**Section 178.330 Specification MC 310; Cargo Tanks Constructed of Ferrous Materials, Primarily For the Transportation of Corrosive Liquids**

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.0.1 [178.330-1] General Requirements**

a) Spec. MC 310 cargo tanks constructed on or before September 1, 1967 for the bulk transportation of hazardous materials must meet all the requirements contained in this section.

b) Must comply with A.S.M.E. Code. Tanks built under this specification shall be designed and constructed in accordance with and fulfill all requirements of

1) the 1949 edition,

2) 1950 edition,

3) 1952 edition,

4) 1956 edition, or

5) the 1959 edition of Section VIII of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, no revisions, which are hereafter referred to as "the Code."

c) When divided into compartments. When the interior of the tank is divided into compartments, each compartment shall be designed, constructed and tested as a separate tank.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.0.2 [178.330-2] Material**

a) As specified in paragraphs U-12, U-13, and U-20 of the Code, 1949 edition, no revisions. Tanks may be constructed of ferrous materials listed in Table U-2 including the stainless steels or of nickel or nickel alloys as listed in Table U-3 of the Code. Use of other materials listed in Table U-3 may be authorized by the Department upon submission of satisfactory supporting data. Materials for tanks transporting hydrogen peroxide over 52 percent by weight, must comply with the 1956 edition of the Code, but shall be limited to Aluminum Association Nos. 1060, 1260, 5254 and 5652. Other aluminum alloys may be authorized by the Department upon submission of satisfactory supporting data.

b) Lining. Except as provided in paragraph (c) of this Section, cargo tanks must be lined and the material used for lining each cargo tank subject to this specification shall be homogenous, nonporous, imperforate when applied, not less elastic than the metal of the tank proper, and substantially immune to attack by the commodities transported therein. It shall be of substantially uniform thickness, and it shall be directly bonded or attached by other equally satisfactory means. Joints and seams in the lining shall be made by fusing the material together, or by other equally satisfactory means. The interior of the tank shall be free from scale, oxidation, moisture, and all foreign matter during the lining operation.

c) Conditions under which tanks need not be lined. Tanks need not be lined as provided in paragraph (b) of this Section, if:

1) The material of the tank is substantially immune to attack by the materials to be transported therein.

2) The material of the tank is thick enough to withstand 10 years' normal service without being reduced at any point to less thickness than that specified in Section 178.330.0.3 corresponding to its capacity, or

3) The chemical reaction between the material of the tank and the commodity to be transported therein is such as to allow the tank to be properly passivated or neutralized as set forth elsewhere in this appendix, or

4) For the transportation of hydrofluoric acid of 60 percent or higher concentration, they be passivated in the following or an equally effective method: By filling the tank to not less than 90 percent of its capacity with hydrofluoric acid of 58 percent strength and allowing it to stand at least 48 hours at a temperature of 80°F., then 7 hours at 140°F., the internal pressure being maintained at atmospheric pressure the meanwhile.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.0.3 [178.330-3] Thickness of Metal**

The minimum thickness of metal for cargo tanks shall be as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Tank Capacity: | | | | Minimum Thickness (inch) | | |
|  | | | | | |  |
| Not more than 1,200 gallons | | |  | |  | ¼ |
| Over 1,200 to 1,800 gallons | |  | | |  | 5/16 |
| Over 1,800 gallons |  | | | |  | 3/8 |

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.0.4 [178.330-4] Joints**

All joints and seams formed in the manufacture of any cargo tank shall be made tight by welding, riveting, riveting and welding, brazing, or riveting and brazing, at the option of the motor carrier, subject to the limitation that any of the aforesaid methods are permissible only when any one of them or combination as used in the tank is not subject to adverse action by the nature of the corrosive liquid which is to be transported in such tank provided that joints in tanks for hydrogen peroxide of concentration exceeding 52 percent shall be made by welding only.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.0.5 [178.330-5] Bulkheads, Baffles, Ring Stiffeners, Tank Supports, and Compartmentation**

No applicable provision.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.0.6 [178.330-6] Closures for Manholes**

The manhole cover shall be designed to provide a secure closure of the manhole. All covers, not hinged to the tanks, shall be attached to the outside of the dome by at least 1/8 inch chain or its equivalent. All joints between manhole covers and their seats shall be made tight against leakage of vapor and liquid by use of gaskets of suitable material not subject to attack by the corrosive liquid to be transported in the tank.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.0.7 [178.330-7] Overturn Protection**

No applicable provision.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.0.8 [178.330-8] Outlets**

a) Outlet construction. Except as provided hereinafter, no cargo tanks, except those used for the shipments of sludge acid or alkaline corrosive liquids, and no tanks for the transportation of hydrogen peroxide in concentrations exceeding 52 percent by weight, shall have bottom discharge outlets; outlets leaving the cargo tank at or near the top but having the end of the outlet below the top liquid level shall not be considered as bottom outlets but such outlets must be equipped with a shut-off valve at the point of outlet from the cargo tank and a shut-off valve or a blank flange or screw-on cap at the discharge end of the outlet and must not be moved with any of the contents in the line beyond the point where it leaves the cargo tank. The valve at the tank shall be protected against damage in the event of overturn. Cargo tanks used for the transportation of sludge acid and/or alkaline corrosive liquids may be equipped with bottom outlets when the products to be transported are too viscous to be unloaded through a dome connection or top outlet.

