



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

DOT-E 12841
(SECOND REVISION)

EXPIRATION DATE: February 29, 2004

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: FIBA Technologies, Inc.
Westboro, MA
2. PURPOSE AND LIMITATIONS:
 - a. This exemption authorizes the manufacture, mark, sale and use of non-DOT specification vacuum insulated portable tanks conforming with all regulations applicable to a DOT Specification MC 338 cargo tank motor vehicle, except as specified herein, for the transportation in commerce of the materials authorized by this exemption. This exemption provides no relief from the Hazardous Materials Regulations (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.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.315, 173.318 and 176.76(g)(1) in that a non-DOT specification portable tank is not authorized except as prescribed herein.
5. BASIS: This exemption is based on the application of FIBA Technologies, Inc. dated September 18, 2001, and supplemental information dated February 13, 2002, submitted in accordance with § 107.105 and the public proceeding thereon and additional information dated April 25, 2002.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper shipping name	Hazard Class/ Division	Identification Number	Tank Model Allowed
Argon, refrigerated liquid (cryogenic liquid)	2.2	UN1951	A, B, C
Nitrogen, refrigerated liquid (cryogenic liquid)	2.2	UN1977	A, B, C
Oxygen, refrigerated liquid (cryogenic liquid)	2.2	UN1073	A, B, C
Ethylene, refrigerated liquid	2.1	UN1038	A, B, C
Methane, refrigerated liquid or Natural gas, refrigerated liquid	2.1	UN1972	A, B, C
Carbon dioxide, refrigerated liquid	2.2	UN2187	D
Nitrous oxide, refrigerated liquid	2.2	UN2201	A, B, C
Ethane, refrigerated liquid	2.1	UN1961	B & C

* **NOTE:** The column above showing Tank Model Allowed indicates which of the 4 tank models authorized in Paragraph 7 below, are authorized for each material listed in the table.

7. SAFETY CONTROL MEASURES:(a) Packaging: -

(1) Packagings authorized are four design models of non-DOT specification portable tanks, all of which are designed, constructed and "U" stamped in accordance with Section VIII, Division 1 of the ASME Code. Design criteria for the inner tanks are as follows:

Tank Model	(A) HDS-5400- 60	(B) HDS-5350- 145	(C) HDS-5300- 250	(D) FTP-21.2
Drawing Numbers	HDS-5400- 60-01 R.0; 60-04 R.0	HDS-5350- 145-01 R.0 145-01 R.4	HDS-5300- 250-01 R.0 250-04 R.0	FTP-21-0 Rev. 3; FTP-21-3 Rev. 0
Water Capacity	5388 gals 20369 l	5347 gals 20237 l	5280 gals 19987 l	5236 gals 19822 l
Shell Thickness	0.1816 in. (4.61 mm) Minimum	0.373 inch (9.47 mm) Minimum	0.6143 in. (15.6 mm) Minimum	0.81 in. (20.57 mm) Nominal
Minimum Head Thickness	0.1816 in. (4.61 mm)	0.3714 in. (9.43 mm)	0.6099 in. (15.49 mm)	0.795 in. (20.19 mm)
Inside Diameter:	86 inches (2184 mm)	85.625 in (2175 mm)	85.125 in (2162 mm)	85 inches (2159 mm)
Overall Length	229 inches (5818 mm)			229 inches (5818 mm)
Inner Tank Material of Construction	SA 240 Type 304 austenitic stainless steel			SA 612 carbon steel
Minimum Design Temperature:	-320°F (-196°C)			-40°F (-40°C)

Each portable tank is vacuum insulated and mounted on a skid. Each tank must conform to FIBA Technologies drawings shown in the table above for the applicable model and with design calculations, and U1-A forms on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA).

(2) Additionally, each tank must conform to the requirements contained in § 178.338 except as follows:

§ 178.338-2 Material.

(a) Tank construction material is A-36 for the outer jacket. Material for structural attachments is SA 36 or equivalent steel.

(b) * * *

(c) Impact testing is not required.

(d) * * *

(e) Postweld heat treatment is not required.

(f) * * *

§ 178.338-6 Manholes.

(a) Manholes are optional. If provided, manholes must comply with the ASME Code and the tank must be provided with a means of entrance and exit through the jacket, or the jacket must be marked to indicate the access hole location.

