U.S. Department
of Transportation
**Research and
Special Programs
Administration**

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

JUN 18 2002

DOT-E 11933
(SECOND REVISION)

EXPIRATION DATE: **May 31, 2004**

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Columbiana Boiler Company, LLC
(Former Grantee: The Columbiana Boiler Company)
Columbiana, OH

2. PURPOSE AND LIMITATIONS:

a. This exemption authorizes the manufacture, marking and sale of a non-DOT specification cylinder (pressure vessel) for the transportation in commerce of chlorine subject to the limitations and special requirements specified herein. This exemption provides no relief from the Hazardous Materials Regulations 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.

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

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.3(a) and § 173.304 in that a non-DOT specification pressure vessel is not authorized except as specified herein.

5. BASIS: This exemption is based on the application of Columbiana Boiler Company, LLC dated May 29, 2002, 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
Chlorine	2.3	UN1017	hazard zone B

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification pressure vessel manufactured in conformance with Columbiana Boiler Company, LLC's drawings, numbered 52597 and 52697, except as modified by the terms of this exemption and meeting the following requirements:

(1) Pressure vessels must be manufactured using equipment and processes adequate to ensure that each cylinder produced conforms to the requirements of this exemption. Pressure vessels must be cylindrical, circular in cross section, of welded steel with an electric-arc welded longitudinal seam. The pressure vessels must have: an outside diameter (nominal) of 76.2cm (30 inches), an overall length (nominal) of 207cm or 224.8cm (81.5 or 88.5 inches); and a burst pressure not less than 86.18 Bar (1250 psi).

(2) Material of construction must comply with § 179.300-7.

(3) The minimum thickness after forming of the body shells must be 10.32mm(0.4063 inch) for A285C material and 8.73mm (0.3438 inch) for A516-70 material, or the thickness required in § 179.300-6(a) whichever is greater. The welded joint efficiency for these pressure vessels is 1.0.

(4) Tank heads must be formed concave to pressure and must be fusion-welded to the tank shell. Heads must be an ellipsoid of revolution 2:1 ratio of major to minor axis. They must be one piece, hot formed in one heat so as to provide a straight flange of a length sufficient for the fusion-welding of the head to body shell. The minimum thickness after forming of the heads must be 15.88mm (0.625 inch) or the thickness required in § 179.300-8(a) whichever is greater.

(5) All welding procedures and postweld heat treatment procedures used to fabricate pressure vessels under

this exemption must be in compliance with Appendix W of the Association of American Railroads Manual of Standards and Recommended Practices, Specifications for Tank Cars (Appendix W). Heat treatment must be accomplished after all forming and welding operations.

(6) Tank fittings must be protected as provided in § 179.300-12.

(7) Valves for venting, loading and unloading must comply with requirements of § 179.300-13 except that threaded connections directly to the head are required.

(8) Attachments must be in compliance with § 179.300-14.

(9) Safety relief devices must meet the requirements of § 179.300-15.

(10) Welding procedures and operators must be qualified in accordance with Appendix W of the Association of American Railroads Manual of Standards and Recommended Practices, Specifications for Tank Cars.

b. TESTING -

Design Qualification

(1) Upon initiation of production, production on new tooling, modification of the production process or change in the design, one pressure vessel taken at random from the first 10 finished vessels, must be hydrostatically pressurized to the minimum burst pressure (86.18 Bar, 1250 psi) without rupture or leakage.

(2) One pressure vessel, taken at random from the first 10 finished vessels, must have tensile tests performed on specimens taken from each head, the body section and across the body seam. Two weld bend specimens must be taken from the body seam. All specimens are to be prepared and tested as provided in Appendix W, with one weld bend specimen being a root bend and the second being a face bend. Tensile values and elongation values must not be less than that specified in § 179.300-7. Bend specimens must show no evidence of cracking.

