue a new approval certificate for the modified tank and ensure that any necessary changes are made to the metal identification plate. A copy of each newly issued approval certificate shall be retained by the approval agency and by the owner of each portable tank, and a copy of such certificate shall be forwarded by the approval agency to the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau.

§ 173.32b Periodic retesting and reinspection of Specification IM 100 and IM 101 portable tanks.

(a) *Retesting.* (1) Each Specification IM 100 and IM 101 (§§ 178.270-272 of this subchapter) portable tank and all piping, valves and accessories, except pressure-relief devices, shall be hydrostatically tested with water, or other liquid of similar density and viscosity, to a pressure not less than 150 percent of the maximum allowable working pressure at intervals of not more than five years. While under pressure the tank shall be inspected for leakage, corrosion, dents, or any other condition which might render the tank unsafe for service. The hydrostatic test shall be witnessed by an individual or organization designated as an approval agency in accordance with the procedures in Part 107, Subpart E of this chapter. Any damage or deficiency which might render the portable tank unsafe for service shall be repaired to the satisfaction of the witnessing approval authority and the tank hydrostatically retested. Upon successful completion of the hydrostatic test, the witnessing approval agency shall apply its name, identifying mark or number and the date of the test to the metal identification

plate required by § 178.270-14 of this subchapter.

(2) *Pressure relief devices.* Spring-loaded pressure relief valves must be retested at intervals of not more than two and one-half years.

(b) *Visual reinspection.* Each portable tank and all piping, valves and accessories shall be visually reinspected at intervals not exceeding two and one-half years. The reinspection shall be conducted by an individual or organization designated as an approval agency in accordance with the procedures in Part 107, Subpart E of this chapter. In the case of insulated tanks, lagging need not be removed if, in the opinion of the approval agency, external corrosion is likely to be negligible. The portable tank shall not be returned to service if evidence of any unsafe condition is discovered until such condition has been corrected to the satisfaction of the witnessing approval agency. Reinspection shall include the following items:

(1) The tank shall be carefully inspected for corroded areas, dents, defects in welds, piping, valves or gaskets, and other conditions including leakage that might render the tank unsafe for service.

(2) Devices for tightening manhole covers must be operative and there must be no leakage at manhole covers or gaskets.

(3) Missing or loose bolts or nuts on any flanged connection or blank flange must be replaced or tightened.

(4) All emergency devices and valves must be free from corrosion, distortion and any damage that could prevent their normal operation.

(5) Required markings on the tank must be legible.

Upon successful completion of the visual reinspection, the witnessing approval agency shall apply its name, identifying mark or number and the date of the visual reinspection on the metal plate required by § 178.270-14 of this subchapter.

(c) *Deteriorated portable tanks.* Without regard to any other retest requirements, any tank that shows evidence at any time of dents, corroded areas, leakage or other conditions that indicate a weakness that could render the portable tank unsafe for service, must be retested in accordance with the requirements of paragraph (a) of this section prior to reuse.

(d) *Damaged portable tanks.* Without regard to any other retest requirements, any tank that has been damaged to an extent that may adversely affect its product retention capability must be retested in accordance with the requirements of paragraph (a) of this section prior to reuse.

(e) *Records.* The witnessing approval agency shall retain a written record of

the date and results of all required retests and reinspection for a period of not less than 15 years. The owner of each portable tank shall retain such a written record of the most recent retest and reinspection.

§ 173.22c Use of specification IM 100 and IM 101 portable tanks.

(a) Each Specification IM 100 and IM 101 (§§ 178.270-272 of this subchapter) portable tank used for the transportation of hazardous materials shall fulfill the requirements of the relevant specification and all applicable requirements of this subchapter.

(b) No Specification IM 100 or IM 101 portable tank offered for transportation may exceed a gross weight of 55,000 pounds.

(c) No Specification IM 100 or IM 101 portable tank containing a hazardous material that could destructively attack or dangerously react with any component of the portable tank including valves, piping, safety devices and gaskets may be offered for transportation.

(d) Hazardous materials not specifically authorized for transportation in Specification IM 100 or IM 101 portable tanks by this part, may be transported in such portable tanks with the written approval of, and under the conditions established by, the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau.

(e) Rear end protection for transportation by highway. Each transport vehicle used to transport a Specification IM 100 or IM 101 portable tank must be fitted with rear end protection conforming to the requirements of § 393.86 of this title. The bumper shall be located at least six inches to the rear of any tank component that is used for the loading or unloading of the contents of the tank or which may, at any time, contain lading in transit, and must be capable of absorbing, without damage that would result in leakage of the product, the impact of the loaded vehicle with a deceleration of 2 "g" using a factor of safety of two based on the ultimate strength of the bumper material. Such impact shall be considered uniformly distributed and applied horizontally from any direction at an angle not exceeding 30° to the longitudinal axis of the vehicle.

