U.S. Department
of Transportation

**Research and
Special Programs
Administration**

JUL 19 2000

400 Seventh Street, S.W.
Washington, D.C. 20590

DOT-E 12449
(FIRST REVISION)

EXPIRATION DATE: **May 31, 2002**

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Chlorine Service Company
Kingwood, Texas

2. PURPOSE AND LIMITATIONS:

a. This exemption authorizes the manufacture, mark, sale and use of non-DOT specification ASME Code "U" stamped pressure vessels for the transportation in commerce of Division 2.1 and 2.2 materials subject to the limitations and special requirements specified herein. This exemption provides no relief from any Hazardous Materials Regulation (HMR) other than as specifically stated herein.

b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce. The safety analyses did not consider the hazards and risks associated with consumer use, use as a component of a transport vehicle or other device, or other uses not associated with transportation in commerce.

3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.314 in that a non-DOT specification pressure vessel is authorized.

JUL 19 2000

5. BASIS: This exemption is based on the application of Chlorine Service Company dated March 29, 2000 and additional information dated April 28, May 8, May 11, May 22, and June 22, 2000 submitted in accordance with § 107.105 and the public proceeding thereon.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Material Description	Hazard Class/ Division	Identi-fication Number	Packing Group
Division 2.1 and 2.2 materials authorized for DOT Specification 51 portable tanks	2.1 or 2.2	As applicable	N/A
Trifluoromethane (R23)	2.2	UN1984	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification pressure vessel designed, manufactured, tested, and "U" stamped in accordance with Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code. The pressure vessel must be in conformance with Chlorine Service Company drawing number CSC 000131 Revision 1 or CSC 000132 Revision 1 on file with the Office of Hazardous Materials Exemptions and Approvals and with the following requirements:

(1) Pressure vessels must be manufactured using equipment and processes adequate to ensure that each cylinder produced conforms to the requirements of this exemption. Pressure vessels must be cylindrical, circular in cross section, of welded steel with electric-arc welded longitudinal seam. The pressure vessel must have: an outside diameter (nominal) of 76.2cm (30 inches), and an overall length (nominal) of 207 cm (81.5 inches).

(2) The pressure vessel maximum allowable working pressure (MAWP) is 500 psig, except that a MAWP of 1365 psig is required for pressure vessels

transporting Trifluoromethane. The minimum bursting pressure must be four times the MAWP.

(3) Material of construction must be SA-516-70 for the 500 psig MAWP pressure vessel and SA-612N for the 1365 psig MAWP pressure vessel.

(4) The welded joint efficiency for these pressure vessels must be 1.0.

(5) Tank heads must be formed concave to pressure and must be fusion-welded to the tank shell. Heads must be an ellipsoid of revolution 2:1 ratio of major to minor axis. They must be one piece, formed so as to provide a straight flange of a length sufficient for the fusion-welding of the head to body shell.

(6) Tank fittings must be protected as provided in § 179.300-12.

(7) Valves for venting, loading and unloading must comply with requirements of § 179.300-13 except that threaded connections directly to the head are required.

(8) Attachments must be in compliance with § 179.300-14.

(9) Safety relief devices must meet the requirements of § 179.300-15.

b. TESTING -

(1) Design Qualification

(i) Upon initiation of production, production on new tooling, modification of the production process or change in the design, one pressure vessel taken at random from the first 10 finished vessels, must be hydrostatically pressurized to the minimum burst pressure without rupture or leakage.

(ii) One pressure vessel, taken at random from the first 10 finished vessels, must have tensile tests

performed on specimens taken from each head, the body section and across the body seam. Two weld bend specimens must be taken from the body seam. All specimens are to be prepared and tested as provided in Appendix W of The Association of American Railroads Manual of Standards and Recommended Practices, Specifications for Tank Cars, with one weld bend specimen being a root bend and the second being a face bend. Tensile values and elongation values must not be less than that specified in §179.300-7. Bend specimens must show no evidence of cracking.

(2) Production Testing

(i) One pressure vessel from each lot of 200 consecutively produced must be tested to the minimum burst pressure without rupture or leakage. All other pressure vessels must be hydrostatically tested to a test pressure of 51.72 Bar (750 psi) or 137.93 Bar (2000 psi), as applicable, in a water-jacket or other suitable method, operated so as to obtain accurate data. Alternate methods of testing must be approved in writing by the Associate Administrator for Hazardous Materials Safety. The pressure gauge must permit readings to an accuracy of 1 percent. The expansion gauge must permit readings of total volumetric expansion to an accuracy either of 1 percent or 0.1 cubic centimeter.

