



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

**March 29, 2024**

1200 New Jersey Avenue, SE  
Washington, DC 20590

DOT-SP 11379  
(TWENTY-SEVENTH REVISION)

**EXPIRATION DATE: 2025-06-30**

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: ZF Passive Safety Systems US Inc.  
Livonia, Michigan
2. PURPOSE AND LIMITATIONS:
  - a. This special permit authorizes the manufacture, mark, sale, and use of non-DOT specification pressure vessels in airbag inflators or seatbelt pretensioners. The pressure vessels, charged with non-toxic, non-liquefied gases, are authorized for transportation in commerce subject to the requirements and limitations specified herein. 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. FIFTEEN YEAR TRANSPORTATION AUTHORIZATION: This special permit authorizes the transportation of the pressure vessels identified herein for up to fifteen years from the date of manufacture. This limitation does not apply to non-specification pressure vessels when installed in air bag modules or when shipped to a metal recycler. This special permit provides no certification of safety for end use environments and life cycles.
  - c. SPECIAL PERMIT SCOPE LIMITATIONS: This special permit only applies to non-specification pressure vessels in airbag inflators or seatbelt pretensioners when they are article of commerce in transportation. The safety analyses performed in development of this special permit only considered the hazards and risks associated with transportation in commerce. The safety analyses did not consider the hazards and risks associated with consumer use, incorporation as a component of a vehicle or other device, or other uses not associated with transportation in commerce.
  - d. In accordance with 49 CFR 107.107(a), party status may not be granted to a manufacturing special permit. These packagings 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 §§ 173.301(a) and 173.302(a)(1) in that non-DOT specification cylinders are not authorized, except as specified herein.
5. BASIS: This special permit is based on the application of ZF Passive Safety Systems US Inc. dated April 5, 2023, submitted in accordance with § 107.105 and the public proceeding thereon.
6. HAZARDOUS MATERIALS (49 CFR 172.101):

Hazardous Material Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Articles, pyrotechnic	1.4G	UN0431	N/A
Non-toxic, flammable non-liquefied gases and mixtures thereof/ Proper shipping name as specified in § 172.101	2.1	As appropriate	N/A
Non-toxic, non-flammable non-liquefied gases and mixtures thereof/ Proper shipping name as specified in § 172.101	2.2	As appropriate	N/A
Safety device, <i>electrically initiated</i>	9	UN3268	N/A
Safety device, pyrotechnic	1.4G	UN0503	N/A

## Notes:

1. Under this special permit, the use of these proper shipping names is limited to devices used as air bag inflators or seat-belt pretensioners.
  2. A component that contains a quantity of pyrotechnic materials must be classed and approved as provided for in § 173.56 of the HMR. If the pyrotechnic material augments the volume of the gas in the pressure vessel, or in any way enhances the performance of the compressed gas, the device must be tested in the same configuration as when shipped.
  3. Safety devices, electrically initiated may be classed as Class 9 in accordance with § 173.166(b)(1).
7. SAFETY CONTROL MEASURES:
    - a. PACKAGING: Packaging prescribed is a non-DOT specification pressure vessel as shown in the drawings on file with the Office of Hazardous Materials Safety (OHMS) and must meet the following requirements:

- (1) The maximum service pressure at 70 °F may not exceed 12,000 psi. The minimum test pressure is the pressure of the contents at 200 °F. The rated service pressure may not exceed 80 percent of the test pressure and the water volume of each pressure vessel may not exceed one liter. The term “pressure of contents” as used in this special permit means the total pressure of all the materials to be shipped in the cylinder.
- (2) Material of construction must conform to all requirements of § 178.65(b) except that aluminum is limited to Alloy 6061 of T6 temper.
- (3) Manufacturing must conform to all requirements of § 178.65(c), except that welding of attachments to the cylinder sidewall after proof testing is authorized. Welding must be performed in accordance with the Welding System Assessment Guidelines that are included in the Automotive Industry Action Group’s (AIAG) CQI-15 publication on file OHMS. The AIAG document must be available to the Independent Inspector to verify the welding parameters, quality assurance measures and test results.
- (4) The minimum wall thickness must be such that the wall stress meets the requirements of § 178.65(d).
- (5) Openings and attachments must conform to all requirements of § 178.65(e) except:
  - (i) § 178.65(e)(1): Sidewall openings and attachments are authorized, provided the openings and attachments are not detrimental to the cylinder’s structural integrity. The burst performance of the cylinder shall not be less than 95% of the same cylinder design without attachment. In all cases, the burst pressure must meet the criteria of paragraph 7.b.(4). This must be demonstrated through certification by the Independent Inspection Agency as provided in paragraph 8.d.
  - (ii) The diameter of the circle as referenced in § 178.65(e)(2) may not exceed 90%.
- (6) Each pressure vessel must be equipped with a pressure relief device designed to meet all the requirements for a rupture disk prescribed in the Compressed Gas Association (CGA) Pamphlet S-1.1. The pressure relief device must be capable of preventing rupture of the pressure vessel when subjected to fire test conducted in accordance with CGA Pamphlet C-14 or tested in accordance with test series 6(c) of Part I of the UN Manual of Tests and Criteria.

b. TESTING:

- (1) Each pressure vessel must be tested as required in § 178.65(f) except that:
  - (i) Each cylinder must be tested at an internal pressure of at least the test pressure and must be held at that pressure for at least 30 seconds, or limited to that adequate to ensure compliance with the requirements contained in § 178.65(f)(1)(i) through § 178.65(f)(1)(iii); and
  - (ii) The maximum duration of the shift specified in § 178.65(f)(3) may be extended beyond 10 hours at the discretion of the independent inspector.
- (2) The flattening test specified in § 178.65(g) is not required.
- (3) A representative pressure vessel, packaged as it would be for shipment, must be activated and no materials other than non-toxic, non-flammable vapors or gases may be expelled from the package.
- (4) A cylinder with an outside diameter less than 2 inches may burst at a location other than that specified in § 178.65(f)(2)(ii) and (iii).
- (5) Each heat of incoming stock material (tubing) shall be subjected to tensile and burst testing in accordance with ZF Design Certification for Inflators.
- (6) Cylinder lots shall be hydrostatically tested to destruction in accordance with § 178.65(f)(2) except that, after the first cylinder has been selected from the beginning of the lot, the sample rate by which successively produced cylinders within the lot are selected shall be determined in accordance with the criteria provided in the following table:

Test Plan	Sampling Rate	Switching Criteria
<b>Level 1 (Starting Level)</b>	1 per 1,000 cylinders or less	No failures for 1,000 consecutive burst tests. <sup>1</sup>
<b>Level 2</b>	1 per 2,500 cylinders or less	No failures for 4,000 consecutive burst tests. <sup>2</sup>
<b>Level 3</b>	1 per 5,000 cylinders or less	N/A

<sup>1</sup> Corresponds to a minimum production volume of 1,000,000 cylinders.

<sup>2</sup> Corresponds to a minimum production volume of 10,000,000 cylinders.

After beginning with the Level 1 Test Plan the manufacturing process may qualify for successive reductions in the sampling rate based on the

successful completion of each level's Switching Criteria. If a test failure occurs at either Level 2 or Level 3 then the root cause shall be determined. If the root cause is determined to be a special cause (i.e., unique to the cylinder lot) and it is corrected, then cylinder production shall continue to use the current test plan. If the root cause is determined to be a common cause (i.e., not unique to the cylinder lot or a common variation) then cylinder production shall revert to the previous test plan and the consecutive acceptance test count will start over. If unsatisfactory results occur at Level 1 then the production process must be halted to determine the source of the test failure. After troubleshooting, the process shall be restarted using the Level 1 Test Plan.

- c. MARKING: Each pressure vessel must be durably marked as follows:

DOT SP-11379/12000<sup>1</sup>  
Lot No. xxxxx<sup>2</sup>  
Manufacturer's Name  
This Pressure Vessel May Not Be Refilled

<sup>1</sup> Where 12000 represents the service pressure.

<sup>2</sup> Where xxxxx is the lot number or serial number as appropriate.

Note: Each line of these markings may be placed without regard to location or order on the pressure vessel. The serial number must be traceable to the production lot under which the cylinder was manufactured in accordance with the requirements specified in §§ 178.65(f)(3) and 178.65(i).

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.
- 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 package and it is offered for transportation in conformance with this special permit and the HMR.
- c. This special permit is limited to non-specification pressure vessels in airbag inflators or seatbelt pretensioners when they are articles of commerce in transportation. The pressure vessels are excepted from the requirements of the HMR, Part 178 when the design has been certified by an Independent Inspection Agency, approved under § 107.803 as having met all the requirements of this special permit.

- d. The Independent Inspection Agency's design certification must include test results and documents related to explosive classification and approval. A copy of the certification must be maintained where the pressure vessel is manufactured and by the Independent Inspection Agency for a period of 15 years from the date of completion of the design certification.
  - e. A current copy of this special permit must be maintained at each facility where the pressure vessel is manufactured under this special permit. It must be made available to a DOT representative upon request.
  - f. The grantee must comply with all provisions of this special permit, and all other applicable requirements contained in the 49 CFR, Parts 100-180. No modifications may be made to the pressure vessel or pyrotechnic components which would affect the performance of the pressure vessel or its compliance with the requirements of this special permit until such modifications have been reviewed, tested and certified by an Independent Inspector as meeting the requirements of this special permit.
  - g. Devices utilizing the non-DOT specification pressure vessel authorized herein are exempt from the requirements of 49 CFR Parts 100-180 when installed in safety components such as steering columns or door panels.
  - h. Pressure vessels must be transported in strong outside packaging in accordance with § 173.301(a)(9), unless otherwise directed by §§ 173.166 or 173.62.
  - i. Transportation of a Division 2.1 hazardous material (flammable gases) is not authorized aboard cargo vessel or aircraft unless specifically authorized in the Hazardous Materials Table (§ 172.101). Transportation of a Division 1.4G pyrotechnic article is forbidden aboard passenger-carrying aircraft.
  - j. Data from the testing conducted in accordance with paragraph 7.b(6) of this special permit must be made available upon request to DOT. The data should be organized according to the cylinder design and drawing number. The number of cylinders that have been manufactured should be recorded, along with the number of failures that occurred for each design/drawing number.
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, passenger-carrying aircraft (except for Division 1.4G articles, which are forbidden aboard passenger-carrying aircraft, and the other hazardous materials listed in paragraph 6 may not exceed the quantity limitation specified in Column (9A) of the § 172.101 Hazardous Materials Table), and cargo-only aircraft (see restriction in paragraph 8.i above).
10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each cargo vessel or aircraft used to transport packages covered by this special permit. The shipper shall 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, 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.

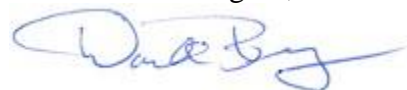
Each “Hazmat employee”, as defined in § 171.8, who performs a function subject to this special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this special permit, including display of its number, when the 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 Materials Administration, Department of Transportation, Washington, D.C. 20590.  
Attention: PHH-13.

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: BrianM/TG