(f) No Specification IM 100 or IM 101 portable tank may be offered for transportation if evidence exists of any condition that may render the portable tank unsafe for service. Prior to filling, each portable tank shall be carefully inspected to insure that it is

fit for service. This inspection shall include the following items:

(1) Examination of shell, piping, valves and other appurtenances for corroded areas, dents, defects in welds or any other unsafe condition.

(2) Devices for tightening manhole covers must be operative and there must be no sign of leakage at manhole covers or gaskets.

(3) Missing or loose bolts or nuts on any flanged connection or blank flange must be replaced or tightened.

(4) All emergency devices and valves must be free from corrosion, distortion and any damage that could prevent their normal operation.

(5) Required markings on the tank must be legible.

7. In § 173.116 paragraph (a) would be revised and paragraph (i) would be added to read as follows:

§ 173.116 Outage.

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

(i) The degree to which a portable tank may be filled with a flammable liquid shall not exceed the volume percentage determined using the following relationship:

$$f_{\max} = \frac{0.98}{1 + \alpha(122 - t_f)}$$

Properties of Liquid	Specification Container Required	
	Tank Spec.	Maximum Allowable Working Pressure (Psi) Not Less Than
Vapor Pressure at 150° F. less than 43 pounds per square inch, absolute.	IM 101	48
Vapor Pressure at 150° F. less than 33 pounds per square inch, absolute.	IM 101	38
Vapor Pressure at 150° F. less than 25 pounds per square inch, absolute.	IM 101	30
Vapor Pressure at 150° F. less than 20 pounds per square inch, absolute.	IM 101	25
Vapor Pressure at 150° F. less than 20 pounds per square inch, absolute, and flashpoint of 32° F or above.	IM 100	24.9
Vapor Pressure at 150° F. less than 9.2 pounds per square inch, absolute, and flashpoint of 32° F. or above.	IM 100	14.2

10. In § 173.125 paragraphs (a)(8) and (9) would be added to read as follows:

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

(a) * * *

(8) Specification IM 101 (§§ 178.270

Where f_{\max} is the maximum filling limit as percent of total volume.

t_f is the liquid temperature at filling in °F.
 α is the coefficient of cubical expansion of the liquid.

§ 173.118a [Amended]

8. In § 173.118a, paragraph (b)(4) would be revised to read as follows:

(b) * * *

(4) Carriage aboard aircraft vessels (for packaging requirements for transport by vessel see § 176.340); and,

9. In § 173.119 paragraph (n) would be added to read as follows:

§ 173.119 Flammable liquids not specifically provided for:

(n) Specification IM 100 and IM 101 (§§ 178.270-272 of this subchapter). Portable tanks. Flammable liquids not specifically provided for, which do not meet the definition of another hazard class, may be offered for transportation in IM 100 and IM 101 portable tanks in accordance with the following table:

and 178.272 of this subchapter), Portable tanks.

(9) Specification IM 100 (§§ 178.270 and 178.271 of this subchapter). Portable tanks. Authorized only for alcohols with a flash point of 32° F or over.

11. In § 173.127 the heading and paragraph (a)(1) would be revised to read as follows:

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

(a) ***

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

* * * * *

12. In § 173.135 paragraph (a)(10) would be added to read as follows:

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

(a) ***

(10) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks with maximum allowable working pressure not less than 38 psig.

13. In § 173.136 paragraph (a)(10) would be added to read as follows:

§ 173.136 Methyl Dichlorosilane and trichlorosilane.

(a) ***

(10) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks with maximum allowable pressure not less than 38 psig.

14. In § 173.141 paragraph (a)(11) would be added to read as follows:

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

(a) ***

(11) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks with maximum allowable working pressure not less than 38 psig.

15. In § 173.145, paragraph (a)(8) would be added to read as follows:

§ 173.145 Dimethyl hydrazine, unsymmetrical, and methyl hydrazine.

(a) ***

(8) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks with maximum allowable working pressure not less than 38 psig. Bottom outlets not allowed. Safety valves must be constructed of steel.

16. In § 173.245 paragraph (b) would be redesignated paragraph (c), and a new paragraph (b) would be added to read as follows:

§ 173.245 Corrosive liquids not specifically provided for.

