



Transport  
Canada  
Safety and Security

Transports  
Canada  
Sécurité et sûreté

Transport Dangerous  
Goods Directorate  
330 Sparks Street  
Ottawa ON K1A 0N5

Direction générale du transport  
des marchandises dangereuses  
330, rue Sparks  
Ottawa ON K1A 0N5

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## Equivalency Certificate

**Certificate No.:** SU 9209 (Ren. 4)

**Certificate Holder:** Structural Composites Industries,  
a Worthington Cylinders Company

**Mode of Transport:** Road, Rail, Air, Marine


**Issue Date:** DEC 14 2010

**Expiry Date:** April 30, 2012

### CONDITIONS

This Equivalency Certificate authorizes Structural Composites Industries, a Worthington Cylinders Company, to manufacture, sell, offer for sale, distribute or deliver in Canada, and authorizes any person to handle, offer for transport, transport or import into Canada, by road or railway vehicle, by aircraft or by ship, cylinders in a manner that does not comply with sections 5.1 and 5.2, subparagraphs 5.10(1)(a)(i) and 5.10(1)(b)(i), paragraph 5.10(1)(c), subparagraph 5.10(1)(d)(i), and subsection 5.10(2) of the *Transportation of Dangerous Goods Regulations*, if:

(a) subject to paragraphs (b) to (f), the requirements with respect to specification TC-3FCM cylinders in National Standard of Canada CAN/CSA B340-02, "*Selection and Use of Cylinders, Spheres, Tubes, and Other Containers for the Transportation of Dangerous Goods, Class 2*", October 2002, as amended in January 2004 and February 2005, cited in the rest of the certificate as CAN/CSA B340-02 are complied with;

  
2010/12/14  
Page 1 of 6

Issue Date: DEC 14 2010

**Equivalency Certificate  
SU 9209 (Ren. 4)**

**CONDITIONS**

(b) each cylinder contains one of the following dangerous goods:

<u>DANGEROUS GOODS</u>	<u>PIN</u>
AIR, COMPRESSED, with not more than 23.5 per cent oxygen, by volume	UN1002
NITROGEN, COMPRESSED	UN1066
OXYGEN, COMPRESSED	UN1072
COMPRESSED GAS, N.O.S. (mixture of oxygen and air or nitrogen)	UN1956

(c) each cylinder containing oxygen complies with clause 4.6.1.2 of CAN/CSA-B340-02;

(d) each cylinder is packaged in accordance with clause 4.9 of CAN/CSA-B340-02;


(e) each cylinder is stored in a protective environment for use in one of the following services:

- aircraft escape slide
- back-up crew oxygen
- walk around oxygen
- naval liferaft;

(f) not more than 15 years has elapsed since the initial test date for each cylinder;

**Manufacture**

(g) the cylinders are manufactured at 336 Enterprise Place, Pomona, CA, U.S.A., in accordance with the specific procedures and with model nos. ALT 215, ALT 279, ALT 280, ALT 281, ALT 282, ALT 372, ALT 405, ALT 621, ALT 63A or ALT 565, filed by Structural Composites Industries, a Worthington Cylinders Company with the Transport Dangerous Goods Directorate;

  
2010/12/14  
Page 2 of 6

Issue Date: DEC 14 2010

**Equivalency Certificate  
SU 9209 (Ren. 4)**

**CONDITIONS**

(h) subject to paragraphs (i) to (l), the cylinders are in compliance with the applicable requirements for specification TC-3FCM in National Standard of Canada CAN/CSA B339-02, *"Cylinders, Spheres, and Tubes for the Transportation of Dangerous Goods"*, October 2002, as amended in November 2003 and February 2005, cited in the rest of this certificate as CAN/CSA B339-02;

(i) the filament material is composed of high modulus para-aramid in accordance with the Society of Automotive Engineers, Inc., aerospace material specification AMS 3901, *Organic Fiber (Para-Aramid), Yarn and Roving, High Modulus*, dated September 1998, including the applicable supplementary detail specifications thereto;


