August 4, 2006

U.S. Department
of Transportation

400 Seventh Street, S.W.
Washington, D.C. 20590

**Pipeline and Hazardous
Materials Safety Administration**

DOT-SP 10945
(SEVENTEENTH REVISION)

EXPIRATION DATE: February 28, 2010

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Structural Composites Industries
Pomona, CA

2. PURPOSE AND LIMITATIONS:

a. This special permit authorizes the manufacture, mark, sale, and use of non-DOT specification fully wrapped carbon fiber reinforced aluminum lined cylinders 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.

b. The safety analyses performed in development of this special permit only considered the hazards and risks associated with transportation in commerce.

c. No party status will be granted to this special permit.

3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 180.205, 173.302a(a)(1), 173.304a(a)(1) and 175.3 in that non-DOT specification cylinders are not authorized except as prescribed herein.

5. BASIS: This special permit is based on the application of Structural Composites Industries dated January 26, 2006, submitted in accordance with § 107.105 and the public proceeding thereon.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Materials Description	Hazard Class/ Division	Identi-fication Number	Packing Group
Air, compressed (containing up to 39% by volume oxygen content)	2.2	UN1002	N/A
Argon, compressed	2.2	UN1006	N/A
Bromotrifluoromethane *or* Refrigerant Gas, R 13B1	2.2	UN1009	N/A
Carbon dioxide	2.2	UN1013	N/A
Chlorodifluorobromethane *or* Refrigerant Gas, R 12B1	2.2	UN1974	N/A
Compressed gas, n.o.s.	2.2	UN1956	N/A
Helium, compressed	2.2	UN1046	N/A
Heptafluoropropane *or* Refrigerant Gas R 227	2.2	UN3296	N/A
Hydrogen, compressed	2.1	UN1049	N/A
Methane, compressed *or* Natural gas, compressed *(with high methane content)*	2.1	UN1971	N/A
Nitrogen, compressed	2.2	UN1066	N/A
Nitrous oxide	2.2	UN1070	N/A
Oxygen, compressed	2.2	UN1072	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Prescribed packaging is a fully wrapped carbon-fiber reinforced aluminum lined cylinder made in conformance with the Basic Requirements for Fully Wrapped Carbon-Fiber Reinforced Aluminum Lined Cylinders (DOT-CFFC) Fourth Revision), dated November 2000, except as follows:

(1) Additional glass fiber layers may be added to the cylinder to provide added damage protection, provided

that the design criteria remain the same (i.e. load sharing capability may not exceed 15%)

b. TESTING - Cylinders retested prior to July 1, 2001 must be retested within 36 months of the retest date marked on the cylinder. Cylinders retested after July 1, 2001 must be reinspected and hydrostatically retested at least once every five years. Testing must be performed in accordance with § 180.205, tested to 5/3 of the marked service pressure and the latest edition of CGA pamphlet C-6.2 "Guidelines for Visual Inspection and Re-qualification of Fiber Reinforced High Pressure Cylinders", except as specifically noted herein:

(1) Cylinders must be volumetrically tested by the water jacket method suitable for the determination of the cylinder expansion for a minimum test time of one minute.

(2) A maximum permanent expansion to total expansion ratio does not apply. The cylinder must be condemned if the elastic expansion exceeds the rejection elastic expansion (REE) as marked on the cylinder.

(3) Retest markings must be applied on a label securely affixed to the cylinder and overcoated with epoxy, near the original test date. Metal stamping of the composite surface is prohibited. Reheat treatment of rejected cylinders is not authorized.

(4) Cylinders with fiber damage (cuts, abrasions, etc.) that exceed Level 1 type damage as defined in CGA Pamphlet C-6.2 and meet the following depth and length criteria are considered to have Level 2 damage:

a. Depth - Damage that upon visual inspection is seen to penetrate the outer fiberglass layer but does not expose the carbon layer beneath, or that has a measured depth of greater than 0.005 inches and less than 0.045 inches for cylinders with an outside diameter greater than 7.5 inches or less than 0.035 inches for cylinders 7.5 inches or less in outside diameter;

b. Length - Damage that has a maximum allowable length of:

Region	Direction of fiber damage	Maximum length of damage
Cylinder sidewall and domes	Transverse to fiber direction (longitudinal direction)	20% of the length of the straight sidewall section of the cylinder
Cylinder sidewall and domes	In the direction of the fiber (circumferential direction)	20% of the length of the straight sidewall section of the cylinder

(5) Cylinders with damage that meet the Level 2 criteria must be rejected. Retesters must contact the cylinder manufacturer in the event that damage is questionable based on this criteria. Repair of rejected cylinders is authorized for Level 2 type damage. Repairs must be made in accordance with CGA pamphlet C-6.2, prior to the hydrostatic pressure test. Repairs must be evaluated after the hydrostatic test.

(6) Cylinders that have direct fiber damage that penetrates through the outer fiberglass layer and into the carbon layer, or that have a measured damage depth of greater than the Level 2 maximum stated in (5)(a) above are considered to have Level 3 type damage. Cylinders that have damage with depth meeting Level 2, but length exceeding the Level 2 maximum are considered to have Level 3 type damage. Cylinders with Level 3 type damage are not authorized to be repaired, and must be condemned.

(7) A hydrostatic retest may be repeated as provided for in § 180.205(g), only two such retests are permitted. Pressurization prior to the official hydrostatic test for the purpose of a systems check must not exceed 85% of the required test pressure.

c. OPERATIONAL CONTROLS -

(1) Cylinders manufactured under this special permit are not authorized for use fifteen (15) years after the date of manufacture.

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

(3) Cylinders used in oxygen service must conform with § 173.302(b)(1)-(4). Cylinders used in nitrous oxide service must conform with § 173.304a(a)(4).

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

(5) Transportation of flammable gases is not authorized aboard passenger-carrying aircraft or passenger vessel.

(6) Transportation of oxygen is only authorized when in accordance with § 172.102(c)(2) Special Provision A52 and §§ 175.85(h) and (i).

(7) Cylinders must be packaged in accordance with § 173.301(a)(9).

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 modifications or changes are made to the package and it is offered for transportation in conformance with this special permit and the HMR.

c. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.

d. 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.

e. 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 for a specific manufacturing facility.

f. The cylinders described in this special permit are authorized only for normal transportation as an article of commerce i.e., the movement of hazardous materials packages from consignor to consignee.

g. When transported by cargo vessel, flammable gases covered by this special permit must be packed within a closed freight container of steel construction.

h. Packagings permanently marked "DOT-E 10945", prior to October 1, 2007 may continue to be used under this special permit for the remaining service life of the packaging or until the special permit is no longer valid. Packagings marked on or after October 1, 2007 must be marked "DOT-SP 10945".

i. Shipping papers displaying "DOT-E 10945" may continue to be used until October 1, 2007 provided the special permit remains valid.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, passenger vessel, cargo aircraft and passenger-carrying aircraft (see paragraph 7.(c).(5) and (6) for restrictions).

10. MODAL REQUIREMENTS:

a. A current copy of this special permit must be carried aboard each cargo vessel, passenger vessel or aircraft used to transport packages covered by this special permit.

b. 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:

- All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR Parts 171-180.