



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

September 17, 2021

1200 New Jersey Avenue, SE
Washington, DC 20590

DOT-SP 16535
(THIRD REVISION)

EXPIRATION DATE: 2025-08-31

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: National Aeronautics and Space Administration
Washington, D.C.
2. PURPOSE AND LIMITATION:
 - a. This special permit authorizes the transportation in commerce of non-DOT specification carbon composite overwrapped cylinders containing compressed nitrogen. 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 § 173.302a(a) in that non-DOT specification cylinders are authorized; § 173.301(f)(1) in that a pressure relief device is not required on a cylinder filled with a gas; and § 173.301(h)(3) in that alternative cylinder valve protection is authorized, as provided herein.
5. BASIS: This special permit is based on the application of National Aeronautics and Space Administration dated August 30, 2021 submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR 172.101):

| Hazardous Materials Description | | | |
|---------------------------------|---------------------------|-----------------------|---------------|
| Proper Shipping Name | Hazard Class/ Division | Identification Number | Packing Group |
| Nitrogen, compressed | 2.2 | UN1066 | N/A |

7. SAFETY CONTROL MEASURES:a. PACKAGING:

(1) Prescribed packaging consists of two non-DOT specification Composite Overwrapped Pressure Vessel (COPV) tanks installed in National Aeronautics and Space Administration's (NASA) Simplified Aid for Extra-vehicular Activity Rescue (SAFER) Test Module (TM) assembly.

(2) Each COPV is a filament-wound carbon fiber reinforced metal lined pressure vessel designed and tested to ARDE Inc. component envelope drawing D4688 on file with the Office of Hazardous Materials Approvals and Permits Division.

(i) The liner is essentially non-load sharing, and it is made of Inconel alloy 718 and is formed by welding two hemispherical domed heads containing integral bosses to the cylindrical section.

(ii) The overwrap must be Toray T-1000 carbon graphite fiber with ARDE HARF 53 resin system.

(iii) The tanks must comply with all NASA standards and specifications relating to SAFER.

(3) The nominal volumetric capacity of each COPV tank is approximately 170 cubic inch (2.8L).

(4) Each of the two tanks in the SAFER TM is filled with Nitrogen to an operational pressure of 8,000 psig at 80 °F.

(5) The maximum design pressure of the COPVs is 10,000 psig at 165 °F. The proof pressure is 15,000 psig and the minimum burst pressure is 20,000 psig. The tanks are not equipped with pressure relief devices.

(6) The SAFER TM assembly must be enclosed in a Nomex covered Pyrell foam pouch and then wrapped within a pink polyethylene bag. This assembly must be further packed in a UN 4D wooden box, which is the cargo transportation containment.

(7) Only two non-DOT specification tanks may be transported within each SAFER TM, and a maximum number of two cargo transportation containments may be transported together.

b. REQUALIFICATION: No periodic requalification is required for these pressure vessels (tanks).

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. The tanks (cylinders) are authorized for no more than 100 pressurizations when used as part of the TM assembly.

d. The tanks must be used exclusively as a component of the International Space Station program.

e. Each tank must be shipped in a strong outside packaging in accordance with § 173.301(a)(9).

f. MARKING: The cargo transportation shipping container must be marked "DOT-SP 16535" on two opposite sides in letters at least 2 inches in height on a contrasting background.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, passenger-carrying aircraft, and cargo aircraft.

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each cargo vessel, aircraft, or motor vehicle 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.:



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: PDW