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

OCT 17 1995

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

DOT-E 10291
(THIRD REVISION)

EXPIRATION DATE: December 31, 1996

(FOR RENEWAL, SEE 49 CFR SECTION 107.105.)

1. GRANTEE: Tankbouw Rootselaar B.V., Nijkerk, Holland
U.S. Agent: RTI, Inc., Arlington, Virginia
(See Appendix A to this for a list of additional grantees)

2. PURPOSE AND LIMITATION: This exemption authorizes the transportation in commerce of certain Division 2.1 and Division 2.2 gases packaged in three designs of non-DOT specification portable tanks, mounted in ISO frames. 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 Sections 173.315(a) insofar as non-DOT specification packaging is not authorized 173.245.1(b) insofar as openings are located in areas after than the top or end.
and 173.245.

5. BASIS. This exemption is based on the applications of Tankbouw Rootselaar dated September 18 and 28, 1995, submitted in accordance with 49 CFR 107.113 and a determination that it is necessary to preclude a serious economic loss.

6. HAZARDOUS MATERIALS (49 CFR 172.101):

Hazardous materials description/proper shipping name	Hazard Class/ Division	Identification number	* Tank Design Allowed
Dichlorodifluoromethane, R12	2.2	UN1028	A, B, C
Chlorodifluoromethane, R22	2.2	UN1018	A, B, C
Chloropentafluoroethane, R115	2.2	UN1020	A, B, C

Chlorodifluoromethane and chloropentafluoroethane mixture with fixed boiling point, R502	2.2	UN1973	A, B, C
Dichlorodifluoromethane and difluoroethane azeotropic mixture with approximately 74% dichlorodifluoromethane, R500	2.2	UN2602	A, B, C
Hexafluoropropylene, R1216	2.2	UN1858	A, B, C
Chlorotrifluorethane, R133a	2.2	UN1983	A, B, C
Tetrafluoroethane, R134a, compressed gas, n.o.s.	2.2	UN1956	A, B, C
Chlorotetrafluoroethane, R124	2.2	UN1021	A, B, C
Chlorodifluorobromomethane, R12B1	2.2	UN1974	A, B, C
Dichlorofluoromethane, R21	2.2	UN1029	A, B, C
Dichlorotetrafluoroethane, R114	2.2	UN1958	A, B, C
Chlorodifluoroethanes, R142b	2.1	UN2517	A, B, C
Difluoroethane, R152a	2.1	UN1030	A, B, C
Dimethylether	2.1	UN1033	A, B, C
Ethylchloride	2.1	UN1037	A, B, C
Methylchloride	2.1	UN1063	A, B, C
Vinylchloride, Inhibited	2.1	UN1086	A, B, C
Mixture: 1% R12 and 99% R114 Liquified gas, n.o.s.	2.1	UN3163	A, B, C

* Tank designs, designated A, B, and C, are authorized as indicated in Table Column 4 above.

6. HAZARDOUS MATERIALS (continued):

Hazardous materials description/proper shipping name	Hazard Class/ Division	Identification number	* Tank Design Allowed
Mixture: 53% R22, 13% R152a + 34% R124 Liquified gas, n.o.s.	2.2	UN3163	A, B, C
Mixture: 60% R22, 38% R125 + 2% propane Liquefied gas, n.o.s.	2.2	UN3163	A, B, C
Mixture: 61% R22, 22% R124 + 11% R152a Liquefied gas, n.o.s.	2.2	UN3163	A, B, C
Mixture: 30% R22 and 70% R124 Liquefied gas, n.o.s.	2.2	UN3163	A, B, C
Mixture: 60% R22, 15% R142b + 25% R124 Liquefied gas, n.o.s.	2.2	UN3163	A, B, C
Mixture: 23% R32, 25% R125 + 52% R134a Liquefied gas, n.o.s.	2.2	UN3163	A, B, C
Trifluoroethane R143	2.1	UN2035	B, C
Pentafluoroethane R125	2.2	UN3220	B, C
Mixture: 50% R125 and 50% R143a Liquefied gas, n.o.s.	2.2	UN3163	B, C
Mixture: 44% R125, 52% R143a + 4% R134a Liquified gas, n.o.s.	2.2	UN3163	B, C
Mixture: 38% R22, 60% R125 + 2% R290 Liquified gas, n.o.s	2.2	UN3163	B, C
Other Division 2.1 and Division 2.2 materials authorized for DOT Specification 51 portable tanks in 49 CFR 173.315	2.1 or 2.2 as appropriate	various	A, B, C as appropri-ate

* Tank designs, designated A, B, and C, are authorized as indicated in Table Column 4 above.

