(iii) Mark each hose assembly with the month and year of its original pressure test.

(8) *Chlorine cargo tanks.* Angle valves on cargo tanks intended for chlorine service must conform to the standards of the Chlorine Institute, Inc., Drawing; Dwg. 104–8; or ''Section 3, Pamphlet 166, Angle Valve Guidelines for Chlorine Bulk Transportation;'' or ''Sections 4 through 6, Pamphlet 168, Guidelines for Dual Valve Systems for Bulk Chlorine Transport'' (IBR, see §171.7 of this subchapter). Before installation, each angle valve must be tested for leakage at not less than 225 psig using dry air or inert gas.

(c) *Marking inlets and outlets.* Except for gauging devices, thermometer wells, and pressure relief valves, each cargo tank inlet and outlet must be marked ''liquid'' or ''vapor'' to designate whether it communicates with liquid or vapor when the cargo tank is filled to the maximum permitted filling density. A filling line that communicates with vapor may be marked ''spray-fill'' instead of ''vapor.''

(d) *Refrigeration and heating coils.* (1) Refrigeration and heating coils must be securely anchored with provisions for thermal expansion. The coils must be pressure tested externally to at least the cargo tank test pressure, and internally to either the tank test pressure or twice the working pressure of the heating/refrigeration system, whichever is higher. A cargo tank may not be placed in service if any leakage occurs or other evidence of damage is found. The refrigerant or heating medium to be circulated through the coils must not be capable of causing any adverse chemical reaction with the cargo tank lading in the event of leakage. The unit furnishing refrigeration may be mounted on the motor vehicle.

(2) Where any liquid susceptible to freezing, or the vapor of any such liquid, is used for heating or refrigeration, the heating or refrigeration system shall be arranged to permit complete drainage.

[Order 59–B, 30 FR 580, Jan. 16, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §178.337–9, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at *www.govinfo.gov*.

§178.337–10 Accident damage protection.

(a) All valves, fittings, pressure relief devices, and other accessories to the tank proper shall be protected in accordance with paragraph (b) of this section against such damage as could be caused by collision with other vehicles or objects, jack-knifing and overturning. In addition, pressure relief valves shall be so protected that in the event of overturn of the vehicle onto a hard surface, their opening will not be prevented and their discharge will not be restricted.

(b) The protective devices or housing must be designed to withstand static loading in any direction equal to twice the weight of the tank and attachments when filled with the lading, using a safety factor of not less than four, based on the ultimate strength of the material to be used, without damage to the fittings protected, and must be made of metal at least 3/16-inch thick.

(c) *Rear-end tank protection.* Rear-end tank protection devices must:

(1) Consist of at least one rear bumper designed to protect the cargo tank and all valves, piping and fittings located at the rear of the cargo tank from damage that could result in loss of lading in the event of a rear end collision. The bumper design must transmit the force of the collision directly to the chassis of the vehicle. The rear bumper and its attachments to the chassis must be designed to withstand a load equal to twice the weight of the loaded cargo tank motor vehicle and attachments, using a safety factor of four based on the tensile strength of the materials used, with such load being applied horizontally and parallel to the major axis of the cargo tank. The rear bumper dimensions must also meet the requirements of §393.86 of this title; or

(2) Conform to the requirements of §178.345–8(d).

(d) *Chlorine tanks.* A chlorine tank must be equipped with a protective housing and a manway cover to permit the use of standard emergency kits for controlling leaks in fittings on the

dome cover plate. For tanks manufactured on or after October 1, 2009, the housing and manway cover must conform to the Chlorine Institute, Inc., Dwg. 137–5 (IBR, see §171.7 of this subchapter).

(e) *Piping and fittings.* Piping and fittings must be grouped in the smallest practicable space and protected from damage as required in this section.

(f) *Shear section.* A shear section or sacrificial device is required for the valves specified in the following locations:

(1) A section that will break under strain must be provided adjacent to or outboard of each valve specified in §178.337–8(a)(3) and (4).

(2) Each internal self-closing stop valve, excess flow valve, and check valve must be protected by a shear section or other sacrificial device. The sacrificial device must be located in the piping system outboard of the stop valve and within the accident damage protection to prevent any accidental loss of lading. The failure of the sacrificial device must leave the protected lading protection device and its attachment to the cargo tank wall intact and capable of retaining product.

[Order 59–B, 30 FR 581, Jan. 16, 1965. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §178.337–10, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at *www.govinfo.gov*.

§178.337–11 Emergency discharge control.

(a) *Emergency discharge control equipment.* Emergency discharge control equipment must be installed in a liquid discharge line as specified by product and service in §173.315(n) of this subchapter. The performance and certification requirements for emergency discharge control equipment are specified in §173.315(n) of this subchapter and are not a part of the cargo tank motor vehicle certification made under this specification.

(b) *Engine fuel lines.* On a truck-mounted cargo tank, emergency discharge control equipment is not required on an engine fuel line of not more than ¾ NPT equipped with a valve having an integral excess flow valve or excess flow feature.

[64 FR 28050, May 24, 1999]

§178.337–12 [Reserved]

§178.337–13 Supporting and anchoring.

(a) A cargo tank that is not permanently attached to or integral with a vehicle chassis must be secured by the use of restraining devices designed to prevent relative motion between the cargo tank and the vehicle chassis when the vehicle is in operation. Such restraining devices must be readily accessible for inspection and maintenance.

(b) On a cargo tank motor vehicle designed and constructed so that the cargo tank constitutes in whole or in part the structural member used in place of a motor vehicle frame, the cargo tank must be supported by external cradles. A cargo tank mounted on a motor vehicle frame must be supported by external cradles or longitudinal members. Where used, the cradles must subtend at least 120 degrees of the shell circumference.

(c) The design calculations of the support elements must satisfy the requirements of §178.337–3, (a), (b), (c), and (d).

(d) Where any cargo tank support is attached to any part of a cargo tank head, the stresses imposed upon the head must be provided for as required in paragraph (c) of this section.

[68 FR 19280, Apr. 18, 2003]

§178.337–14 Gauging devices.

(a) *Liquid level gauging devices.* See §173.315(h) of this subchapter.

(b) *Pressure gauges.* (1) See §173.315(h) of this subchapter.

(2) Each cargo tank used in carbon dioxide, refrigerated liquid or nitrous oxide, refrigerated liquid service must be provided with a suitable pressure gauge. A shut-off valve must be installed between the pressure gauge and the cargo tank.