

March 12, 2021



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 16372  
(SECOND REVISION)

**EXPIRATION DATE: 2024-12-31**

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Northrop Grumman Systems Corporation  
Redondo Beach, CA
2. PURPOSE AND LIMITATION:
  - a. This special permit authorizes the transportation in commerce of certain non-DOT specification containers known as heat pipes containing anhydrous ammonia and/or pulse tube coolers containing helium. 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 cylinders must be equipped with one or more pressure relief devices and §§ 173.302a(a)(1) and 173.304a(a)(2) in that DOT specification packaging is required, except as provided herein.
5. BASIS: This special permit is based on the application of Northrop Grumman Systems Corporation dated January 29, 2021, submitted in accordance with § 107.109.

**March 12, 2021**6. HAZARDOUS MATERIALS (49 CFR § 172.101):

<b>Hazardous Materials Description</b>			
<b>Proper Shipping Name</b>	<b>Hazard Class/ Division</b>	<b>Identi- fication Number</b>	<b>Packing Group</b>
Ammonia, anhydrous	2.2/2.3*	UN1005	N/A
Helium, compressed	2.2	UN1046	N/A

\*Division 2.3 must be used for international transportation. Division 2.2 may be used as an alternate when only domestic transportation is involved.

7. SAFETY CONTROL MEASURES:

a. PACKAGING Prescribed packaging consists of the following non-DOT specification pressure containers which are designed in accordance with MIL STD 1522A and are parts of the Mid Infrared Instrument Cryocooler Compressor Assembly, MIRI CCA:

(1) Heat Pipes: These contain pressurized anhydrous ammonia. They are constructed of 6063 aluminum extrusions and 6061 aluminum fill tube and end caps. The cooler assembly will contain two heat pipes and shipped in configurations with and without the heat pipes installed. Pressurized volume is 0.03 liters (30 cc) per heat pipe. The service pressure is 109 psia at 20°C and maximum working pressure is 600 psia at 90°C.

(2) Pulse Tube (PT) Cooler: It contains pressurized helium. The reservoir material is aluminum alloy 2219 and the cold head material is titanium alloy Ti 6Al-4V. The pressurized volume is 2.20 liters. The fill pressure is 500 psig at 25°C and maximum working pressure is 578 psig at 70°C.

(3) Getter and Valve Assembly: It also contains pressurized helium. Pressurized volume is 0.17 liters with maximum working pressure of 500 psig at 70°C. The material of construction for this assembly is 316L stainless steel.

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(4) JT Compressor: The pressurized volume is 0.90 liters and the maximum working pressure is 434 psig at 70°C. It is made of aluminum alloy 2219. For transportation, it is filled with only one atmosphere of helium.

(5) All welding and radiographic inspection for the above components is consistent with AWS D17.1. These components are proof tested to at least 1.5 x the maximum working pressure and leak tested consistent with ASTM E493 or E498. Each component must also meet a minimum burst requirement of 2.5 x the maximum working pressure. A complete specification for these containers is on file with Special Permits and Approvals Division.

b. OPERATIONAL CONTROLS -

(1) The MIRI CCA Cooler Assembly must be transported inside a strong outer shipping container, H9944. The container is constructed of plywood/fiber glass laminate panels and aluminum structure with casters and fork pockets. The cooler assembly must be mounted on shock isolators inside the shipping container to prevent impact or shock related damage to the assembly and its components.

(2) MARKING- The outer shipping container must be plainly and durably marked on two opposite sides on a contrasting background, "DOT-SP 16372" as specified in §172.301(c)

(3) Emergency response information provided with the shipment and available via an emergency response telephone number must indicate that the pressurized components in the Cooler assemblies are not fitted with pressure relief devices and must provide appropriate guidance in the event of fire.

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.

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- 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.

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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-30, 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 [http://hazmat.dot.gov/sp\\_app/special\\_permits/spec\\_perm\\_index.htm](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: WEST FREEMAN/SG