§ 178.338-9 Holding Time.

(a) In lieu of tests, the holding time has been established by calculation for carbon dioxide in Tank Model FTP-21.2 at 59 days. Holding times for other materials and tank models have been established by calculation as shown in the following table (times expressed in days):

Days of Holding Time Set by Calculation			
Material	Tank Model		
	(A) HDS-5400-60	(B) HDS-5350-145	(C) HDS-5300-250
Argon, refrigerated liquid	39	63	78
Nitrogen, refrigerated liquid	32	49	59
Oxygen, refrigerated liquid	49	77	92
Ethylene, refrigerated liquid	74	123	141
Methane, refrigerated liquid (LNG)	53	84	105
Nitrous oxide, refrigerated liquid	85	156	222
Ethane, refrigerated liquid	N/A	37	95

(b) Not applicable

(c) Not applicable

§ 178.338-10 Collision damage protection. This section does not apply.

§ 178.338-13 Supports and anchoring.

(a) * * *

(b), (c) The portable tank need not conform to § 178.338-13(b) or (c). The portable tank must meet the definition of "container" specified in § 450.3(a) and must fully comply with the applicable provisions of 49 CFR parts 450-453, and each design must be qualified in accordance with § 178.270-13(c).

§ 178.338-18 Marking

(a) Applies except "DOT-E 12841" must replace the mark "DOT MC 338".

(b) * * *

b. TESTING - Each portable tank must be reinspected and retested once every five years in accordance with the procedure prescribed in § 180.605 for DOT Specification 51 portable tanks. The test pressure in the inner tank shall be determined from the following formulas:

If vacuum exists in the outer jacket during test:

$$P_T = 1.25 \times [P_d - 14.7]$$

If there is no vacuum in the outer jacket:

$$P_T = 1.25 \times P_d$$

Where:

P_T = Test pressure, psig

P_d = Design pressure (the sum of the maximum allowable working pressure, liquid head and 14.7 psi)

c. OPERATIONAL CONTROLS -

(1) Each portable tank must be prepared and shipped as required in § 173.318, as applicable for the lading.

(2) Shipments by cargo vessel must conform with the following:

(i) The package must conform with § 176.76(g). Portable tanks may not be overstowed with other containers or freight. Portable tanks must be stowed such that they are readily accessible and can be monitored in accordance with the provisions of this exemption.

(ii) The legend "One-Way Travel Time _____ Hours" or "OWTT _____ Hours" must be marked on the shipping paper and on the dangerous cargo manifest immediately after the container description. The OWTT is determined by the formula:

$$\text{OWTT} = \text{MRHT} - 24 \text{ hours.}$$

(iii) A written record of the portable tank's pressure and ambient (outside) temperature at the following times must be prepared for each shipment.

(A) At the start of each trip;

(B) Immediately before and after any manual venting;

(C) At least every 24 hours; and

(D) At the destination point.

(iv) Any lading road relief valve set at a pressure lower than that prescribed for the (safety) pressure relief valve must be closed during transportation by cargo vessel unless the holding time was determined based on the setting of the pressure control valve.

(3) No person may transport or offer for transportation a charged portable tank unless the pressure of the lading is equal to or less than that used to determine the marked rated holding time MRHT and the OWTT is equal to or greater than the elapsed time between the start and termination of travel.

(4) The actual holding time for each tank must be determined after each shipment. If it is determined that the actual holding time is less than 90 percent of the MRHT of the tank, the tank may not be refilled until it is restored to its MRHT or the tank is re-marked with the reduced holding time determined by this examination.

(5) The holding time and the MRHT of the first portable tank must be determined and results thereof must be submitted to OHMEA prior to initial shipment.

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 modification or change is made to the package or its contents 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 either (1) marked with the name of the manufacturer and location (city and state) of the facility at which it is manufactured or (2) 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. Each portable tank must be plainly and durably marked on both sides near the middle, in letters at least two (2) inches high on a contrasting background, "DOT-E 12841".

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

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel or motor vehicle 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:
- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, Parts 171-180.
 - o 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 this 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 in Washington, D.C.

gr Ann Mazzullo
Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

MAY 14 2002

(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.

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Copies of this exemption may be obtained by accessing the Hazardous Materials Safety Homepage at <http://hazmat.dot.gov/exemptions> Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

PO: PTOlson