



SPECIAL PERMIT 2339 REVISION NO. 1

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 high pressure gas cylinders by rail in Canada, under conditions prescribed herein, and does not relieve any shipper or carrier from compliance with any requirement of the Commission's Regulations, except as specifically stated.

1. BASIS

Letter dated August 20, 1986 from Chesterfield Cylinder Company Inc.
Box 8001 Enid, Oklahoma 73702.

2. COMMODITY CLASSIFICATION

Flammable gas 2.1
Non-flammable gas 2.2

3. COMMODITY NAME

Commodities are those which we authorized by the US D.O.T. for 3T cylinders except carbon monoxide and gases having any free hydrogen or sulphides.

4. IDENTIFICATION NUMBER

As appropriate.

5. REGULATION AFFECTED

73.301, 73.302, 73.304.

6. AUTHORIZED SHIPPER

Chesterfield cylinder Co., its agents, distributors and customers.

7. PACKAGING DESCRIPTION

Non CTC Specification steel cylinder made in accordance with drawing 47482P dated January 11, 1983, Drawing 47593P dated August 9, 1983 and D.O.T. Specification 3T except as follows:

178.45-2

(a) Type - Each cylinder must be of seamless construction with one end concave to pressure, the bottom to be convex to pressure.



(b) Size - The maximum water capacity is 120 pounds.

(c) * * *

178.45-3 does not apply.

178.45-5 material, steel.

(a) Only open hearth, basic oxygen, or electric furnace process steel of uniform quality is authorized. The steel analysis must conform to the following:

ANALYSES TOLERANCES

Element (percent)	Ladle analysis	Check analysis	
		Under	Over
Carbon.....	0.33 to 0.40	0.03	0.04
Manganese.....	0.60 to 1.05	0.04	0.04
Phosphorus (max).....	0.015	...	0.01
Sulfur (max).....	0.015	...	0.003
Silicon.....	0.15 to 0.35	0.02	0.03
Chromium.....	0.80 to 1.15	0.05	0.05
Molybdenum.....	0.15 to 0.25	0.02	0.02
* * *	* * *	* * *	* * *

178.45-6 Manufacture

(a) thru (c) * * *

(d) The thickness of the bottoms of cylinders is, under no condition, to be less than two times the minimum wall thickness of the cylindrical shell; such bottom thickness to be measured within an area bounded by a line representing the points of contact between the cylinder and floor when the cylinder is in a vertical position.

(e) Welding or brazing is prohibited.

(f) Each new design and any significant change to any acceptable design must be qualified for production by testing prototype samples as follows:

(1) Three samples must be subjected to 100,000 pressure reversal cycles between zero and service pressure or 10,000 pressure reversal cycles between zero and test pressure, at a rate not in excess of 10 cycles per minute without failure.

(2) Three samples must be pressurized to destruction and failure must not occur at less than 2.5 times the marked cylinder service pressure. Each cylinder must remain in one piece. Failure must initiate in the cylinder sidewall in a longitudinal direction. Rate of pressurization must not exceed 200 psi per second.

178.45-7 Wall thickness

- (a) The minimum wall thickness must be such that the wall stress at the minimum specified test pressure does not exceed 67 percent of the minimum tensile strength of the steel as determined by the physical tests required in SS178.45-14 and 178.45-15. A wall stress of more than 90,500 psi is not permitted. In no case may wall thickness be less than .210 inch.
- (b) * * *
- (c) Does not apply.

178.45-17 Markings

- (a) Marking must be done by stamping into the metal of the cylinder. All markings must be legible and located on a shoulder.
- (b) Required markings are as follows:
 - (1) "CTC SP 2339" or "CTC/DOT-E 9001" followed by the service pressure.
 - (2) The appropriate serial number.
 - (3) The inspector's official mark near the serial number.
 - (4) The date of the test (for example "5-72" for May 1972), so placed that dates of subsequent tests may be easily added.
- (c) Markings must be at least 1/4 inch high.
- (d) * * *

8. SPECIAL REQUIREMENTS


- (1) Prior to the initial shipment of cylinders made to any specific design, a report of test results specified in 178.45-6(f) must be submitted to the Director of Operation.
- (2) These cylinders shall not be used for carriage of gases that would cause hydrogen embrittlement of the steel.
- (3) Each cylinder must be requalified for use in accordance with CFR 49 Section 173.34 as prescribed for D.O.T. 3T cylinders.
- (4) Inspection reports as prescribed in 178.45-18 shall be submitted to the Director of Operation.
- (5) The Director of Operation shall be advised in advance of the scheduled date of production of new cylinders.

