



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

May 25, 2023

1200 New Jersey Avenue, SE
Washington, DC 20590

DOT-SP 21544

EXPIRATION DATE: 2025-04-30

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: Astra Space Operations, Inc.
Alameda, CA
2. PURPOSE AND LIMITATION:
 - a. This special permit authorizes the transportation in commerce of certain compressed gases contained in a non-DOT specification cylinder further incorporated into a propellant management system within a satellite. 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. 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(f) in that a pressure relief device is not required; and 173.302a in that non-DOT specification cylinders are authorized, as specified herein.
5. BASIS: This special permit is based on the application of Astra Space Operations, Inc. dated March 29, 2023, submitted in accordance with § 107.105 and the public proceeding thereon.

Tracking Number: 2023036020

6. HAZARDOUS MATERIALS (49 CFR 172.101):

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Krypton, compressed	2.2	UN1056	N/A
Xenon, compressed	2.2	UN2036	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING: Packaging prescribed is a non-DOT specification composite cylinder which is integrated into a propellant management system inside a satellite. The cylinder is a fully wrapped carbon fiber cylinder with a seamless aluminum liner and a maximum operating pressure of 4,000 psi. The packaging is made in accordance with American National Standard: ANSI-AIAA S-081B-2018 Space Systems – Composite Overwrapped Pressure Vessels and the documents on file with the Office of Hazardous Materials Safety (OHMS).

b. OPERATIONAL CONTROLS:

(1) Pressurized cylinders must be shipped in the Transpack wooden crate, as described in Astra Space Operations, Inc.'s application dated March 29, 2023, and on file with OHMS.

(2) Cylinders may not be pressurized more than 12 times.

8. SPECIAL PROVISIONS:

a. A person who is not a holder of this special permit, but receives a packaging covered by this special permit, may reoffer it for transportation provided no modification or change is made to the packaging and it is offered 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, cargo vessel, cargo-only aircraft.

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each motor vehicle, cargo vessel, and cargo-only aircraft used to transport packages covered by this special permit. The shipper must furnish a copy of this special permit to the air carrier before or at the time the shipment is tendered.
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 "W. Schoonover", is written over a light blue 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: ae