

August 28, 2015



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 14457
(TENTH REVISION)

EXPIRATION DATE: March 31, 2017

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Amtrol Alfa Metalomecanica, SA
Guimares, Portugal
(U.S. Agent: Amtrol Inc., West Warwick, RI)
2. PURPOSE AND LIMITATION:
 - a. This special permit authorizes the manufacture, marking, sale and use of a non-DOT specification fully-wrapped fiberglass composite cylinder with a welded carbon steel liner for the transportation in commerce of the materials authorized by this special permit. 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.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.304a(a)(1), 180.207(a)(3), and 178.71 in that a non-DOT specification cylinder and service life beyond 15 years are not authorized except as specified herein.

NOTE: This does not relieve the grantee of this special permit from securing and maintaining a valid approval for the foreign manufacture of cylinders from the Associate Administrator for Hazardous Materials Safety.

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5. BASIS: This special permit is based on the application of Amtrol Alfa Metalomecanica, SA, dated February 29, 2013, submitted in accordance with § 107.109, and additional information dated August 17, 2015.
6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Butane see also Petroleum gases, liquefied	2.1	UN1011	N/A
Compressed gas, flammable, n.o.s.	2.1	UN1954	N/A
Hydrocarbon gas mixture, liquefied, n.o.s.	2.1	UN1965	N/A
Liquefied gas, flammable, n.o.s.*	2.1	UN3161	N/A
Petroleum gases, liquefied or Liquefied petroleum gas	2.1	UN1075	N/A
Propane see also Petroleum gases, liquefied	2.1	UN1978	N/A
Dichlorodifluoromethane or Refrigerant gas R12	2.2	UN1028	N/A
Chlorodifluoromethane or Refrigerant gas R22	2.2	UN1018	N/A
1,1,1,2-Tetrafluoroethane or Refrigerant gas R134a	2.2	UN3159	N/A
Liquefied gas n.o.s.*	2.2	UN3163	N/A

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Hazardous Materials Description			
Proper Shipping Name	Hazard Class/Division	Identification Number	Packing Group
Helium, compressed	2.2	UN1046	N/A
Compressed gas, n.o.s.*	2.2	UN1956	N/A
Refrigerant gas R404A*	2.2	UN3337	N/A
Refrigerant gas R407A*	2.2	UN3338	N/A
Refrigerant gas R407B*	2.2	UN3339	N/A
Refrigerant gas R407C*	2.2	UN3340	N/A
Chlorodifluoromethane and chloropentafluoroethane mixture or Refrigerant gas R502*	2.2	UN1973	N/A

*Technical name required

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification, fully-wrapped fiberglass composite cylinder with a welded carbon steel liner. Cylinders must be designed, manufactured, and tested in accordance with the design and construction requirements for UN Composite Cylinders specified in § 178.71(1)(ii), ISO 11119-2 standard, except as detailed below and with Amtrol Alfa Metalomecanica, SA's specification and drawings on file with the Office of Hazardous Materials Special Permits and Approvals (OHMSPA). Additionally, cylinders must be in conformance with the following:

(1) Type size and service pressure.

Maximum Volume: 24 Liters (6.3 Gallons);

Maximum service pressure: 28 bars (406 psi);

Minimum test pressure = 1.5 x service pressure up to a maximum of 42 bars (609 psig);

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Minimum burst pressure: 2 x test pressure

(2) Materials.

Liner - Liner material must be in accordance with ASTM-A1008/A1008M-01a ("Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability"). The material has the following chemical composition:

Element	Weight %
Carbon	0.10 (max)
Manganese	0.50 (max)
Phosphorous	0.25 (max)
Sulfur	0.035 (max)
Aluminum	0.010 (max)

Filament material - a mono component glass fiber in a polypropylene matrix in accordance with ISO 11119-2.

(3) Design and Manufacture.

The liner must be designed, manufactured and tested in accordance with the requirements of Amtrol Alfa Metalomecanica, SA specification and drawings on file with the OHMSPA.

- The liner must have a minimum burst pressure greater than or equal to the test pressure. For example for a cylinder with 28 bar service pressure, the liner's burst pressure \geq 42 bars.
- Welding procedures and welder qualification must be in accordance with CGA pamphlet C-3 or ISO standards 15614-1, 9606-1 and 14732.

All other design testing and manufacturing processes of the composite cylinder must be in accordance with ISO 11119-2 and additional testing described herein.

(4) Batch (Lot) Inspection and Testing.

All batch testing and inspection must be in accordance with ISO 11119-2 except as noted in paragraph 7.a.(2).

(5) Design qualification tests.

Prior to initial shipment of any specific cylinder design, qualification tests must have been performed on representative cylinders with satisfactory results. All cylinders used for design qualification tests must be fabricated on the same equipment and subjected to the same processes as is used to produce cylinders intended for charging and shipment. All tests must be witnessed by DOT approved independent inspector agency (IIA). Test reports must be kept on file by the cylinder manufacturer and made available to the IIA and the Office of Hazardous Materials Safety upon request. Required testing for design changes must be as specified in ISO 11119-2.

(6) Flawed Tolerance Test.