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

September 2, 1987



Director of Operation
Railway Transport Committee

Issued at Hull, Quebec
this 2nd day of September 1986

Address all inquiries to:

Director of Operation, RTC
Canadian Transport Commission
25 Eddy Street, 14th Floor
Hull, Quebec
K1A 0N9

Certificate of acceptance for seamless steel gas cylinders

Order No. **STEEL GAS CYLINDERS 860683** Sept. 19 1986
 Manufactured for **Canadian Oxygen** Location at **Toronto, Ontario Canada**
 Manufactured by **Chesterfield Cylinder Co.** Location at **Enid, Oklahoma**
 Consigned to **Canadian Oxygen** Location at **Toronto, Ontario Canada**
 Quantity **300** Size **9 5/16** Inches outside diameter by **57 1/2** Inches long.
 Marks stamped into the shoulder of the cylinder are: **plus (+)** (Rep. 3184 cu. in.)
 Specifications **CTC/DOT-E 9001 3000**

Serial Nos. **206751** to **207498** incl.
 Inspectors mark **(7)**
 Identifying symbol (registered) **CCC-OK**
 Test date **9-86**
 Tare weights (yes or no) **no**

OTHER MARKS CANOX
 0.220 inch
 RECORDS OFFICE
 RECEIVED
 CTC
 OCT 3 12 36 PM '86
 RECORDS OFFICE
 0019455

The cylinders were heat treated by the process of quench and temper.

The neckrings were attached by process of rivetting.

Cylinders marked with a plus (+) sign signify compliance with paragraphs 173.302(c) (2), (3) & (4) of the Department of Transportation Regulations. (Title 49 of the Code of Federal Regulations.) Thus, they can be charged to a pressure 10 percent in excess of their marked service pressure. This excess charging is permissible only if the gas contained is not liquified, dissolved, poisonous, or flammable. Cylinders having this excess charge must be equipped with frangible disc safety relief devices (without fusible metal backing) having a bursting pressure not exceeding the minimum prescribed test pressure.

These cylinders were made by process of hot forging and drawing to a seamless shell, the open end of which is necked by spinning.

The material used was identified by the following heat numbers **BA702, BA707, BA712, BT511, BT513, BT518, BT520, BT523 & CA001.**

The material used was verified as to chemical analysis and record thereof is attached hereto. The heat numbers were marked on the material.

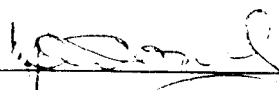
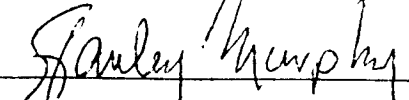
All shells and cylinders were inspected visually and by ultrasonic means and all that were accepted were found free of injurious defects which might significantly affect the strength of the cylinder. The processes of manufacture and heat treatment of cylinders were observed and found satisfactory.

The cylinder walls were measured and the minimum thickness noted was **0.220** Inch. The outside diameter was measured and found to be approx. **9 5/16** inches. The wall stress was calculated to be **90,127** pounds per square inch under an internal pressure of **5000** pounds per square inch.

Hydrostatic test, physical tests of the material, and other tests as prescribed in specification DOT-E 9001 were made in the presence of the inspector. All materials, test results, and cylinders accepted were found to be in compliance with the requirements of that specification and records therefor attached hereto.

I hereby certify that all of these cylinders proved satisfactory in every way and comply with the requirements of the DEPARTMENT OF TRANSPORTATION SPECIFICATIONS NO. 3T Except as noted per DOT-E 9001, and Canadian Transport Commission Special Permit No. 2339.

NOTE: All cylinders were magnetic particle inspected and found satisfactory.

Manager Quality Control  Certifying Inspector 
 Place **ENID, OK.**
 Date: **9-19-86**
 T. H. Cochrane Laboratories Ltd.
 5803 W. National Ave.
 Milwaukee, WIS. 53214

SECRET

5263174

CTC/DOT/F 90011 8000 011
R 05927 (050-911)

w/o

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last

9-5-86

cm

221200
CANOX