



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

**January 17, 2025**

1200 New Jersey Avenue, SE  
Washington, DC 20590

DOT-SP 21834

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: (See individual authorization letter)
2. PURPOSE AND LIMITATION:
  - a. This special permit authorizes the transportation in commerce of compressed xenon in fully wrapped fiber reinforced composite cylinders (COPV) with aluminum liners designed, manufactured, and tested to UN ISO 11119-2 specifications, except that no pressure relief devices will be fitted. Cylinders may be transported as an integrated part of the spacecraft or as a standalone part. 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 the development of this special permit only considered the hazards and risks associated with the transportation in commerce.
  - c. Unless otherwise stated herein, this special permit consists of the special permit authorization letter issued to the grantee together with this document.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.301(f)(1) in that a cylinder filled with a gas must be equipped with one or more pressure relief devices, except as specified herein.
5. BASIS: This special permit is based on the application of Umbra Lab, Inc. dated August 5, 2024, submitted in accordance with § 107.105 and the public proceeding thereon.

Tracking Number: 2024084729

6. HAZARDOUS MATERIALS (49 CFR 172.101):

| Hazardous Materials Description |                           |                       |               |
|---------------------------------|---------------------------|-----------------------|---------------|
| Proper Shipping Name            | Hazard Class/<br>Division | Identification Number | Packing Group |
| Xenon, compressed               | 2.2                       | UN2036                | N/A           |

7. SAFETY CONTROL MEASURES:

a. PACKAGING: Prescribed packagings are fully wrapped fiber reinforced composite cylinders (COPV) with aluminum liners manufactured by Advanced Material Systems (Drawing # 2-C-639) designed, manufactured, and tested to UN ISO 11119-2 specifications, except that no pressure relief devices will be fitted. The cylinders will contain up to 5.0 kg of compressed xenon during transportation with a MEOP of 2,000 psi at 40 °C. Cylinders may be transported as an integrated part of the spacecraft or as a standalone part. Cylinders must be packaged within rigid outer shipping containers. Details of the packagings and rigid outer shipping containers must be as described in the application on file with the Office of Hazardous Materials Safety.

b. OPERATIONAL CONTROLS Packages must be transported in a climate-controlled vehicle.

c. MARKING: The rigid outer shipping container holding the cylinder must be marked on two sides in letters at least 2 inches high on contrasting background "DOT-SP 21834".

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.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle.

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each 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.:

A handwritten signature in blue ink, appearing to read "William Schoonover", is written over a faint circular stamp.

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.

PO: AS