U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

MAY 29 1996

DOT-E 11275
(SECOND REVISION)

EXPIRATION DATE: August 11, 1997

(FOR RENEWAL, SEE 49 CFR SECTION 107.105.)

1. GRANTEE: Dorbyl Engineering
Republic of South Africa
US Agent: OSNA Equipment Incorporated, Denver, CO

2. PURPOSE AND LIMITATION: This exemption authorizes the manufacture, marking and sale of three designs of non-DOT specification portable tanks, mounted in ISO frames, to be used for the transportation in commerce of certain Division 2.1 and 2.2 gases. This exemption provides no relief from any regulation other than as specifically stated herein.

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

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR Section 178.245-1(b) insofar as all openings are not grouped in one location.

5. BASIS. This exemption is based on the application of Dorbyl Engineering dated June 14, 1994, and supplemental information dated November 1, 1994, July 14, August 9 and 10, 1995, September 21, 1995, November 14, 1995, January 29 and 31, 1996, submitted in accordance with 49 CFR 107.103 and the public process thereon.

6. HAZARDOUS MATERIALS (49 CFR 172.101):

Hazardous materials description/ proper shipping name	Hazard Class/ Division	Identification Number
Chlorodifluoromethane, R22	2.2	UN1018
Chlorotetrafluoroethane, R124	2.2	UN1021
Dichlorodifluoromethane, R12	2.2	UN1028
Dichlorofluoromethane, R21	2.2	UN1029
Difluoroethane, R152a	2.1	UN1030
Dimethyl ether	2.1	UN1033
Ethyl chloride	2.1	UN1037
Methyl chloride	2.1	UN1063
Vinyl chloride, inhibited	2.1	UN1086
Dichlorotetrafluoroethane, R114	2.2	UN1958
Chlorodifluoromethane and chloro-pentafluoroethane mixture, R502	2.2	UN1973
Chlorodifluorobromomethane, R12B1	2.2	UN1974
Chlorotrifluoroethane, R133a	2.2	UN1983
Trifluoroethane, compressed, R143	2.1	UN2035
Chlorodifluoroethanes, R142b	2.1	UN2517
Dichlorodifluoromethane and difluoro-ethane azeotropic mixture, R500	2.2	UN2602
1,1,1,2-Tetrafluoroethane	2.2	UN3159
Pentafluoroethane	2.2	UN3220
FORANE 404 A / Liquefied gas, n.o.s	2.2	UN3163
FORANE 407 C / Liquefied gas, n.o.s.	2.2	UN3163
FORANE 408 A / Liquefied gas, n.o.s.	2.2	UN3163
FORANE 409 A / Liquefied gas, n.o.s.	2.2	UN3163
Mixture R124 / 142b / Liquefied gas, n.o.s.	2.2	UN3163
Mixture R125 / 143a / Liquefied gas, n.o.s.	2.2	UN3163

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Hazardous materials description -- proper shipping name	Hazard Class/ Division	Identi- fication Number	Packing Group
Mixture of Chlorodifluoromethane Difluoroethane, Chlorotetrafluoroethane, R-441/Liquefied gas, n.o.s.	2.2	UN3163	n/a
Mixture of Chlorodifluoromethane, Chlorotetrafluoroethane and Difluoroethane, R-401a/Liquefied gas, n.o.s.	2.2	UN3163	n/a
Mixture of Chlorodifluoromethane, Pentafluoroethane and Propane R-402a/Liquefied gas, n.o.s.	2.2	UN3163	n/a
Mixture of Chlorodifluoromethane, Pentafluoroethane and Propane R-402b/Liquefied gas, n.o.s.	2.2	UN3163	n/a
Mixture of Difluoromethane and Pentafluoroethane, R-410b/Liquefied gas, n.o.s.	2.2	UN3163	n/a
Isobutane	2.1	UN1969	n/a
Propadiene/Methylacetylene mixture	2.1	UN1060	n/a
Compressed or Liquefied gases, n.o.s. (Pentafluoroethane/Trifluoro-ethane mixture (R507)	2.2	UN1956	n/a
Ethylene Oxide/Dichlorofluoroethane mixture	2.2	UN3070	n/a
Ethylene Oxide/Chlorotetrafluoroethane	2.2	UN3297	n/a
Ethylene Oxide/Pentafluoroethane	2.2	UN3298	n/a
Butadiene	2.1	UN1010	n/a
Butane	2.1	UN1011	n/a
Butylene	2.1	UN1012	n/a
Cyclopropane liquefied	2.1	UN1027	n/a
Dimethylamine anhydrous	2.1	UN1032	n/a

