

December 17, 2014



U.S. Department
of Transportation

East Building, PHH-30
1200 New Jersey Avenue S.E.
Washington, D.C. 20590

**Pipeline and Hazardous
Materials Safety Administration**

DOT-SP 10481
(NINTH REVISION)

EXPIRATION DATE: November 30, 2018

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: M1 Engineering Limited
Bradford, West Yorkshire, England
(U.S. Agent: W.R. Zanes & Co. of LA., Inc.
New Orleans, LA)
2. PURPOSE AND LIMITATIONS:
 - a. This special permit authorizes the manufacture, marking, sale, and use of a non-DOT specification vacuum insulated portable tank in an ISO frame 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 special permit. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein. The most recent revision supersedes all previous revisions.
 - b. The safety analyses performed in development of this special permit 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 §§ 173.318 and 176.76(g) in that a non-DOT specification portable tank is not authorized, except as prescribed herein.
5. BASIS: This special permit is based on the application of W.R. Zanes & Co. of La., Inc., on behalf of M1 Engineering Limited dated November 03, 2014 submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Material Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Argon, refrigerated liquid (<i>cryogenic liquid</i>)	2.2	UN1951	N/A
Ethylene, refrigerated liquid (<i>cryogenic liquid</i>)	2.1	UN1038	N/A
Methane, refrigerated liquid (<i>cryogenics liquid</i>) or Natural gas, refrigerated liquid (<i>cryogenic liquid</i>), with high methane content	2.1	UN1972	N/A
Nitrogen, refrigerated liquid <i>cryogenic liquid</i>	2.2	UN1977	N/A
Oxygen, refrigerated liquid (<i>cryogenic liquid</i>)	2.2	UN1073	N/A
Air, refrigerated liquid (<i>cryogenic liquid</i>)	2.2	UN1003	N/A
Carbon dioxide, refrigerated liquid (<i>cryogenic liquid</i>)	2.2	UN2187	N/A
Nitrous oxide, refrigerated liquid (<i>cryogenic liquid</i>)	2.2	UN2201	N/A

7. SAFETY CONTROL MEASURES:a. PACKAGING -

(1) Prescribed packaging is a non-DOT specification portable tank designed, constructed and "U" stamped in accordance with Section VIII, Division 1 of the ASME Code. The portable tank is vacuum insulated and enclosed in an ISO frame. The portable tank must conform to M1 Engineering Limited's drawings No. C265065 dated September 20, 1990; B491041 dated July 7, 1990; B489455/E dated March 1990, M1 Engineering Limited's drawing No. CCU/008-013/01 dated March 1, 2001; M1 Engineering Limited's drawing 110140 Rev. 0, M1 Engineering Limited's drawing 110143 Rev. 0, and other drawings, design calculations, and U1-A forms on file with the Office of Hazardous Materials Special Permits and Approvals (OHMSPA). Four designs of portable tanks are authorized. No new construction is authorized. The authorized portable tanks have design criteria as follows:

Tank Design	Design 1	Design 2	Design 2A	Design 2B
Design pressure				
psig	135	164	265	333
bar	9.31	11.35	18.25	23
MAWP				
psig	116	150	250	319
bar	8	10.3	17.25	22
Design temperature				
°F	-320	-320	-320	-320
°C	-196	-196	-196	-196
Water capacity				
U.S. Gallons	5,019	5,284	5,284	5,284
Liters	19,000	20,000	20,000	20,000

(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 SA 240 Type 304 austenitic stainless steel for the inner tank; and BS 1501 Pt.3- 304 stainless steel or equivalent steel for the outer jacket. Material for structural attachments is SA 36 or equivalent specification steel.

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§ 178.338-6 Manholes.

(a) * * *

(b) Each portable tank must be provided with an inspection access hole (manhole) of not less than 18 inches (456 mm) diameter. After a final inspection, the access hole must be closed by welding using a suitable access cover plate fabricated from the same material as the tank. 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.

§ 178.338-10 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 49 CFR 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) * * *

(1) "DOT-SP 10481" must replace the mark "DOT MC-338".

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

If there is no vacuum in the outer jacket during the test:

$$P_T = 1.25 \times P_d$$

If vacuum exists in the outer jacket during test:

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

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 to the following:

(i) The package must conform to § 176.76(g). Portable tanks may be over stowed only if enclosed in ISO-type frames and otherwise suitably protected. Portable tanks must be stowed such that they are readily accessible and can be monitored in accordance with the provisions of this special permit.

(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:

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

(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 OHMSPA 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 special permit for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this special permit.

- b. A person who is not a holder of this special permit, but receives a package covered by this special permit, 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 special permit and the HMR.
- c. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.
- d. Each packaging manufactured under the authority of this special permit 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 Special Permits and Approvals for a specific manufacturing facility.
- e. A current copy of this special permit must be maintained at each facility where the package is manufactured under the authority of this special permit. It must be made available to a DOT representative upon request.
- f. Each portable tank must be plainly and durable marked on both sides near the middle, in letters and numbers at least two (2) inches high on a contrasting background, "DOT-SP 10481".
- g. Transportation of Division 2.1 materials (flammable gases) are not authorized aboard cargo vessel unless specially authorized in the Hazardous Materials Table (§ 172.101).
- h. Owners and manufacturer's serial numbers for the portable tanks authorized under this special permit must be on file with the OHMSPA.
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight and cargo vessel.
10. MODAL REQUIREMENTS:
- a. A current copy of this special permit must be carried aboard each cargo vessel and motor vehicle used to transport packages covered by this special permit.

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b. The portable tank must be secured to the motor vehicle in accordance with the requirements of 49 CFR 393.100 through 393.106. Additionally, the motor vehicle's bumper must be located at least 6 inches to the rear of any tank component used for loading or unloading that may contain lading during transit.

c. Portable tanks may not be transported in container-on-flat car (COFC) or trailer-on-flat car (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 special permit 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 special permit and the Hazardous Materials Regulations, Parts 171-180.
- o Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
- 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 special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

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

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)- "The Hazardous Materials Safety and Security Reauthorization Act of 2005" (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term "exemption" to "special permit" and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 Immediate notice of certain hazardous materials incidents, and 171.16 Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit must notify the Associate Administrator for Hazardous Materials Safety, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:



for Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety

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

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: CHHOCHMAN/SG