



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

July 03, 2023

1200 New Jersey Avenue, SE
Washington, DC 20590

DOT-SP 14550
(FOURTH REVISION)

EXPIRATION DATE: 2027-06-30

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Air Liquide Electronics U.S., LP
Morrisville, PA
2. PURPOSE AND LIMITATION:
 - a. This special permit authorizes the filling, for export only, of non-DOT specification pressure vessels containing a liquefied flammable gas, and the return of the pressure vessels to the United States, for purposes of refilling for export only, when containing a residue of the hazardous material. 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.
 - c. No party status will be granted to this special permit.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.301, 173.301(f), 173.304, and 173.304a in that the use of a non-DOT specification pressure vessel without a pressure relief device is not authorized, except as specified herein.
5. BASIS: This special permit is based on the application of Air Liquide Electronics U.S. LP dated May 25, 2023, and submitted in accordance with § 107.109.

Tracking Number: 2023055335

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Liquefied gas, flammable, n.o.s. (Trimethylsilane)	2.1	UN3161	N/A

7. SAFETY CONTROL MEASURES:a. PACKAGING:

(1) Packagings prescribed are 10 non-DOT specification welded pressure vessels with elliptical ends designed and manufactured by LIOTARD (France). The pressure vessels conform to LIOTARD Drawing No. 1387/04000 and the Air Liquide specification on file with the Office of Hazardous Materials Safety (OHMS).

(2) Each pressure vessel conforms to the following design data:

Shell material	P355NL1 (carbon steel) ¹
Water capacity	766 liters (202.3 gallons)
Outside diameter	1000 mm (39.3 inches)
Minimum designed wall thickness	5.7 mm (0.23 inch)
Test pressure	25 bar (362.5 psig)
Wall stress at test pressure	Not greater than 0.77 of min. yield strength
Minimum burst pressure	56 bar (812 psig) ²

¹ The requirements for this steel are specified in European Standard EN 10028-3. A copy of the standard must be on file with OHMS. The closest US-equivalent to this steel is considered to be ASTM A662 Grade C. Each pressure vessel has a guaranteed minimum yield strength (Re) of 345 MPa (50,025 psi) and ultimate tensile strength (UTS) of 490 MPa (71,050 psi).

² The minimum burst pressure is as calculated according to the formula in § 179.300-8(a), as applicable to welded DOT Specification 110A tanks of capacity similar to that of the pressure vessels addressed in this application.

(3) Each pressure vessel is permanently mounted and enclosed within a steel framework equipped with forklift pockets and provisions for top lifting.

b. TESTING:

(1) Prior to first use under the terms of this special permit each pressure vessel must be subjected to:

(i) Hydrostatically tested at 25 bar (362.5 psig) using: the direct expansion method specified in the Compressed Gas Association (CGA) Pamphlet C-1; the direct expansion method provided in Annex F (Volumetric expansion testing of gas cylinders) or to European Standard EN 1968:2002 – the non-water jacket volumetric expansion test; or another direct expansion method approved by the Associate Administration for Hazardous Materials Safety. When tested, there must be no evidence of leakage or any other deficiency that would render the pressure vessel unsafe for transportation. Permanent volumetric expansion may not be greater than 10% of the total volumetric expansion at test pressure;

(ii) An external and internal examination, wall thickness measurement and leakage test in accordance with CGA Pamphlet C-6 or written procedures prepared by Air Liquide which are on file with OHMS;

(iii) A Brinell Hardness Test must be performed on each pressure vessel at 2 locations 180° opposite each other. Test locations may not be on the circumferential weld but must be within 10 cm (4 inches) of the weld. The Brinell Hardness Number must not exceed 240.

(2) Each pressure vessel must periodically be inspected and tested once every 10 years in accordance with procedures described in 7.b.(1)(i) & (ii) of this special permit.

c. OPERATIONAL CONTROLS:

(1) This special permit is limited to 10 pressure vessels. The pressure vessels are identified by the following Serial Numbers: X61LT5101, X61LT5106, X61LT5108, X61LT5113 through X61LT5118, and X61LT5120.

- (2) New construction is not authorized.
- (3) Each pressure vessels must be properly secured to prevent movement under conditions normally incident to transportation.
- (4) Pressure vessels authorized under this special permit may not be transported with other materials in the same transport vehicle, freight container or motor vehicle.
- (5) The filling ratio (filling density) shall be calculated to ensure that no more than 402 kg (886 pounds) will be loaded into the pressure vessel and the liquid portion of the contents will not completely fill the pressure vessel at any temperature at or below 130°F. Additionally, the maximum developed pressure at 55°C (130°F) may not exceed 4.6 bar (67 psi) during transportation.
- (6) Each pressure vessel authorized under this special permit may only be filled in the United States for export only, and be returned to the United States, for purposes of refilling for export only. The returned pressure vessel may have a maximum of 20 kg (44 pounds) of hazardous materials (residue).
- (7) Since these pressure vessels are not equipped with pressure relief devices, the emergency response information must be provided with each shipment that indicates the pressure vessels are not fitted with pressure relief devices and provide appropriate guidance for exposure to fire. The emergency response must also provide telephone number and contact person.

8. SPECIAL PROVISIONS:

- a. A person who is not a holder of this special permit who receives a package covered by this special permit may reoffer it for transportation provided no modification or change is made to the package and it is reoffered for transportation in conformance with this special permit and the HMR.
- b. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.
- c. Each pressure vessel must be plainly and durably marked on opposing side near the middle, in letters and numerals at least 5 cm (2 inches) high on a contrasting background, "DOT-SP 14550".

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

10. **MODAL REQUIREMENTS:** A current copy of this special permit must be carried aboard each cargo vessel or motor vehicle used to transport packages covered by this special permit.
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, 49 CFR 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 this 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 William Schoonover
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Material Safety Administration, U.S. Department of Transportation, East Building PHH-13, 1200 New Jersey Avenue, Southeast, Washington, D.C. 20590.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at <https://www.phmsa.dot.gov/approvals-and-permits/hazmat/special-permits-search>. Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

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