



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

JUL 6 2004

DOT-E 12277
(THIRD REVISION)

EXPIRATION DATE: May 31, 2006

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: The Indian Sugar and General Engineering Corporation, Haryana, India
(U.S. Agent: J.B. Kale w/Maitech Int'l, Stafford, Tx)
2. PURPOSE AND LIMITATIONS:
 - a. This exemption authorizes the manufacture, marking, sale and use of a non-DOT specification cylinder (pressure vessel) conforming with all regulations applicable to a DOT specification 106A500W multi-unit tank car tank, except as specified herein, for the transportation in commerce of the material authorized by this exemption. 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.
 - c. Party status will not be granted to this exemption.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.3 and 173.314 in that a non-DOT specification pressure vessel is not authorized except as specified herein.

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5. BASIS: This exemption is based on the applications of The Indian Sugar and General Engineering Corporation dated June 14, 2004 and June 21, 2004, 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 (Zone B)	2.3	UN1017	N/A
Dichlorodifluoromethane or Refrigerant gas R 12	2.2	UN1028	N/A
1,2-Dichloro-1,1,2,2-tetrafluoroethane or Refrigerant gas, R 114	2.2	UN1958	N/A
Dimethylamine, anhydrous	2.1	UN1032	N/A
Ethyl chloride	2.1	UN1037	N/A
Methyl bromide (Zone C)	2.3	UN1062	N/A
Methyl chloride or Refrigerant gas R 40	2.1	UN1063	N/A
Methylamine, anhydrous	2.1	UN1061	N/A
Sulfur dioxide (Zone C)	2.3	UN1079	N/A
Trimethylamine, anhydrous	2.1	UN1083	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification pressure vessel designed, manufactured, and tested in accordance with The Indian Sugar and General Engineering Corporation drawing number PV-01-1241, Rev. 10, the supporting documentation on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA) and with DOT Specification 106A500W (§§ 179.300 and 179.301) 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 pressure vessel produced conforms to the requirements of this exemption. Pressure vessels must be cylindrical, circular in cross section, of welded steel with electric-arc welded longitudinal seam. The pressure vessel must have: an outside diameter (nominal) of 76.2 cm (30 inches), an overall length (nominal) of 206 cm and 221 cm (81 inches and 87 inches); and a bursting pressure not less than 86.18 bar (1250 psi).

(2) Material of construction must be ASTM A-516-70.

(3) The minimum thickness after forming of the body shells must be 10.32 mm (0.40625 inch) or the thickness required in § 179.300-6(b) whichever is greater. The welded joint efficiency for these pressure vessels is 1.0.

(4) Each tank head must be formed convex to pressure and must be fusion-welded to the tank shell. It must be one piece, hot formed in one heat so as to provide a straight flange at least 101.6 mm (4 inches) long. Each tank head must have a snug drive fit into the shell for the fusion-welding of the head to body shell. The minimum thickness after forming of each head must be 15.88 mm (0.625 inch) or the thickness required in § 179.300-8(b) whichever is greater. The convex heads must be designed to reverse prior to any leakage or rupture.

(5) All welding, weld procedures, postweld heat treatment procedures, and operators used to fabricate pressure vessels under this exemption must be in compliance with and qualified under the requirements of 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 the 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 except that only fusible plugs are authorized.

b. TESTING -

(1) Design Qualification

(i) 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.

(ii) 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 AAR Specifications for Tank Cars, 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.

(2) Production Testing

(i) 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, and 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.

(A) 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.

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

(ii) 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.

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

(3) Periodic retest and inspection - Each pressure vessel must be retested and inspected in accordance with § 180.519 as specified for DOT 106A500. The retest and reinspection must be performed by a facility which holds a current retester identification number issued by the Associate Administrator for Hazardous Materials Safety.

c. MANUFACTURE - The manufacturer of pressure vessels under this exemption must secure an approval in accordance with the provisions of 49 CFR Part 107, Subpart H, that apply. Each facility located outside the United States where pressure vessels are to be manufactured or where any part of the manufacture is to take place under this exemption, must secure an authorization under § 173.300b in addition to the applicable requirements of 49 CFR Part 107, Subpart H.

d. INSPECTION - Compliance with the requirements of §§ 178.35 and 173.300a, is required before production of containers under this exemption.

In addition to the information required by § 178.35, the inspector's report must include information required in § 179.300-20.

e. REPAIR - All repairs to pressure vessels authorized by this exemption must be performed under the direct guidance and supervision of a representative of The Indian Sugar and General Engineering Corporation (ISGEC). The repairs must be certified as meeting Sections 1.4 and 2.0 of ISGEC Procedure No. DOT/REP-01 "Repair Procedure for Containers in Use" dated August 8, 1999 which is on file with the OHMEA.

f. OPERATIONAL CONTROLS -

(1) Each cylinder must remain in dedicated product service for its entire life.

(2) Pressure vessel design must allow application of the Chlorine Institute's Emergency Kit "B".

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this exemption for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this exemption.

b. A person who is not a holder of this exemption, but receives a package covered by this exemption, 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 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 the DOT registered Approval number issued by the Office of Hazardous Materials Exemptions and Approvals for a specific manufacturing facility in accordance with the Approval Requirements stated in paragraph 7c.

e. A current copy of this exemption must be maintained at each facility where the package is manufactured under this exemption. It must be made available to a DOT representative upon request.

f. Pressure vessels manufactured under this exemption must be in conformance with ISEG drawing number PV-01-1241, Rev. 10 except that whenever a provision of this exemption is in conflict with the drawing, ISEG must comply with the conditions of this exemption and make appropriate revisions to the drawing(s). Revisions to drawings must be prepared by the manufacturer and be requested by the Independent Inspector (IIA) of record. Later drawings and revisions are considered a part of this exemption when requested by the IIA and approved in writing under the provisions of § 173.300a.

g. MARKING - Each pressure vessel must be marked by stamping permanently and plainly in letters and figures at least 9.525mm (3/8 inch) high into the metal of valve end chime as follows:

DOT E-12277/34.47 Bar

A516/WC XXXXXX

DOT Registration Approval Number/Serial No.

Independent Inspection Agency Registered Mark/Test Date

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

h. OHMEA may require the testing under prescribed conditions of any pressure vessel when probable cause appears for suspecting that a pressure vessel is in an unsafe operating condition in accordance with the requirements specified in § 180.509(b).

i. Any pressure vessel not used for the transport of the hazardous materials authorized under this exemption for a period of 1 year or more must be successfully retested and inspected in accordance with § 180.519 as specified for DOT 106A500 prior to being returned to hazardous material transportation service.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight and cargo vessel.
10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each motor vehicle and cargo vessel used to transport packages covered by this exemption.
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:

- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, Parts 171-180.
- o 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.
- o Registration required by § 107.601 et seq., when applicable.

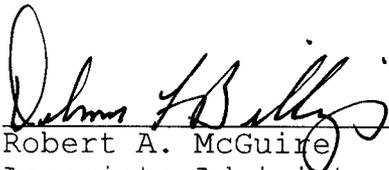
Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

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:

- a. The Indian Sugar and General Engineering Corporation must report and fully describe all repairs made to pressure vessels authorized by this exemption on an annual basis to OHMEA.
- b. 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.

for 
Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

JUL 6 2004
(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.

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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: SS/AM