b) Bottom outlets. Bottom outlets, when permitted in accordance with paragraph (a) of this Section, shall be of metal not subject to rapid deterioration by the lading, and each shall be provided with a valve or plug at its upper end and a liquid-tight closure at its lower end. Every such valve or plug shall be such as to insure against unseating due to stresses or shocks incident to transportation. Bottom outlets are to be equipped with an effective and reliable shut-off valve located inside the shell of the tank, tank compartment outlet or sump if the sump is integral with the tank.

c) Bottom washout chambers. Except as specified in the last line of this paragraph, tanks may be equipped with bottom washout chambers. Bottom washout chambers shall be of metal not subject to rapid deterioration by the lading and shall be provided with a liquid-tight closure at its lower end. If used for loading or unloading, they shall be equipped with a valve or plug at the upper end. Bottom washout chambers are not permitted on tanks used for the transportation of hydrogen peroxide of concentration exceeding 52 percent by weight.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.0.9 [178.330-9] Vents, Valves, and Connections**

When installed, venting, gauging, loading, and air inlet devices, including their valves, shall be provided with adequate means for their secure closure and means shall also be provided for the closing of pipe connections of valves.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.1.0 [178.330-10] Protection of Fittings**

Draw-off valves and faucets projecting beyond the frame, or if the vehicle be frameless, beyond the shell, at the rear, shall be adequately protected in the event of collision by steel bumpers or other equally effective devices.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.1.1 [178.330-11] Emergency Discharge Control**

See Section 178.330.0.8 (b).

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.1.2 [178.330-12] Shear Section**

a) Discharge connections. There shall be provided between each shut-off valve seat and discharge valve a shear section which will break under strain, unless the discharge piping is so arranged as to afford equivalent protection, and leave the shut-off valve seat intact in case of accident to the discharge valve or piping.

b) Heater coils. Heater coils, when installed, shall be so constructed that the breaking off of their external connections will not cause leakage of contents of tanks.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.1.3 [178.330-13] Anchoring of Tank**

No applicable provision.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.1.4 [178.330-14] Gauging Devices**

No applicable provision.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.1.5 [178.330-15] Pumps and Compressors**

No applicable provision.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.1.6 [178.330-16] Testing Requirements**

a) Test for leaks. Before being certified in accordance with Section 178.330.1.8, every cargo tank shall be tested by completely filling the tank and dome with water or other liquid having a similar viscosity, the temperature of which shall not exceed 100°F. during the test, and applying a pressure of 1½ times the design pressure but not less than 10 psig. The tank must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. All closures shall be in place while test is made, and the pressure shall be gauged at the top of the tank.

b) Test for distortion or failure. Before being certified in accordance with Section 178.330.1.8, every cargo tank shall be tested by the pressures prescribed in paragraph (a) of this Section and shall withstand such pressures without undue distortion, or if failure impends or occurs, the cargo tank shall not be returned to service unless a suitable repair is made. The suitability of the repair shall be determined by the same method of test.

c) Retest requirements. Every cargo tank shall be retested in accordance with 92 Ill. Adm. Code 177.824.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.1.7 [178.330-17] Marking of Cargo Tanks**

a) Metal identification plate. There shall be on every cargo tank a metal plate located on the right side, near the front, in a place readily accessible for inspection. This plate shall be permanently affixed to the tank by means of soldering, brazing, welding, or other suitable means; and upon it shall be marked by stamping, embossing, or other means of forming letters into or on the metal of the plate itself in the manner illustrated below, at least the information indicated below. The plate shall not be so painted as to obscure the markings thereon.

Carrier's Serial Number1

Manufacturer's Name2

Date of Manufacture2

ICC MC 310

Nominal Capacity ............................................................. U.S. Gallons

b) Test date markings. Every cargo tank constructed in accordance with this specification shall be marked with the test date as prescribed in 92 Ill. Adm. Code 177.824(h).

c) Additional markings. In addition to the above markings, cargo tanks must be marked as required by 92 Ill. Adm. Code 177.823.

1 Carriers are not required to number their tanks serially; any designation regularly used by the carrier to identify the tank may be put in this space.

2 In the event the identity of the tank manufacturer or the date of manufacture is not known and cannot be ascertained, the spaces indicated shall be marked "MAKE UNKNOWN" and/or "DATE OF MANUFACTURE UNKNOWN."

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)

**Section 178.330.1.8 [178.330-18] Certification**

A certificate from the manufacturer of the cargo tank, or from a competent testing agency, certifying that each such tank is designed and constructed in accordance with the requirements of the specification, shall be procured and such certificate shall be retained in the files of the carrier during the time that such tank is employed in the transportation of corrosive liquids by him. In lieu of this certificate, if the motor carrier himself elects to ascertain if any such tank fulfills the requirements of the specification by his own test, he shall similarly retain the test data. Where such tanks are used for hydrogen peroxide in concentration exceeding 52 percent by weight, such certificate or test data shall indicate that the tank complies with special provisions of this specification for that lading.

(Source: Added at 5 Ill. Reg. 1715, effective February 9, 1981)