Two completed cylinders shall be prepared for performing flawed tolerance test. Each cylinder shall have two cuts into the composite side-wall. One cut shall be longitudinal and the other transverse. The size of each must be as described herein:

- Width = 1mm, length = 5 times the composite thickness, depth = at least 40% of the composite thickness.
- One flawed cylinder shall withstand the ambient pressure cycling test to 5000 pressure cycles to 2/3 times test pressure without leaking;
- Second flawed cylinder shall withstand the burst test to at least 4/3 times the test pressure;
- Test reports must be kept on file by the cylinder manufacturer and made available to the IIA and the OHMSPA.

(7) Pressure relief devices and valve protection.

Each cylinder must be equipped with a pressure relief device in accordance with § 173.301(f). Protection for valves and other connections must be in accordance with § 173.301(h).

(8) Drop Test.

Drop test must be in accordance with ISO 11119-2, referenced in § 178.71. Visual damage shall be noted after each drop. No repairs to the cylinder or repair/replacement of outer plastic casing (OPC) shall be made during the drop test.

b. MARKING: Each cylinder must be permanently marked "DOT-SP 14457" on the exterior surface.

c. REQUALIFICATION - Periodic inspection and testing must be conducted in accordance with the procedure described in §180.207 for ISO 11119-2 cylinders, except as noted below. The retester must hold a valid DOT RIN. During retesting the outer plastic casing shall not be removed. Each cylinder must be given an external visual inspection as follows: Any cylinder with damage to the outer plastic casing which exposes the composite shell must be rejected. A cylinder that has been exposed to fire or that shows exterior degradation due to exposure to chemicals must be rejected. External cylinder damage must be evaluated in accordance with the criteria detailed Amtrol "In Service Inspection of Amtrol CoMet Cylinders" document in Attachment A of this special permit and on file with OHMSPA. Cylinders inspected in accordance with sections 7c.(1) and (2) below must be given an internal visual inspection as follows: Retesters must inspect for internal defects (e.g. isolated pits, cracks) in accordance with CGA Pamphlet C-6 (Standards for Visual Inspection of Steel Compressed Gas Cylinders). Cylinders must be requalified in accordance with one of the following options:

(1) Each cylinder must be retested at least once every five (5) years using a hydraulic proof pressure test equal to 1.5 times the marked service pressure. The test pressure must be held for a minimum of 3 minutes without any loss of pressure. Prior to performing the hydrostatic pressure test, each cylinder must be subjected to external and internal visual inspections as described above; or,

(2) Each cylinder must be retested at least once every five (5) years using an external visual inspection and an internal visual inspection as described above. The internal visual inspection must be performed using a borescope; or,

(3) In accordance with § 180.209(g), cylinders used in LPG gas service that meet the requirement limits in Table 1 of ASTM D-1835, "Standard Specification for Liquefied Petroleum (LP) Gases", must be retested once every five (5) years using external visual inspection only as described above.

d. OPERATIONAL CONTROLS -

(1) Cylinders manufactured under this special permit are not authorized for use 15 years from the date of manufacture, except as specified under paragraph 8.a. of this special permit.

(2) Filling requirements are subject to all terms contained in §§ 173.304 and 173.304a for DOT 4BA specification cylinders. Persons refilling cylinders authorized by this special permit must follow manufacturer's recommendations for pre-fill inspections.

(3) A cylinder that has been subjected to fire may not be returned to service.

(4) Cylinders must be packaged in accordance with the requirements in § 173.301(a)(9).

(5) Cylinders may not be used for underwater breathing purposes.

(6) Recovery gas cylinders must only be used in dedicated service and must be clearly marked "RECOVERY CYLINDER".

8. SPECIAL PROVISIONS:

a. Service Life Extension Program.

(1) Amtrol Alfa Metalomecanica may proceed in extending the service life of certain lot of cylinders in accordance with the service life extension program,

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dated August 9, 2010 on file with OHMSPA. The program must be successfully completed for each designated design type prior to extending cylinder service life from 15 years to 30 years.

(2) For those designated design type cylinder, Amtrol must randomly recall a minimum of thirty cylinders of each design type which have been in service for 10 and 13 years. Cylinders recalled after 10 years shall be designated "Group A" and cylinders recalled after 13 years shall be designated "Group B". All recalled cylinders must meet the design qualification testing and requirements as specified in ISO 11119-2, Section 8. All cylinders that fail to meet the design qualification requirements must be condemned, removed from service and rendered incapable of retaining pressure. In the case that some units from the initial minimum lot size are condemned, an additional 30 cylinders must be selected and subjected to all design qualification and testing of ISO 11119-2. These 30 cylinders constitute a batch for additional testing. The cylinders must be tested in accordance with Sections 8.5.4, 8.5.5, 8.5.7 and 8.5.8 of ISO 11119-2. An Independent Inspector must witness all tests. Acceptance criteria shall be as defined in ISO 11119-2 except $P_b = 1.8P_h$ and the design life (y) must be greater than or equal to 20 years.

(3) The complete test report including original test data must be submitted to the Associate Administrator for Hazardous Materials Safety for assessment within 30 days of completion. Failure to meet the acceptance criteria specified in Service Life Extension Program shall result in the design being restricted to a maximum life of 15 years.

(1) 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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- (2) 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.
 - (3) A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.
 - (4) Each packaging manufactured under the authority of this special permit must be either (1) marked with the name of the manufacturer and location (city and state) of the facility at which it is manufactured or (2) marked with a registration symbol designated by the Office of Hazardous Materials Special Permits and Approvals for a specific manufacturing facility.
 - (5) 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 aircraft only.
 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.
 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.

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- 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 Dr. Magdy El-Sibaie
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 Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: BrMoore/kah