* * * * *

(b) Corrosive liquids, other than those for which special requirements are prescribed, may be offered for

transportation in Specification IM 101 (§§ 178.270 and 178.272 of this subchapter) portable tanks as follows:

(1) Corrosive liquids listed below may be packaged in IM 101 portable tanks:

Acetic acid (aqueous solution)
Acetic acid, glacial
Acetic anhydride
Acid butyl phosphate
Acrylic acid
Alkanesulfonic acid
Aluminum phosphate solution
2-(2-Aminoethoxy) ethanol
Aminopropyl diethanolamine
n-Aminopropyl morpholine
bis (Aminopropyl) piperazine
Ammonium hydrogen fluoride solution
Ammonium hydroxide (containing not more than 44% ammonia)
Amyl acid phosphate
Antimony pentachloride solution
Antimony trichloride solution
Bromacetic acid solution
Butyric acid
Calcium hydrogen sulfite solution
Chromic fluoride solution
Coal tar dye, liquid (not otherwise specifically named in § 172.101)
Compound, cleaning, liquid
Compound, cleaning, liquid (containing phosphoric acid, acetic acid, sodium or potassium hydroxide)
Compound, lacquer, paint or varnish removing liquid
Compound, rust preventing or compound, rust removing
Compound, tree or weed killing, liquid
Compound, vulcanizing, liquid
Cosmetics, n.o.s.
Crotonic acid
Dichloroacetic acid
Dichloroisopropyl ether
Dichloropropene and propylene dichloride mixture
Di-(2-ethylhexyl) phosphoric acid
Diisopropylethanolamine
Disinfectant, liquid
Drugs, n.o.s., liquid
Dye intermediate, liquid
Ethyl phosphonous chloridate
Ferric chloride solution
Formic acid solution
Fumaryl chloride
Hexamethylene imine
Hexanoic acid
Hydriodic acid
Isobutyric acid
Isobutyric anhydride
Isopentanoic acid
Medicines, n.o.s., liquid
Methyl dichloroacetate
Methyl ethyl pyridine
Mining reagent liquid (containing 20% or more cresylic acid)
Monoethanolamine
Monoethanolamine solution
Phosphoric acid or phosphoric acid solution
Propionic acid
Propionic acid solution
Propionic anhydride
Selenic acid, liquid
Sodium fluoride solution
Sodium hydrogen sulfate solution
Sodium methylate, alcohol mixture
Sulfurous acid
1,2,3,6-Tetrahydrobenzaldehyde
Tetramethyl ammonium hydroxide, liquid
Textile treating compound mixture, liquid
Thioglycolic acid
Toluene sulfonic acid, liquid

Trichloroacetic acid solution
Valeric acid
Valeryl chloride
Zinc chloride solution

(2) Any other corrosive liquid for which specific requirements are not prescribed may be offered for transportation in an IM 101 portable tank with a maximum allowable working pressure not less than 38 psig. Bottom outlets not allowed.

(3) If the portable tank is not lined with a material substantially immune to attack by the commodities to be transported:

(i) The material of the tank must be substantially immune to attack by the commodities to be transported;

(ii) The material of the tank must be thick enough to withstand 10 years normal service with the commodity without being reduced to any thickness less than that specified in § 178.270-4 of this subchapter; or,

(iii) The chemical reaction between the material of the tank and the commodity to be transported is such as to allow the tank to be properly passivated or neutralized, and the tank is not frequently cleaned and not used in the transportation of other commodities.

(c) Except when transportation by aircraft or vessel is involved, 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.

17. In § 173.247 paragraph (a)(18) would be added to read as follows:

§ 173.247 Acetyl bromide, acetyl chloride, acetyl iodide, antimony pentachloride, benzoyl chloride, boron trifluoride-acetic acid complex, chromyl chloride, dichloroacetyl chloride, diphenylmethyl bromide solution, pyrosulfuryl chloride, silicon chloride, sulfur chloride (mono and di), sulfuryl chloride, thionyl chloride, tin tetrachloride (anhydrous), titanium tetrachloride, and trimethyl acetyl chloride.

(a) ***

(18) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks.

18. In § 173.248 paragraph (a)(8) would be added to read as follows:

§ 173.248 Acid sludge, sludge acid, spent sulfuric acid, or spent mixed acid.

(a) ***

(8) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks. Bottom outlets not allowed.

19. In § 173.249 paragraph (a)(14) would be added to read as follows:

§ 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; boiler compound, liquid solution.

(a) ***

(14) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks.

20. In § 173.253 paragraph (a)(9) would be added to read as follows:

§ 173.253 Chloroacetyl chloride.

(a) ***

(9) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks.

21. In § 173.254 paragraph (a)(6) would be added to read as follows:

§ 173.254 Chlorosulfonic acid and mixtures of chlorosulfonic acid-sulfur trioxide.

(a) ***

(6) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks.

Bottom outlets not allowed.

