



SPECIAL PERMIT 1471 REVISION NO. 7

This Special Permit is issued pursuant to the terms of Section 71.6(a) of the "Canadian Transport Commission's Regulations for the Transportation of Dangerous Commodities by Rail" to authorize the shipment of by rail in Canada certain non-flammable gases in filament-wound reinforced plastic (FRP)(FC) seamless, aluminum lined cylinders, under conditions prescribed herein, and does not relieve any shipper or carrier from compliance with any requirement of the said Regulations, except as specifically stated.

1. BASIS

Letter dated February 1, 1988, from EFI Corporation, 751 Charcot Avenue, San Jose, California, 95131

2. COMMODITY CLASSIFICATION

Non-flammable gas 2.2.

3. COMMODITY NAME

- a) Air, compressed
- b) Oxygen, compressed
- c) Compressed gas, n.o.s. (Air, compressed, enriched with up to 39 percent by volume oxygen content).
- d) Argon, compressed

4. IDENTIFICATION NUMBER

- a) 1002
- b) 1072
- c) 1956
- d) 1006

5. REGULATION AFFECTED

73.302.

6. AUTHORIZED SHIPPER

EFI Corporation, 751 Charcot Avenue, San Jose, California, its agents or distributors or customers.

7. PACKAGING DESCRIPTION

a) Non C.T.C. specification filament-wound reinforced plastic seamless, full composite, aluminum lined cylinders made of definitely prescribed materials.

(1) Design and construction must be in compliance with EFI Corporation applications and drawings 6410-001 Rev. E, dated 7-30-85, 6410-002 Rev. C, dated 12-23-81, 6293-001 Rev. F, dated 2-19-87, 6463-001 Rev. F, dated 1-20-87, 6988-001 Rev. K, dated 2-19-87, 6977-001 Rev. H, dated 2-19-87, 6977-002 Rev. B, dated 6-4-85, 6391-001 Rev. C, dated 8-7-85, 6704-001 Rev. B, dated 8-7-85 and additional design and performance data on file with the Director of Operation.

b) In addition, the cylinders shall be in full compliance with DOT FRP-1 Standard Revision 1 dated March 15, 1982 (178.AA) except as follows:

i) 178.AA-3 Inspection by whom and where.

Inspections and verifications must be performed by approved Independent Inspection Agency, Authorized Testing Inc., Riverside, California.

ii) 178.AA Duties of inspector.

(a) \*\*\*

(b) \*\*\*

(c) \*\*\*

(d) \*\*\*

(e) \*\*\*

(f) \*\*\*

(g) Furnish complete inspector's report (178.AA-16) to the maker of the cylinder, to the Director of Operation and upon request, to the purchaser. (See 178.AA-17).

iii) 178.AA-13 Acceptable results of test.

(a) Applies except that for cylinders with 2.5 pounds (70 cubic inches) or less water capacity, the permanent expansion must not exceed 10 percent of total expansion at test pressure.

iv) 178.AA-15 Marking.

(a) \*\*\*

- (b) Required markings are as follows:
  - (1) "CTC SP 1471" or "CTC"DOT E-8059".
  - (2) A serial number and an identifying symbol (letters); location of number to be just below or immediately following the CTC mark; location of symbol to be just below or immediately following the number. The symbol and numbers must be those of the maker.
  - (3) \*\*\*
  - (4) \*\*\*
- (c) \*\*\*
- v) 178.AA-18 Design qualification tests.
  - (a) General - except as authorized in 178.AA-10(a), qualification tests as prescribed in this paragraph shall have been performed on representative cylinders of each specific design prior to the initial shipment. 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 an independent inspector. Test reports must be kept on file by the cylinder maker and made available to the independent inspector and the Director of Operation upon request.
  - (b) Revoked
  - (c) Revoked
  - (d) \*\*\*
  - (e) \*\*\*
  - (f) \*\*\*
  - (g) \*\*\*
  - (h) Qualification test results - A report of all tests for each design describing test setup, procedure and results must be submitted to the Director of Operation. This report must include at least the following basic information on each cylinder tested: \*\*\*

8. SPECIAL REQUIREMENTS

- a) Cylinder service life must not exceed 15 years.

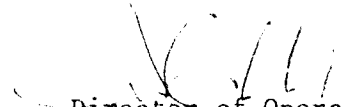
- b) Use of these cylinders for underwater breathing is not authorized.
- c) Cylinders used in oxygen service must be equipped with brass or stainless steel valves and have a marked service pressure not exceeding 3,000 psig.
- d) Cylinder must be packaged in accordance with 73.301 (k).
- e) Each cylinder must be reinspected and hydrostatically retested at least once every three years in accordance with the Compressed Gas Association Pamphlet C-6.2 - 1982 except that permanent volumetric expansion must not exceed 10 percent of total volumetric expansion at test pressure for cylinders with 2.5 pounds or less (70 cubic inches) water capacity. Retest dates may be applied on the epoxy coating in a permanent manner other than by stamping as an alternate retest dates may be stamped on the outer exposed metallic surface of the cylinder neck. Reheat treatment or repair of rejected cylinders not authorized, except that only cylinders made under P/N 6410-001 having 3000 psig service pressure and a nominal volume of 50 cubic inches may be repaired under the following conditions:
  - (1) Repairs must be performed by EFI Corporation or a cylinder requalification facility approved by the Director of Operation. *066420*
  - (2) Repair must be limited to a maximum of 2 damage sites per cylinder on a one-time-only basis.
  - (3) Each repaired cylinder must be stamped with a small R in the neck adjacent to the serial number.
  - (4) Maximum allowable defect is 1 inch long (no width restriction) by 0.016 inch deep in the sidewall or 0.008 inch deep in the heads. Any cylinder with damage exceeding these limits must be removed from service.
  - (5) A report identifying the repair cylinders by serial numbers must be submitted to the Director of Operation at least once every six months from the date of this Special Permit.
- f) A cylinder which has been subjected to action of fire must not be returned to service.
- g) The Director of Operation shall be advised of any change in design of the cylinder.

9. REPORTING REQUIREMENTS

The Director of Operation shall be advised of any incident involving loss of contents and shall be provided with a summary of experience before the expiration date of the Special Permit.

10. EXPIRY DATE

March 15, 1989

  
Director of Operation  
Rail Safety Branch

Issued at Hull, Quebec  
this 15th day of March 1988

Address all inquiries to:

Director of Operation, Rail Safety Branch  
National Transportation Agency  
25 Eddy Street, 14th Floor  
Hull, Quebec  
K1A 0N9