(j) the para-aramid filament is tested for strand strength in accordance with the American Society for Testing and Materials test method ASTM D2343-03, *Standard Test Method for Tensile Properties of Glass Fiber Strands, Yarns, and Rovings Used in Reinforced Plastics*, published in 2003, and the filament strand strength is at least 3100 MPa;

(k) the cylinder for the gunfire test is positioned so that the projectile impacts the cylinder bottom and exits at the side wall, or so that the projectile impact point is in the cylinder side wall wrapping at approximately a 45° angle and aimed to exit at the cylinder side wall, or so that the projectile impacts the cylinder side wall at a 90° angle to the side wall axis, and any evidence of fragmentation failure of the tested cylinder or any tear greater than 76.2 mm from the entrance or the exit hole is cause for rejection;

(l) the Transport Canada mark, the specification designation and the service pressure marked on each cylinder is: "TC-SU 9209", followed by service pressure expressed in bar;

(m) the requalification period is 5 years; and

(n) the certificate holder reports, once per calendar year, a summary of cylinder manufacturing and performance experience to the Director, Regulatory Affairs Branch, Transport Dangerous Goods Directorate, Transport Canada.

  
2010/12/14  
Page 3 of 6

Issue Date: DEC 14 2010

**Equivalency Certificate  
SU 9209 (Ren. 4)**

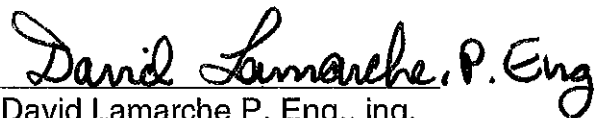
**CONDITIONS**

This Equivalency Certificate serves as the registration of Structural Composites Industries LLC, pursuant to clause 25.2 of CAN/CSA B339-02, to manufacture cylinders of the designs specified herein. Structural Composites Industries LLC's, registered mark pursuant to CAN/CSA B339-02, is:

**ALT**

**Note: The issuance of this Equivalency Certificate in no way reduces the certificate holder's responsibility to comply with any other requirements of the *Transportation of Dangerous Goods Regulations* not specifically addressed in this certificate.**


Signature of Issuing Authority



David Lamarche P. Eng., ing.

Chief

Permits and Approvals Division



2010/12/14  
Page 4 of 6

**Issue Date:** DEC 14 2010

**Equivalency Certificate  
SU 9209 (Ren. 4)**

*(The following is for information purposes only and is not part of the certificate)*

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a Worthington Cylinders Company  
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**Explanatory Note**

The cylinders have previously been manufactured under permit 4237. The applicant had demonstrated that the substitution of high modulus para-aramid for Type-S fibreglass filament as described would result in a cylinder which could be used with equivalent safety to that of a TC-3FCM specification cylinder. This certificate authorizes an extension of the requalification period to 5 years for cylinders contained in a protective environment.

**Legend for Certificate Number**

SH - Road, SR - Rail, SA - Air, SM - Marine  
SU - More than one Mode of Transport  
Ren. - Renewal

  
2010/12/14  
Page 5 of 6

**Issue Date:** DEC 14 2010

**Equivalency Certificate  
SU 9209 (Ren. 4)**

**NOTE**

Under Canadian Law, a foreign manufacturer of non-specification cylinders cannot be charged with an offence under the *Transportation of Dangerous Goods Act, 1992* for failure to comply with the conditions of an Equivalency Certificate. However, certain remedies under the Act are available to Transport Canada in this eventuality.

These include:

1. detention of dangerous goods and consequently the cylinder containing them (subsection 17(1));
2. detention of the cylinders whether full or empty (subsection 17(1));
3. directions not to import the cylinders or to return them to origin (subsection 17(3));
4. inspectors' directions (subsection 19);
5. directions to importers of the cylinders to issue notices of defective construction or recall (subsection 9(2)); and
6. revocation of the Equivalency Certificate, thereby making any use of the cylinders an offence (section 31(6)).

If none of the foregoing are adequate, Protective Directions may be issued to prohibit or to control the use of the cylinders (section 32).