22. In § 173.255 paragraph (a)(7) would be added to read as follows:

§ 173.255 Dimethyl sulfate.

(a) ***

(7) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks with maximum allowable working pressure not less than 58 psig and minimum shell thickness of not less than 1/4-inch if of mild steel construction or equivalent thickness if of other material (see § 178.270-5(c) of this subchapter). Bottom outlets not allowed.

23. In § 173.272 paragraph (i)(20) would be revised to read as follows:

§ 173.272 Sulfuric acid.

(i) ***

(20) Specification 60 (§ 178.255 of this subchapter) and Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks. Authorized for sulfuric acid of 65.25 percent or greater concentrations provided the corrosive effect on steel is not greater than that of 65.25 percent sulfuric acid, measured at 100°F.

24. In § 173.280 paragraph (a)(9) would be added to read as follows:

§ 173.280 Trichlorosilanes.

(a) ***

(9) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks.

25. In § 173.294 paragraph (a)(4) would be added to read as follows:

§ 173.294 Monochloroacetic acid, liquid or solution.

(a) ***

(4) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks.

26. In § 173.346 paragraph (a)(28) would be added to read as follows:

§ 173.346 Poison B liquids not specifically provided for.

(a) ***

(28) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks with maximum allowable working pressure not less than 38 psig.

27. In § 173.347 paragraph (a)(9) would be added to read as follows:

§ 173.347 Aniline oil.

(a) ***

(9) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks.

Internal discharge valve required.

28. In § 173.352 paragraph (a)(6) would be added to read as follows:

§ 173.352 Sodium and potassium cyanide solutions.

(a) ***

(6) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks with maximum allowable working pressure not less than 38 psig.

29. In § 173.362 paragraph (a)(5) would be added to read as follows:

§ 173.362 4-Chloro-o-toluidine hydrochloride.

(a) ***

(5) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks with maximum allowable working pressure not less than 38 psig.

30. In § 173.620 paragraph (a)(7) would be added to read as follows:

§ 173.620 Carbon tetrachloride, ethylene dibromide (1, 2-dibromoethane), and Tetrachloroethane.

(a) ***

(7) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks with maximum allowable working pressure not less than 38 psig.

ble tanks with maximum allowable working pressure not less than 38 psig.

31. In § 173.630 paragraph (b)(5) would be added to read as follows:

§ 173.630 Chloroform.

(b) ***

(5) Specification IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks.

PART 176—CARRIAGE BY VESSEL

32. In the table of sections, an appropriate entry for a new § 176.340 would be added.

33. A new § 176.340 would be added to read as follows:

§ 176.340 Combustible liquids in portable tanks.

(a) Combustible liquids may be transported by vessel in portable tanks only as specified below:

(1) Specification IM 100 and IM 101 (§§ 178.270 and 178.272 of this subchapter). Portable tanks.

(2) Marine Portable Tanks (MPT) approved and constructed in accordance with 46 CFR Part 64.

(3) Portable tanks approved and maintained in accordance with 46 CFR 98.35, constructed prior to October 1, 1974. Such tanks may continue in service only until October 1, 1984.

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

(5) Portable tanks approved by the Commandant (G-MHM).

PART 178—SHIPPING CONTAINER SPECIFICATIONS

34. In the table of sections, appropriate entries for new §§ 178.270, 178.271 and 178.272 would be added.

35. New §§ 178.270, 178.271 and 178.272 would be added to read as follows:

§ 178.270 Specification IM 100 and IM 101; steel portable tanks; general design and construction requirements.

§ 178.270-1 Specification requirements for IM 100 and IM 101 portable tanks.

(a) Each portable tank must meet the requirements of this section in addition to the requirements in § 178.271 (IM 100) and § 178.272 (IM 101), respectively. These requirements apply to portable tanks that are designed to carry liquids having a vapor pressure of less than 43 psia at a temperature of 150°F.

PROPOSED RULES

§ 178.270-2 General.

(a) Tanks, including attachments and service and structural equipment, must be designed to withstand, without loss of contents, the maximum internal pressure that can be anticipated to result from contents and the static and dynamic stresses incurred in normal handling and transportation.

(b) *Cross-sectional design.* Each portable tank must have a cross-sectional design that is capable of being stress analyzed either mathematically or by the experimental method contained in UG-101 of the ASME Code, or other method acceptable to the Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau.

(c) Each portable tank must be designed so that the center of gravity of the filled tank is approximately centered within the points of attachment of the lifting devices.

(d) Each portable tank that is insulated must have the insulation jacketed or otherwise protected from mechanical damage. This protection must also prevent the accumulation of moisture or foreign matter that would decrease the efficiency of the insulation.

