U.S. Department
of Transportation

**Pipeline and
Hazardous Materials
Safety Administration**

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

MAY 3 1 2005

DOT-E 8842
(SIXTH REVISION)

EXPIRATION DATE: April 30, 2007

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Pacific Scientific Company
HTL/Kin-Tech Division
Duarte, CA

2. PURPOSE AND LIMITATION:

a. This exemption authorizes the use of non-DOT specification small, high pressure cylinders of welded construction for aircraft use or military weapons systems only, to be used for the transportation in commerce of certain nonflammable compressed gases described in paragraph 6 below. This exemption provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.

b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce. The safety analyses did not consider the hazards and risks associated with consumer use, use as a component of a transport vehicle or other device, or other uses not associated with transportation in commerce.

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

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.302a(a), 175.3 in that non-DOT specification packagings are not authorized, except as specified herein; and § 178.44.

5. BASIS: This exemption is based on the application of Pacific Scientific, HTL/Kin Tech Division, dated April 4, 2005 submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identi- fication Number**	**Packing Group**
Nitrogen, compressed	2.2	UN1066	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Prescribed packaging is a non-DOT specification girth welded steel cylinder in accordance with HTL design drawing 41001600 dated April 19, 1982, on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA), and in full compliance with DOT Specification 3HT (§§ 178.35 and 178.44) except as follows:

§ 178.35(e) *Safety devices.*

(Added) Approval of the pressure relief device required by § 173.301(f) must be submitted to the OHMEA prior to initial shipment.

§ 178.44(a) *Type, size and service pressure.*

Cylinder may be girth welded and have end fittings welded as shown on HTL drawing 41001600 dated April 19, 1982. Maximum volume is 16 cubic inches nominal water capacity with a maximum service pressure of 6,600 psi.

§ 178.44(b) *Authorized steel.*

Type 3041 stainless steel with the following composition is authorized with proper welding procedure.

CHEMICAL ANALYSIS

	PERCENT
Carbon	0.035 max
Manganese	2.00 max
Phosphorus	0.045
Sulfur	0.030 max
Silicon	1.00 max
Chromium	17.00/20.00
Nickel	8.00/13.00
Copper	0.70 max

§ 178.44(d) *Manufacture.*

(Added) Each cylinder shall be subjected to a process treatment after welding and before stress relieving by hydrostatically pressurizing to at least 100 percent but not more than 110 percent of the test pressure, and maintained at this pressure for 3 minutes. The process treatment must be witnessed by the independent inspector.

§ 178.44(e) *Welding or Brazing.*

Welding as prescribed in § 178.44(a) of this exemption, is authorized. All pressure welds shall be 100 percent radiographed after hydrostatic test.

§ 178.44(f) *Wall thickness.*

(1) Minimum wall thickness for any cylinder must be 0.050 inc. Minimum wall thickness must be such that the wall stress at the minimum specified test pressure shall not exceed 80,000 psi.

(2) and (3) * * *

§ 178.44(g) *Heat Treatment.*

The half cylinders may be stress relieved or annealed for forming. Welded cylinders must be stress relieved at a temperature of 775°F ± 25°F for one hour. Stress relieving to be done after process treatment, and before hydrostatic test.

§ 178.44(j) *Cycling tests.*

* * *

(1) (Added). Results of design qualification testing per 178.44 (p)(4) of this exemption must be submitted to the OHMEA prior to initial shipment.

(2) Cycle test on each lot is not required.

(3) A lot is defined as a group of cylinders sequentially fabricated from the same heat of steel, manufactured by the same process, and stress relieved under the same conditions of time, temperature and atmosphere and shall not exceed 200 cylinders.

§ 178.44(m) *Physical tests* - Not required.

§ 178.44(n) *Magnetic particle inspection.*

Not required. Instead each cylinder must be inspected using apparatus and procedures for liquid penetrant examination in accordance with ASTM-E-165-65. Inspection shall be performed externally on the finished container after hydrostatic test. Evidence of discontinuities, which in the opinion of the independent inspector may appreciable weaken or decrease the durability of the cylinder, shall be cause for rejection.

§ 178.44(p) *Acceptable results of tests.*

(1) Flattening required without cracking to six times the wall thickness of the cylinder.

(2) Physical tests: Not required.

(3) Burst pressure shall be at least 4/3 times the test pressure. Failure must be in the sidewall in a longitudinal direction. Actual burst pressure must be recorded.

(4) Cycling: The design must be qualified by cycling 3 cylinders from zero to service pressure to at least 50,000 pressurizations without evidence of distortion or failure.

§ 178.44(q) *Rejected cylinders.*

Repair of welded seams by welding prior to process treatment authorized; subsequent thereto containers must be heat treated and pass all prescribed tests.

§ 178.44(r) *Marking.*

(1) Applies except cylinders must be marked DOT-E 8842 instead of DOT-3HT, followed by the service pressure.

(2) Stamping of elastic expansion is not required.

(3) Nameplates are optional.

§ 178.44(s) *Inspector's report.*

The inspector's report must be appropriately modified to reflect identification and compliance with this exemption.

b. TESTING - Each cylinder must be reinspected and hydrostatically retested every 3 years in accordance with § 180.209(a) as prescribed for DOT-3HT cylinders, except that the rejection elastic expansion criteria does not apply.

c. OPERATIONAL CONTROLS -

i. Cylinders are subject to the use restrictions prescribed in § 173.302a(a)(2), except they may also be used in military weapons systems. A copy of the inspector's report on the first lot of cylinders produced must be submitted to the OHMEA prior to initial shipment.

ii. Cylinders must be shipped in strong outside packagings in conformance with § 173.301(a)(9).

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

8. SPECIAL PROVISIONS:

a. A person who is not a holder of this exemption who receives a package covered by this exemption may reoffer it for transportation provided no modification or change is made to the package or its contents and it is reoffered for transportation in conformance with this exemption and the HMR.

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

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo aircraft only, and passenger-carrying aircraft.

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each aircraft or motor vehicle used to transport packages covered by this exemption. The shipper must furnish a copy of this exemption 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 exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

- All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
- Persons operating under the terms of this exemption must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
- Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this exemption 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 exemption must notify the Associate Administrator for Hazardous Materials Safety -- OHMEA, in writing, of any incident involving a package, shipment or operation conducted under terms of this exemption.

Issued in Washington, D.C.:

MAY 3 1 2005

(DATE)

Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Washington, D.C. 20590. Attention: PHH-31.

Copies of this exemption may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/exemptions Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

PO: KFW/ALB