7. PACKAGING AND SAFETY CONTROL MEASURES:

a. PACKAGING - Packagings prescribed are three designs of non-DOT specification portable tanks mounted in ISO frames, designated A, B and C. Design A is constructed to CKT drawing numbers 1541-2 and 1541-9, and Tankbouw Rootselaar drawing numbers D-1670 rev. B, D-1670 rev. G, D-1671, D-1672, D-1673, D-1696 and A-178. Design B is constructed to CKT drawing numbers 1703 1 REV C, 1703-2 Rev C, 1703-5 and Tankbouw Rootselaar drawing numbers D-2091 Rev C, D-2092 Rev B, D-2093 Rev 0, D-2094 Rev 0, D_2095 Rev 0 and A-242. Design C is constructed to CKT drawing numbers 1747-G-1, 1747-C-2 Rev C, 17747-S-1 Rev A, and Tankbouw Rootselaar drawing numbers D-2247-00 Rev C, D-2247 01 Rev A, D-2247-02 Rev 0, D-2247-03 Rev B and D-2247-04 Rev B. Portable tanks must be designed and constructed in accordance with the above drawings, technical specifications, and calculations on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA), and in compliance with the following provisions:

i. Code:

A. Three designs of tanks are authorized. Each design complies with DOT Specification 51 in all respects except openings may be located on the tank in areas other than on the top or at the end;

B. designed, constructed, and certified in accordance with the ASME Code; and
C. IMO Type 5.

ii. Tank Design Data:

Item	Design A	Design B	Design C
Water Capacity US Gals.	4,400	4,400	4,700
Insulation	Sunshield	Sunshield	Sunshield
Material: Carbon Steel	SA-299	SA-299	SA-299
*Design Pressure range	330.7 psig	361.2 psig	363 psig
Test Pressure (min)	496 psig	580 psig	667 psig

* Note: Design Pressure means "maximum allowable working pressure (MAWP)" as used in the ASME Code.

ii. Tank Design Data (continued):

Item	Design A	Design B	Design C
Tank Size:			
Outside diameter	78.74 in.	78.74 in.	80.71 in.
Length	236.22 in	236.22 in.	230.00 in.
Wall Thickness	0.699 in.	0.752 in.	0.778 in.
Head Thickness	0.682 (D-1670B)	0.693 in.	0.713 in.
Weld Joint Efficiency	0.646 (D-1670G)	1.0	1.0
Corrosion Allowance	1.0	0.0	0.0
Number of Baffles	0.0 2	2	2
Openings:			
Manhole (inside dia)	1 x 23.62"	1 x 23.23"	1 x 23.23"
**Vapor phase conn.	1 x 6.5"	1 x 6.5"	1 x 6.5"
**Liquid phase conn.	1 x 7.87"	1 x 7.87"	1 x 6.5"
Pressure relief devices	2 x 2" NPT	2 x 2" NPT	1 x 8.66
Manometer	1 x ½" NPT	1 x ½" NPT	1 x ½" NPT
Tank surface area	430.6 sqft	430.6 sqft	430.6 sqft
Pressure relief devices			
Size (inches)	2	2	2
Number	2	2	1
Set pressure (psig)	330.7	397.4	399
Capacity at 120% MAWP (SCFH)	1,582,856	2,333,189	2,521,268
(m^3/sec)	12.45	18.36	19.83
G Loadings			
Vertical down	2	2	2
Verticle up	2	2	2
Longitudinal	2	2	2
Transverse	2	2	2
Maximum gross weight	67,208 lbs	67,208 lbs	67,208 lbs
Max commodity weight	49,586 lbs	48,908 lbs	48,578 lbs
Tare weight	17,640 lbs	18,300 lbs	18,630 lbs
Design specific gravity	1.34	1.34	1.34
Design temperature range	-40/+131 °F	-40/+131 °F	-40/+131 °F

**Each bottom outlet valve must be provided with a shear section that meets the requirements of 49 CFR 178.337.12.

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

c. MARKING - Each portable tank must be marked in accordance with 49 CFR 173.24 and 173.32(e)(3). Each tank must be plainly marked on both sides near the middle, in letters at least two inches high on a contrasting background, "DOT-E 10291". The metal manufacturer's data plate must be stamped "DOT-E 10291" on the line which reads "U.S. DOT Specification No." Each pressure relief device must be marked with a start-to-discharge pressure in psig and a rated relief device capacity in SCFH.

d. OPERATIONAL CONTROLS -

i. No product may be shipped that has venting requirements exceeding that specified in paragraph 7.a.ii. above. 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. The tank must be filled by weight in accordance with the provisions of 49 CFR 173.315 for compressed gases.

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. Persons who receive the packages covered by this exemption may reoffer them for transportation provided no modifications or changes are made to the packages, all terms of this exemption are complied with and a current copy of this exemption is maintained at each facility from which such reoffering occurs.

b. 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.

c. 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.

d. A test report documenting a satisfactory ISO prototype test for these tank designs must be on file with the OHMEA prior to the first shipment.

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 used to transport packages covered by this exemption.

b. Rear end protection for the motor vehicle must meet the requirements of 49 CFR 178.340-8(b) and 393.86.

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

d. 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.

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:

- 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.:

OCT 17 1995
(DATE)

Alan I. Roberts
Associate Administrator
for Hazardous Materials Safety

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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