§ 178.270-3 Materials of construction.

Each portable tank must be constructed of steel. Materials used in tanks must conform to section VIII, Division 1 of the ASME Code with respect to all chemical and physical properties, and must be suitable for the external environments in which the tank will be carried. The design stress shall not exceed the maximum allowable stress value specified for the material at 300° F. Materials with a minimum percentage elongation less than 20 percent are not permitted. For the purpose of these specifications, all elongation shall be determined using a specimen in which the gauge length is five times the diameter.

§ 178.270-4 Structural integrity.

(a) *Maximum stress values.* The maximum calculated stress value in a tank at the test pressure must not exceed the lower of:

- (1) 93.75 percent of the specified minimum yield strength; or,
- (2) 37.5 percent of the specified minimum tensile strength.

NOTE.—The specified minimum yield strength and the specified minimum tensile strength shall be those listed for the material of construction, or its equivalent, in the ASME Code.

(b) *Tank shell loadings.* Tank shells and their fastenings shall be so designed and, where necessary, provided with additional structural elements, to prevent resulting stresses in excess of

those specified in paragraph (a) of this section. Consideration shall be given to the forces imposed by each of the following loads:

(1) An internal pressure of 150 percent of the maximum allowable working pressure (stresses to be determined using the design formulas prescribed in the ASME Code);

(2) The following simultaneously applied dynamic loadings acting through the center of the tank (W is the maximum permissible weight of the loaded tank and its attachments);

- A. 2W vertically downward;
- B. 2W longitudinally;
- C. 1W laterally; and,
- D. 1W vertically upward;

(3) Loads resulting from any discontinuities between tank shell and heads;

(4) Superimposed loads such as operating equipment, insulation, linings and piping; and,

(5) Reactions of supporting lugs and saddles or other supports.

(c) The shell thickness used in calculating the resulting stress levels in a tank shall be exclusive of any corrosion allowance.

§ 178.270-5 Minimum thickness of shells and heads.

(a) For the purposes of this section, mild steel shall be considered to be a steel with a guaranteed minimum tensile strength of 52,500 pounds per square inch and a guaranteed minimum percentage elongation of 27.

(b) Except as otherwise provided in this subchapter, the shell and heads of each portable tank constructed of mild steel:

(1) With a maximum cross-sectional dimension of 6 feet or less, shall be of a thickness not less than $\frac{1}{16}$ of an inch; or,

(2) With a maximum cross-sectional dimension exceeding 6 feet, shall be of a thickness not less than $\frac{1}{4}$ of an inch.

(c) The shell and heads of each portable tank constructed of a metal other than mild steel, shall be not less than the thickness obtained from applying the following formula:

$$e_1 = \frac{112.3e_0}{(R_{m1} \times A_1)^{1/3}}$$

Where:

- e_0 = Required thickness of mild steel (inches)
 e_1 = Equivalent thickness of other metal (inches)
 R_{m1} = Guaranteed minimum tensile strength of other metal (pounds per square inch)
 A_1 = Guaranteed minimum percentage elongation of other metal

NOTE.—The actual values for the tensile strength and percent elongation for a metal,

as determined through tests on specimens from the group of plates to be used in the fabrication of the tank, may be substituted for the guaranteed minimum values in the above calculation: *Provided*, That the tensile tests are witnessed by the approval agency.

§ 178.270-6 Tank supports, frameworks and lifting attachments.

(a) Each portable tank must be constructed with a permanent support structure that provides a secure base in transport. Skids, frameworks, cradles or similar devices are acceptable. The calculated stress in tank supports, frameworks and lifting attachments must not exceed 80 percent of the specified minimum yield strength of the material of construction under the loading conditions specified in § 178.270-4(b)(2).

(b) When a portable tank is fitted with a framework specifically designed to permit the carriage of the portable tank on a container, the framework shall comply fully with all applicable requirements of Parts 451 and 452 of this title, in addition to the requirements of this section.

§ 178.270-7 Joints in tank shells.

(a) Joints in tank shells must be made by fusion welding. Such joints and their efficiencies must be as required by the ASME Code. Welders who are not ASME Code qualified must be qualified by the approval agency in accordance with the procedures in the ASME Code.

(b) Longitudinal joints must be in the upper half of the shell.

§ 178.270-8 Protection of valves and accessories.

All valves, fittings, accessories, safety devices, gauging devices and other appurtenances shall be adequately protected against mechanical damage.

§ 178.270-9 Inspection openings.

Each portable tank must be fitted with manholes or other inspection openings to allow for complete internal inspection. Each portable tank with a capacity of 500 gallons or more must be fitted with an elliptical manhole not less than 15 inches by inches, or with a circular manhole not less than 18 inches in diameter. In case the size of inspection opening must be sufficient to provide adequate access for maintenance and repair the interior of the tank. All inspection openings and closures must be signed and reinforced as required by the ASME Code.