A. Pressure must be maintained at test pressure for at least 30 seconds and sufficiently longer to ensure complete expansion. Any internal pressure applied after any heat treatment and prior to the official test may not exceed 90 percent of the test pressure.

B. Permanent volumetric expansion may not exceed 10 percent of the total volumetric expansion at test pressure.

(ii) The longitudinal shell joints and head to body shell girth joints must be 100% radiographed on each pressure vessel. Radiographic records for each vessel must be maintained by the manufacturer for 15 years after the date of manufacture.

(iii) Tensile tests and check analysis must be performed on each heat of material before it may be released for production.

(3) Periodic retest and inspection - Each pressure vessel must be retested and inspected in accordance with § 180.519 as specified for the DOT 110A500W or for the DOT 110A2000W tank, as applicable.

c. MANUFACTURE - The manufacturer of pressure vessels under this exemption must secure an approval in accordance with the provisions of 49 CFR Part 107, Subpart H, that apply. Each facility located outside the United States where pressure vessels are to be manufactured or where any part of the manufacture is to take place under this exemption, must secure an authorization under § 173.300b in addition to the applicable requirements of 49 CFR Part 107, Subpart H.

d. INSPECTION - Compliance with the requirements of § 178.35 and § 173.300a, which are not specifically addressed or excepted in this exemption, is required. In addition to the information required by § 178.35, the inspector's report must include information required in § 179.300-20.

e. OPERATIONAL CONTROLS -

(1) Each pressure vessel must meet the outage requirements contained in § 173.24b(a)(1).

(2) Compressed gases in authorized pressure vessels must be transported in accordance with the filling limits in § 173.314(c). The maximum filling density for Trifluoromethane must be 73%.

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this exemption for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this exemption.

b. A person who is not a holder of this exemption, but receives a package covered by this exemption, may reoffer it for transportation provided no modifications or changes are made to the package and it is offered for transportation in conformance with this exemption and the HMR.

c. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.

d. Each packaging manufactured under the authority of this exemption must be marked with a registration symbol designated by the Office of Hazardous Materials Exemptions and Approvals for a specific manufacturing facility.

e. A current copy of this exemption must be maintained at each facility where the package is manufactured under this exemption. It must be made available to a DOT representative upon request.

f. Pressure vessels manufactured under this exemption must be in conformance with Chlorine Service Company drawing number 000131 or 000132 except that whenever a provision of this exemption is in conflict with the drawing, Chlorine Service Company must comply with the conditions of this exemption and make appropriate revisions to the drawing. Revisions to drawings must be prepared by the manufacturer and be requested by the Independent Inspector(IIA) of record. Later drawings and revisions are considered a part of this exemption when requested by the IIA and approved in writing under the provisions of § 173.300a.

g. MARKING - Each pressure vessel must be marked in accordance with § 179.300-18 except that "DOT E-12449" must be stamped in lieu of the DOT specification number.

Note: Variations to the required marking must be approved in writing by the Associate Administrator for Hazardous Materials Safety.

h. This exemption serves as a Competent Authority Approval (CA-0007001), issued by the Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration (RSPA), of the United States Department of Transportation, in accordance with Section 22 of the International Maritime Dangerous Goods (IMDG) Code.

i. The authority to grant the relief provided within this exemption is limited to the extent that the United States government has authority over the transportation of the materials subject to this exemption. Transportation in accordance with this exemption outside the jurisdiction of the United States may require the approval of governments of countries where these materials are so transported.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight and cargo vessel.

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each motor vehicle and cargo vessel used to transport packages covered by this exemption.

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

- All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, Parts 171-180.
- Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must also inform the AAHMS, in writing, as soon as practicable of any incidents involving the package and shipments made under this exemption.

Issued at Washington, D.C.

JUL 19 2000

Robert A. McGuire
FOR Acting Associate Administrator for
Hazardous Materials Safety

(DATE)

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590. Attention: DHM-31.

The original of this exemption is on file at the above office. Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

PO: CWF