

February 26, 2020



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 10785  
(EIGHTEENTH REVISION)

**EXPIRATION DATE: 2022-06-30**

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Thermo Process Instruments, LP  
Franklin, MA
2. PURPOSE AND LIMITATIONS:
  - a. This special permit authorizes the manufacture, marking, sale and use of non-DOT specification cylinders containing certain Divisions 2.2 and 2.3 gases as described in paragraph 6 below to be transported in radiation detectors rather than in DOT Specification cylinders. 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. In accordance with 49 CFR 107.107(a) party status may not be granted to a manufacturing permit. These packaging may be used in accordance with 49 CFR 173.22a.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.302a(a)(1) in that the use of non-DOT specification packaging is not authorized, except as specified herein; and § 172.102 Special Provision 238 in that boron trifluoride under pressure and exceeding 13 grams is not authorized, except as stated herein.

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5. BASIS: This special permit is based on the application of Thermo Process Instruments, LP dated January 3, 2020, submitted in accordance with § 107.105 and the public preceding thereon.
6. HAZARDOUS MATERIALS (49 CFR § 172.101):

<b>Hazardous Materials Description</b>			
<b>Proper Shipping Name</b>	<b>Hazard Class/ Division</b>	<b>Identification Number</b>	<b>Packing Group</b>
Argon, compressed	2.2	UN1006	N/A
Boron trifluoride	2.3	UN1008	N/A
Helium, compressed	2.2	UN1046	N/A
Hexafluoroethane, R116	2.2	UN2193	N/A
Xenon	2.2	UN2036	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING: Packagings prescribed are radiation detection chambers which are a component of a non-contacting measurement system, commonly described as nuclear gauging devices. These gas filled cylindrical shaped radiation detectors consist of metal cylinders with welded, brazed, or soldered joints; brazed ceramic to metal insulator feed-through assemblies for electrical connectors; and a metal fill tube, manufactured in accordance with applicable drawings on file with the Office of Hazardous Materials Safety Approvals and Permits Division (OHMSAPD) and conforming to the following:

(1) **Type, Inner Gas Containment Dimensions and Material.**

- (i) Type I Cylinder:

INNER GAS CONTAINMENT DIMENSIONS: 6.0"- 6.5" in diameter x 13.5"- 125" in length  
 MAX. ENCLOSED VOLUME: 4148 cubic inches  
 MATERIAL: ASTM A-513 or 300 series stainless steel

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MIN. WALL THICKNESS: 0.105"  
MAX. FILL PRESSURE: 160 psig  
GAS CONTAINED: Argon or Freon-116

(ii) Type II Cylinder:

INNER GAS CONTAINMENT DIMENSIONS: 5.0"- 8.5"  
in diameter x 8.5"-11.25" in length  
MAX. ENCLOSED VOLUME: 639 cubic inches  
MATERIAL: HRS C-1015, CRS 1018, or 300  
series stainless steel  
MIN. WALL THICKNESS: 0.0598"  
MAX. FILL PRESSURE: 160 psig  
GAS CONTAINED: Argon or Freon-116

(iii) Type III Cylinder:

INNER GAS CONTAINMENT DIMENSIONS: 3.5"-4.0"  
in diameter x 7.5"-16.0" in length  
MAX. ENCLOSED VOLUME: 201 cubic inches  
MATERIAL: 300 series stainless steel  
MIN. WALL THICKNESS: 0.065"  
MAX. FILL PRESSURE: 360 psig  
GAS CONTAINED: Argon or Freon-116

(iv) Type III-N Cylinder:

INNER GAS CONTAINMENT DIMENSIONS: 3.87" in  
diameter x 7.62" or 15.62" in length  
MAX. ENCLOSED VOLUME: 90 cubic inches  
or 184 cubic inches  
MATERIAL: 300 series stainless steel  
MIN. WALL THICKNESS: 0.065"  
MAX. FILL PRESSURE: 2 psig or 45 psig  
GAS CONTAINED: Boron trifluoride or Helium-3

(v) Type IV Cylinder:

INNER GAS CONTAINMENT DIMENSIONS: 2.0"- 2.5"  
in diameter x 8.0"- 13.0" in length  
MAX. ENCLOSED VOLUME: 64 cubic inches  
MATERIAL: ASTM A-513  
MIN. WALL THICKNESS: 0.049"  
MAX. FILL PRESSURE: 360 psig  
GAS CONTAINED: Argon, Freon-116, or Xenon

(vi) Type V Cylinder:

INNER GAS CONTAINMENT DIMENSIONS: 12.5"  
outside diameter, 2.5" inside diameter, and

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2.5" in length.

MAX. ENCLOSED VOLUME: 187 cubic inches

MATERIAL: 300 Series stainless steel

MIN. WALL THICKNESS: 0.125"

MAX. FILL PRESSURE: 45 psig

GAS CONTAINED: Boron trifluoride or Helium-3

(vii) Type VI Cylinder:

INNER GAS CONTAINMENT DIMENSIONS: 10.43"  
outside diameter, 2.3" inside diameter, and  
2.26" in length.

MAX. ENCLOSED VOLUME: 179 cubic inches

MATERIAL: 300 series stainless steel

MIN. WALL THICKNESS: 0.125"

MAX. FILL PRESSURE: 34 psig

GAS CONTAINED: Boron trifluoride or Helium-3

b. The design burst pressure of the cylinder must be at least 4 times the maximum filling pressure.

c. When offered for transportation, the nuclear gauging device may be comprised of one package containing both the radioactive material source component and the radiation detection component which includes the elements described in paragraph 7(a); or the radioactive material may be in one package and the radiation detection component in a second package. Under either condition, the package containing radioactive material must be in full compliance with the radioactive material provisions of 49 CFR Parts 100 - 180. The gas filled radiation detectors, or the component containing the detectors, must be in strong outside packagings as described in the May 22, 1992 application for the special permit, and must protect the gas filled detector from damage during transport.

d. Notwithstanding § 175.3, packages containing neutron detectors with no more than 25 grams of boron trifluoride per package, may be transported by ground in non-DOT specification packaging.

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this special permit for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this special permit.

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- b. A person who is not a holder of this special permit, but receives a package 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.
- c. Each person offering for transportation a package containing a system component that includes radioactive material must satisfy all requirements for packaging, marking, labeling, transport documentation, modal restrictions (including § 173.448(e) and (f)), and all other Class 7 (radioactive material) provisions of 49 CFR Parts 171 - 180.
- d. Except when transported by air, packages containing only the gas filled radiation detector components of the gauging systems are excepted from 49 CFR Part 172, Subparts E (labeling) and F (placarding).
- e. Each gas filled radiation detector authorized for transport under this special permit must bear the name of the manufacturer. The outer packagings used for the transport of the gas filled detectors must bear the name of the person offering the shipment. Radioactive material packages must be marked with the name of the person certifying that the package meets the requirements of paragraph 8(a).
- f. A current copy of this special permit must be maintained at each facility where the package is manufactured under this special permit. It must be made available to a DOT representative upon request.
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel and cargo only aircraft. Hazard Class 2.3 is forbidden on cargo only 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 current copy of this special permit to the air carrier before or at the time the shipment is tendered.

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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

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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: CWFreeman/SG/kah