§ 178.270-10 External design pressure.

(a) Portable tanks not fitted with vacuum relief devices must be

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signed to withstand a positive external pressure differential of not less than 6 pounds per square inch.

(b) Portable tanks fitted with vacuum relief devices must be designed to withstand a positive external pressure differential not less than the set pressure of the vacuum relief device.

§ 178.270-11 Pressure and vacuum relief devices.

(a) *General.* Each portable tank must be fitted with at least one pressure relief device in accordance with the following:

(1) Each portable tank, or each independent compartment of a portable tank, with a capacity of 500 gallons or more must be provided with at least one spring loaded pressure relief device.

(2) Each portable tank, or each independent compartment of a portable tank, with a capacity less than 500 gallons must be fitted with either a frangible disc or spring loaded pressure relief device.

(b) *Location, arrangement and construction of relief devices.* (1) Pressure relief devices must be situated to provide unrestricted discharge without direct impingement of escaping vapors on any part of the tank or structural framework.

(2) Pressure relief devices must be located so as to have direct communication with the vapor space of the tank or compartment at the midlength of the top centerline. No shutoff valve may be installed between a tank opening and a relief device, or on the discharge side of any relief device. Piping and nozzles for relief devices must be of sufficient size to unrestrictedly pass the required rate of discharge to the relief device.

(3) Fusible elements, when installed, may not be covered or otherwise shielded from external heat.

(4) Spring loaded pressure relief devices must be constructed in a manner such that means are available to determine that the valve discs are free to turn on their seats. Valves must be sealed to prevent unauthorized adjustment of the relief setting.

(c) *Pressure settings of relief devices.*—(1) *Primary pressure relief devices.* The primary relief devices required by paragraph (a) of this section must be set to function at a pressure not to exceed 125 percent of the maximum allowable working pressure. Spring loaded relief devices must close after discharge at a pressure not lower than 10 percent below the start-to-discharge pressure and remain closed at all lesser pressures.

(2) *Emergency pressure relief devices.* Frangible discs, other than

those used as a primary relief device in accordance with paragraph (a)(2) of this section, must be set to burst at a pressure of 150 percent of the maximum allowable working pressure. When additional spring loaded relief devices are installed to provide sufficient emergency venting capacity, the devices must be set to open at a pressure not less than 125 percent of the maximum allowable working pressure and must be designed so that they are fully open at a pressure not greater than 150 percent of the maximum allowable working pressure.

(3) *Fusible elements.* Fusible elements, whether used as primary or emergency relief devices, must have a nominal fusing temperature not more than 250°F.

(4) *Vacuum relief devices.* Vacuum relief devices, when used, must be designed to provide total containment of product under normal conditions and

must be set to open at a nominal overpressure of not less than 3 pounds per square inch.

(d) *Venting capacity of relief devices.*—(1) *Spring loaded relief devices.* Each spring loaded pressure relief device must have a minimum relieving capacity of one standard cubic foot of air per minute per 30 square feet of exposed tank area. Each vacuum relief valve used must have a minimum cross sectional area of 0.44 square inches.

(2) Except as provided in paragraph (d)(3) of this section, the total venting capacity of all pressure relief devices installed on each portable tank must be sufficient, with all devices operating, to limit the pressure in the tank to not more than 20 percent above the start to discharge pressure of the installed device with the lowest pressure setting, and may not, in any case, be less than that required in the following Table:

TABLE I

MINIMUM EMERGENCY VENT CAPACITY IN CUBIC FEET FREE AIR/HOUR (14.7 PSIA AND 59° F.)

Exposed area square feet	Cubic feet free air per hour	Exposed area square feet	Cubic feet free air per hour
20	27,600	275	237,000
30	38,500	300	256,000
40	48,600	350	289,500
50	58,600	400	322,100
60	67,700	450	355,900
70	77,000	500	391,000
80	85,500	550	417,500
90	94,800	600	450,000
100	104,000	650	479,000
120	121,000	700	512,000
140	136,200	750	540,000
160	152,100	800	569,000
180	168,200	850	597,000
200	184,000	900	621,000
225	199,000	950	656,000
250	219,500	1,000	685,000

NOTE 1: Interpolate for intermediate sizes.

(3) The required total venting capacity determined by using Table I may be reduced for insulated tanks by the following relationship:

$$Q_r = F Q_i$$

Where:

Q_r is the total required venting capacity of the insulated tank.

Q_i is the total venting capacity required for an uninsulated tank according to Table I.