Production Testing

(1) One pressure vessel from each lot of 200 consecutively produced must be tested to the minimum burst pressure without rupture or leakage. Additionally when production has been suspended for more than 30 days, one pressure vessel taken at random from the first 10 finished vessels must be tested to the minimum burst pressure without rupture or leakage. All other pressure vessels must be hydrostatically tested to a test pressure of 34.47 Bar (500 psi)in a water-jacket, or other suitable method, operated so as to obtain accurate data. Alternate methods of testing must be approved in writing by the Associate Administrator for Hazardous Materials Safety. The pressure gauge must permit readings to an accuracy of 1 percent. The expansion gauge must permit readings of total volumetric expansion to an accuracy either of 1 percent or 0.1 cubic centimeter.

(i) Pressure must be maintained at test pressure for at least 30 seconds and sufficiently longer to ensure complete expansion. Any internal pressure applied after heat treatment and prior to the official test may not exceed 90 percent of the test pressure.

(ii) Permanent volumetric expansion may not exceed 10 percent of the total volumetric expansion at test pressure.

(2) The longitudinal shell joints and head to body shell girth joints must be 100% radiographed on each pressure vessel. Radiographic records for each vessel must be maintained by the manufacturer for 15 years after the date of manufacture.

(3) Safety relief devices must meet the requirements of § 179.300-15 except that only fusible plugs are authorized.

(4) Tensile tests and check analysis must be performed on each heat of material before it may be released for production.

Periodic retest and inspection - Each pressure vessel must be retested and inspected in accordance with §180.519 as specified for DOT 110A500W.

c. Manufacture - In addition to the applicable requirements of 49 CFR Part 107, Subpart H, the manufacturer must secure

authorization under § 173.300b to manufacture the pressure vessels or any part of the pressure vessels outside the United States.

d. Inspection - Compliance with the requirements of § 178.35 and § 173.300a, which are not specifically addressed or excepted in this exemption, is required. In addition to the information required by § 178.35, the inspector's report must include information required in § 179.300-20.

e. Operational Controls - Pressure vessel design must allow application of the Chlorine Institute's Emergency Kit "B".

8. SPECIAL PROVISIONS:

a. Pressure vessels manufactured under this exemption must be in conformance with Columbiana Boiler Company drawings numbered 52597 or 52697 except that whenever a provision of this exemption is in conflict with the drawings, Columbiana must comply with the conditions of this exemption and make appropriate revisions to the drawings. Revisions to drawings must be prepared by the manufacturer and be requested by the Independent Inspector of record. Later drawings and revisions are considered a part of this exemption when requested by the Independent Inspector and approved in writing under the provisions of § 173.300a.

b. 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 modifications or change are made to the package and it is reoffered for transportation in conformance with this exemption and the HMR.

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

d. Each packaging manufactured under the authority of this exemption must be marked with a registration symbol designated by the Office of Hazardous Materials Exemptions and Approvals for a specific manufacturing facility.

e. A current copy of this exemption must be maintained at each manufacturing facility at which this packaging is manufactured and must be made available to a DOT representative upon request.

f. MARKING - Each pressure vessel must be marked by stamping permanently and plainly in letters and figures at least 3/8 inch high into the metal of valve end chime as

follows:

DOT E-11933/500 PSI/34.47 BAR
A285C or A516-70/WC XXXXXX
M4873/Serial No.
IIA Stamp/Test Date

Note: Variations to the required marking must be approved in writing by the Associate Administrator for Hazardous Materials Safety.

g. Transportation of Division 2.3 materials (gases which are poisonous by inhalation) are not authorized aboard cargo vessel unless specifically authorized in the Hazardous Materials Table (§ 172.101).

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight and cargo vessel (see restriction in paragraph 8.g).

10. MODAL REQUIREMENTS:

a. A current copy of this exemption must be carried aboard each motor vehicle and cargo vessel used to transport packages covered by this exemption.

b. This exemption serves as a Competent Authority Approval (CA-9712001), by the Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration (RSPA), of the United States Department of Transportation, issued in accordance with Section 10.3 of the General Introduction to the International Maritime Dangerous Goods (IMDG) Code.

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, Parts 171-180.
- 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: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must also inform the AAHMS, in writing, as soon as practicable of any incidents involving the package and shipments made under this exemption.

Issued in Washington, D.C.

JUN 18 2002

for Robert A. McGuire
Associate Administrator
for Hazardous Materials Safety

(DATE)

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590. Attention: DHM-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: AM