Hazardous materials description -- proper shipping name	Hazard Class/ Division	Identi- fication Number	Packing Group
Ethylamine	2.1	UN1036	n/a
Isobutylene	2.1	UN1055	n/a
Methylamine Anhydrous	2.1	UN1061	n/a
Propylene	2.1	UN1077	n/a
Trimethylamine Anhydrous	2.1	UN1083	n/a
Vinyl bromide Inhibited	2.1	UN1085	n/a
Vinyl Methyl Ether Inhibited	2.1	UN1087	n/a
Mixture of Chlorodifluoromethane, Difluoroethane and Chlorotetrafluoroethane, R-401c/liquefied gas, n.o.s.	2.2	UN3163	n/a

7. PACKAGING AND SAFETY CONTROL MEASURES:

a. PACKAGING - Packagings authorized are three designs of non-DOT specification portable tanks, for which the manufacturer's and owner's serial numbers of each tank have been identified to and are on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA). The three portable tank designs are identified herein as Designs A, B, and C.

Each tank is mounted in an ISO frame and must be designed and constructed in accordance with DHE Fabrication and Machining technical specifications, calculations, drawings numbered A1/303-0042/10, A1/303-0093/10, A1/303-0042/1, FT 21563, 27.5/Con 17500/10/1, 27.5/Con 17500/1, 27.5/Con 17500/4 and other drawings on file with OHMEA and in conformance with the following provisions:

i. Code: Each portable tank authorized by this exemption meets the following code requirements:

A. Complies with DOT Specification 51 in all respects, including ASME "U" stamp, except openings may be located on the tank in areas other than on the top or at the end; and

B. IMO Type 5.

ii. **Material** - SA-612 carbon steel.

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iii. **Tank Dimensions (inches) and Design Criteria -**

Design	Water Capacity (Gallons)	Outside Diameter (Inches)	Length (Inches)	Shell Thickness (Inches)	Head Thickness (Inches)
A	4,438	80.33	228.0	0.799	0.736
B	4,888	84.76	226.7	0.847	0.78
C	4,624	84.76	214.2	0.847	0.78

iv. **Pressure and Venting Data -**

(1) Design	(2) Design Pressure (Note 1) (psig)	(3) Test Pressure (psig)	(4) Surface Area (Sq Ft)	(5) PRV Setting (psi)	(6) Total Relief Capacity (Note 2) (SCFH)
A	399	599	431.9	399	2296700
B	399	599	464.9	399	2296700
C	399	599	448.4	399	2296700

Notes: (1) Design pressure means "Maximum allowable working pressure" as used in the ASME Code.

(2) Pressure relief devices must be provided as follows:

One 3-inch diameter spring loaded safety relief valve is provided for each tank. Each pressure relief valve must be marked with its maximum flow rate in SCFH.

v. **Design Weights -**

Design Code	Design Specific Gravity	Maximum Gross Weight (Pounds)	Maximum Commodity Weight (Pounds)	Tare Weight (Pounds)
A	1.00	74956	55005	19951
B	1.00	74956	54057	20899
C	1.00	74956	54938	20018

vi. **Weld Joint Efficiency** - 1 (100% X-Ray)

vii. **Corrosion Allowance** - 0.0

viii. **G-Loadings** - Vertical down - 2 Vertical up - 2
Longitudinal - 2 Transverse - 2

ix. **Design Temperature Range** - 40°F to 131°F

x. **Openings** - The following openings are provided:

(1) One opening for a 18.47-inch inside diameter manway on end of tank;
(2) One opening for a 3-inch pressure relief valve on top of tank.
(3) One opening for a 2-inch diameter vapor phase valve on the bottom of the tank.
(4) One opening for a 2-inch diameter liquid phase valve on the bottom of the tank.
(5) One 0.25-inch NPT opening for a pressure gauge on the bottom of the tank.
(6) One 1-inch NPT opening for volumetric gauge in the center of the end.
(7) One 0.5-inch NPT opening for thermometer on the tank bottom.

Note: Each bottom outlet valve must be provided with a shear section that meets the requirements of 49 CFR 178.337-12.

xi. All discharge valves and gauges are protected by a steel valve cabinet.

xii. **Insulation** - None. Tanks are provided with a sunshield..

xiii. **Baffles** - Two flat or dished.

b. TESTING - Each tank must be tested as required for DOT Specification 51 portable tanks in 49 CFR 178.245. Each tank must be inspected and retested once every five years in accordance with 49 CFR 173.32(e) as prescribed for DOT Specification 51 portable tanks.

c. MARKING - Each portable tank must be plainly marked on both sides near the middle, in letters and numerals at least two inches high on a contrasting background, "DOT-E 11275." Additionally, "DOT-E 11275" must be stamped on the manufacturer's data plate on the line which reads "U.S. DOT Specification No."

d. OPERATIONAL CONTROLS -

i. No product requiring a venting capacity exceeding 2,296,700 SCFH may be transported under the terms of this exemption. The venting capacity required for each product must be determined by the flow formulas contained in the Compressed Gas Association's (CGA) Pamphlet S-1.2.

ii. Tanks must be filled by weight in accordance with the provisions of 49 CFR 173.315.

iii. Each tank must be visually inspected prior to each trip to ensure that it has not been damaged on the previous trip.

8. SPECIAL PROVISIONS.

a. Offerors for transportation of the hazardous materials specified in this exemption may use the packaging described in this exemption for the transportation of such hazardous materials so long as no modifications or changes are made to the packages, all terms of this exemption are complied with, and a copy of the current exemption is maintained at each facility from which such offering occurs.

b. 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 Program for a specific manufacturing facility.

c. A copy of this exemption, in its current status, must be maintained at each manufacturing facility at which this packaging is manufactured and must be made available to a DOT representative upon request.

d. Shippers using the packaging covered by this exemption must comply with all provisions of this exemption, and all other applicable requirements contained in 49 CFR Parts 171-180.

e. Hydrostatic test certificates for each tank must be maintained by the owner or manufacturer at its principal business office and be made available to any representative of the DOT upon request.

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

10. MODAL REQUIREMENTS:

a. A copy of this exemption must be carried aboard each cargo vessel or motor vehicle used to transport packages covered by this exemption.

b. Portable tanks may not be transported in container-on-flatcar (COFC) or trailer-on-flatcar (TOFC) service except under conditions approved by the Associate Administrator for Safety, Federal Railroad Administration.

c. When transported by motor vehicle:

i. Rear end protection for the motor vehicle must meet the requirements of 49 CFR 178.345-8(d) and 393.86.

ii. Each portable tank must be secured to the motor vehicle in conformance with the requirements of 49 CFR 393.100 through 393.106.

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 laws, 49 U.S.C. Section 5101 et seq:

- All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
- Registration required by 49 CFR 107.601 et seq., when applicable.

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. (49 CFR 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 inform the AAHMS, in writing, of any incidents involving the package and shipments made under the terms of this exemption.

Issued at Washington, D.C.:

MAY 29 1996

Alan I. Roberts
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.

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