F is 0.25 or $0.25U$, whichever is greater (where U is the thermal conductivity of the insulation at 100°F. in BTU/(hr)(sq ft)(°F)).

Insulation, when used, must be to the satisfaction of the approval agency. In no case shall an insulation be approved which:

- Will not remain effective at all temperatures up to 1200°F.; or,
- Is jacketed with a material

having a melting point of less than 1200°F.

(e) *Markings on pressure relief devices.* The following information shall be plainly displayed on each pressure relief device:

(1) The pressure or, when appropriate, the temperature at which the device is set to function;

(2) The rated flow of air discharged per minute at 59°F. and atmospheric pressure at the set pressure or temperature;

(3) The manufacturer's name and catalog number; and

(4) Allowable tolerances at start to discharge pressure and allowable temperature tolerances.

§ 178.270-12 Valves, nozzles, piping and gauging devices.

(a) All tank nozzles, except for those provided for relief devices, thermometer wells, and inspection openings,

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must be fitted with manually operated stop valves located as near the shell as practicable either internal or external to the shell. Nozzles installed in the vapor space to provide filling and cleaning openings which are closed except during filling or cleaning by a blank flange or other suitable means, need not be provided with a manually operated stop valve.

(b) Each filling or discharge connection located below the normal liquid level of the tank contents must, in addition to the manually operated stop valve required by paragraph (a) of this section, be fitted with a bolted blank flange on the outlet side of the valve or other suitable protection against accidental escape of the contents.

(c) Each valve must be designed and constructed to a rated pressure not less than the maximum allowable working pressure of the tank. Each stop valve with a screwed spindle must be closed by a clockwise motion of the handwheel. All valves must be constructed to prevent unintentional opening.

(d) Internal discharge valves, when installed, shall be self-closing, located inside the tank, or within the welded flange and operated to ensure against the accidental escape of contents.

(e) All piping must be of suitable material. Welded joints must be used wherever practicable. The bursting strength of all piping and pipe fittings must be not less than 4 times the maximum allowable working pressure of the tank. Piping must be supported in such a manner as to prevent damage due to thermal stresses, jarring and vibration.

(f) All nozzles and tank shell penetrations for nozzles shall be designed and constructed in accordance with the ASME Code.

(g) Glass level gauges or gauges of other easily destructible material, which are in direct communication with the contents of the tank, may not be used.

§ 178.270-13 Testing.

(a) *Hydrostatic test.* Each portable tank and all piping, valves and other attachments which are subject to the pressure of the contents of the tank, except pressure relief devices, must be hydrostatically tested by completely filling the portable tank (including domes, if any) with water or other liquid having a similar density and viscosity and applying a pressure of not less than 150 percent of the maximum allowable working pressure. The pressure shall be measured at the top of the tank and shall be maintained for at least 10 minutes. While under pressure the tank shall be inspected for leakage, undue distortion, or other conditions which indicate weakness which might render the tank unsafe

for transportation service. Failure to successfully meet the test criteria shall be deemed evidence of failure to meet the requirements of this specification. Tanks failing to pass the test shall be suitably repaired. The suitability of the repair shall be determined by the same method of test.

(b) *Testing of internal coils.* Internal coils, if installed, must be hydrostatically tested to a pressure of not less than 200 psig or 150 percent of the rated pressure of the coils, whichever is greater.

(c) *Internal restraint test.* A prototype tank of each portable tank design must withstand the following tests without leakage or deformation that would render it unsuitable for use:

(1) *Longitudinal restraint.* The tank loaded to its maximum gross weight is positioned with its longitudinal axis vertical. It shall be held in this position for five minutes by support at the lower end of the base structure providing vertical and lateral restraint and by support at the upper end of the base structure providing lateral restraint only.

(2) *Lateral restraint.* The tank loaded to its maximum gross weight is positioned with its transverse axis vertical. It shall be held in this position for five minutes by support at the lower side of the base structure providing vertical and lateral restraint and by support at the upper side of the base structure providing lateral restraint only.

(d) *Rail impact test.* A prototype tank of each portable tank design which is to be authorized for transportation by rail must successfully withstand the prescribed impact tests without leakage or permanent deformation which would render the portable tank unsuitable for use.

(1) The car bearing the portable tank to be tested must be impacted four times into a string of five empty buffer cars with their brakes set and the train slack removed. The first three impacts shall be made at the same end of the test car at speeds not less than four, six and eight miles per hour. The fourth impact shall be at eight miles per hour at the opposite end of the test car. After each impact the portable tank shall be inspected for any evidence of leakage or deformation which would constitute a failure of the test.

