U.S. Department
of Transportation
**Research and
Special Programs
Administration**

APR 13 2000

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

DOT-E 8965
(SEVENTH REVISION)

EXPIRATION DATE: **February 28, 2002**

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Pressed Steel Tank Company, Inc.
Milwaukee, WI

2. PURPOSE AND LIMITATIONS:

a. This exemption authorizes the manufacture, mark, sale and use of non-DOT specification fiber reinforced plastic, hoop wrapped cylinder for use in the transportation of Division 2.1 and 2.2 hazardous materials described in paragraph 6 below. This exemption provides no relief from any Hazardous Materials Regulation 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.

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

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.302(a) and 175.3.

5. BASIS: This exemption is based on the application of Pressed Steel Tank Company dated March 15, 2000, submitted in accordance with § 107.109.

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6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Material Description	Hazard Class/ Division	Identi-fication Number	Packing Group
Air, compressed	2.2	UN1002	N/A
Helium, compressed	2.2	UN1046	N/A
Argon, compressed	2.2	UN1006	N/A
Oxygen, compressed	2.2	UN1072	N/A
Nitrogen, compressed	2.2	UN1066	N/A
Hydrogen gases, compressed, n.o.s.	2.1	UN1964	N/A
Methane, compressed or Natural gas, compressed (with high methane)	2.1	UN1971	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification fiber reinforced plastic (FRP) hoop wrapped (HW) cylinder made in accordance with Pressed Steel Tank's specification presented with their petition on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA), and in full compliance with DOT FRP-2 Standard (See Appendix I)Revision 1 dated January 4, 1987 (178.BB) except as follows:

178.BB.-2 Type size and service pressure. Type 3HW cylinder consisting of resin impregnated continuous filament windings in the circumferential direction only over a seamless steel liner made in compliance with 178.BB-6(a); not over 400 pounds water capacity; and service pressure at least 900 PSI but not greater than 5000 PSI. The maximum steel liner sidewall thickness shall not exceed 0.500 inches.

178.BB-4 Duties of Inspector.

(a) * * *

(b) Verify compliance of steel liner with 178.BB-6(a). Verify compliance of filament and resin system components with the requirements specified in 178.BB-5.

* * * * *

178.BB-5 Authorized material and identification of material.

(a) Liner material must be as prescribed in § 178.37(b).

* * * * *

178.BB-6 Manufacture.

(a) Liner. Liner without overwrap must be suitable for a marked service pressure of at least 50 percent of the service pressure marked on the composite cylinder, and must be in full compliance with DOT 3AA (§ 178.37) except as follows:

(1) The design is required to be in compliance with § 178.37(a)(2).

* * * * *

(b) Composite Cylinder. The composite cylinder must be fabricated from a steel liner circumferentially wrapped over the entire cylindrical portion with resin impregnated continuous filament windings. Winding pattern to be "hoop" wrap, applied under controlled tension to develop the design composite thickness. After winding is complete, the composite must be cured by a controlled temperature profile, and autofrettaged by pressurizing to not less than 105 and not greater than 115 percent of the prescribed minimum test pressure. No defect is acceptable that is likely to weaken the finished cylinder appreciably.

* * * * *

178.BB-7 Wall thickness.

(a) Minimum thickness of the liner must be at least equal to the minimum design thickness (178.BB-18 (h)) and be such that after autofrettage, the compressive stress in the sidewall of the liner at zero pressure will not exceed 50 percent of the minimum yield strength of the steel as determined in § 178.37(k) or

50 percent of the minimum design yield strength shown in 178.BB-18 (h). The maximum tensile stress of the liner at operating pressure may not exceed 60% of the yield strength.

* * * * *

178.BB-8 Openings.

(a) and (b) * * *

(c) Taper threads when used must comply with one of the following:

(1) American Standard Pipe Thread (NPT) standard must comply with the requirements of Federal Standard H 28/7 (1978).

(2) National Gas Taper Thread (NGT) Standard must comply with the requirements of Federal Standard H 28/7 and H 28/9 (1978).

178.BB-12 Destructive tests.

(a) Applies except change cycling rate to "10 cycles per minute".

* * * * *

178.BB-13 Acceptable results of tests.

(a) * * *

(b) Physical test. Applies to steel liner only.

(1) Elongation must be at least 20 percent for 2 inch gauge length or at least 10 percent in other cases.

(2) * * *

(3) * * *

(c) Cycling test.

(1) Each test cylinder must withstand at least 10,000 pressurizations between approximately zero and service pressure, without evidence of distortion or failure.

(d) Burst test.

(1) Burst pressure must be at least 2-1/2 times the service pressure and in no case less than the value necessary to meet the stress criteria of 178.BB-7(b). Failure must initiate in the cylinder sidewall. Cylinders with marked service pressure not exceeding 2200 psi must remain in one piece. Actual burst pressure must be recorded.

(2) * * *

178.BB-14, 178.BB-15, and 178.BB-16

Change "aluminum" to "steel" whenever the word aluminum is found in these paragraphs.

* * * * *

178.BB-18 Design qualification tests.

(a) thru (c) * * *

(d) * * * Except change cycling rate to "10 cycles per minute".

(1) and (2) * * *

(3) Not required.

(e) * * *

(1) * * *

(2) See 178.BB-13(d)(1) of this exemption.

(f) Not required

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b. TESTING -

Each cylinder must be reinspected and hydrostatically retested every three years in accordance with § 173.34(e) as prescribed for DOT 3HT cylinders, except that the rejection elastic expansion criteria does not apply, permanent volumetric expansion may not exceed 5 percent of total volumetric expansion at test pressure and retest dates must be imbedded in the epoxy coating in a permanent manner other than stamping. Retest dates may be steel stamped on the shoulder of the top head in accordance with 178.BB-15(d). Reheat treatment or repair of rejected cylinders not authorized.

c. OPERATIONAL CONTROLS -

Cylinders manufactured under this exemption are not authorized for use 15 years from the date of manufacture.

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. Use of these cylinders for underwater breathing is not authorized.

g. A cylinder which has been subjected to the action of fire may not be returned to service.

h. The special filling provisions in § 173.302(c)are not authorized.

i. Prototype cylinders to be used solely for design qualification testing may be charged and shipped from the filling facility to the test site, provided each cylinder is in conformance with the provisions of this exemption except for marking (178.BB-15) and design qualification testing (178.BB-18).

j. Transportation of flammable gases (Division 2.1 material) by passenger-carrying aircraft is not authorized.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, cargo aircraft only, and passenger-carrying aircraft (see paragraph 8.j. for restrictions).

10. MODAL REQUIREMENTS:

a. A current copy of this exemption must be carried aboard each cargo vessel, aircraft or motor vehicle used to transport packages covered by this exemption. The shipper must furnish a copy of this exemption to the air carrier before or at the time the shipment is tendered.

b. Flammable gases are not authorized to be transported aboard passenger-carrying aircraft.

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 §§ 172.700 through 172.704.

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.

J. Suzanne Hedgepeth

Robert A. McGuire
Acting Associate Administrator for
Hazardous Materials Safety

APR 13 2000
(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.

Copies of exemptions may be obtained from the AAHMS, U.S. Department of Transportation, 400 7th Street, Washington, DC 20590-0001, Attention: Records Center, 202-366-5046.

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