(2) When track conditions prevent turning the test car around, the fourth impact may be accomplished by using a buffer car, equal to or exceeding the gross weight of the test car, as the striking car. The test car must be placed as the first car of the standing buffer cars and struck by the striking buffer car at the end not previously tested.

(e) *Pressure and vacuum relief devices.* Each spring loaded relief device must be tested for accuracy of the setting prior to installation on a portable tank and must be effectively sealed to maintain the required setting.

§ 178.270-14 Marking of tanks.

(a) *General.* Each portable tank must bear a corrosion resistant metal identification plate which is permanently attached to the portable tank in a position which is readily accessible for inspection. The information required in paragraph (b), and when appropriate, paragraph (c) of this section must be stamped, embossed or otherwise marked by an equally durable method on this plate in characters not less than 1/4 inch high. This plate must not be painted so as to obscure the markings.

(b) *Required information.* At least the following information must appear on the metal identification plate for each specification IM 100 and IM 101 portable tank:

- (1) DOT Specification number.
- (2) Manufacturer's name.
- (3) Date of manufacture.
- (4) Manufacturer's serial number.
- (5) Maximum allowable working pressure (psig.)
- (6) Test pressure (psig.)
- (7) Total water capacity (gallons).
- (8) Maximum gross weight (lbs.)
- (9) Maximum weight of contents (lbs.).
- (10) Equivalent minimum shell thickness in mild steel (in.) and actual shell thickness (in.).

(11) Tank material and specification number.

(12) Identification of approval agency.

(13) Date of last hydrostatic test and identification of witnessing approval agency.

(14) Date of last visual reinspection and identification of witnessing approval agency.

(c) *Additional information.* The following additional information must appear on the metal identification plate when appropriate:

- (1) Lining material.
- (2) Metallurgical design temperature (if above 150°F. or below 0°F.).
- (3) Heating coil maximum allowable working pressure.
- (4) Corrosion allowance provided.
- (5) The words "RAIL AUTHORIZED" if the tank is authorized for rail transport. (Only permitted for design types which have successfully passed the tests in § 178.270-12(d).)
- (d) Nothing in this section shall be deemed to preclude the display of other pertinent information on the required metal identification plate.

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§ 178.271 Specification IM 100 portable tanks.

§ 178.271-1 General requirements.

(a) Specification IM 100 portable tanks must comply with the general design and construction requirements in § 178.270 in addition to the specific design requirements contained in this section.

(b) The maximum allowable working pressure of each portable tank shall be less than 25 psig but not less than 14.2 psig.

(c) Each portable tank with a maximum allowable working pressure equal to or greater than 15 psig shall fulfill the design and construction requirements of Section VIII, Division 1 of the ASME Code except as limited or modified in this section or in § 178.270. Each portable tank with a maximum allowable working pressure less than 15 psig shall be designed and constructed using Section VIII, Division 1 of the ASME Code as a guide except as limited or modified in this section or in § 178.270.

§ 178.271-2 Minimum thickness of shells and heads.

(a) The approval agency may authorize a minimum thickness below that

required by § 178.270-5 where additional protection against tank puncture is provided. The reduction authorized shall be in proportion to the adequacy of the protection provided.

(b) In no case shall a shell and head thickness for a tank be authorized which is less than:

(1) $\frac{1}{8}$ of an inch for a tank with a maximum cross-sectional dimension of 6 feet or less; or

(2) $\frac{1}{16}$ of an inch for a tank constructed of mild steel having a maximum cross-sectional dimension exceeding 6 feet. For tanks having a maximum cross-sectional dimension exceeding 6 feet constructed of other steels, an equivalent head and shell thickness calculated in accordance with § 178.270-5(c) may be used, subject to an absolute minimum of $\frac{1}{8}$ of an inch.

(d) The acceptable methods of providing additional puncture protection are:

(1) An overall external structural protection, such as a jacket, which is rigidly secured to the tank with a layer of cushioning material installed between the external structural protection and the tank; or

(2) A complete framework surrounding the tank including both longitudinal and transverse structural members.

§ 178.272 Specification IM 101 portable tanks.

§ 178.272-1 General requirements.

(a) Specification IM 101 portable tanks must comply with the general design and construction requirements in § 178.270 in addition to the specific design requirements contained in this section.

(b) The maximum allowable working pressure of each portable tank shall be equal to or greater than 25 psig.

(c) Each portable tank shall fulfill the design and construction requirements of Section VIII, Division 1 of the ASME Code except as limited or modified in this section or in § 178.270.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53(e) and paragraph (a) of App. A to Part 106.)

NOTE.—The Materials Transportation Bureau has determined that these proposed regulations will not have a major economic impact under the terms of Executive Order 12044 and DOT implementing procedures (43 FR 9582).

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