

§171.7 of this subchapter). In determining the required reinforcement area for openings in the outer shell, *t* shall be one-fourth inch.

[68 FR 75763, Dec. 31, 2003]

§ 179.220-15 Support system for inner container.

(a) The inner container must be supported within the outer shell by a support system of adequate strength and ductility at its operating temperature to support the inner container when filled with liquid lading to any level. The support system must be designed to support, without yielding, impact loads producing accelerations of the following magnitudes and directions when the inner container is loaded so that the car is at its rail load limit, and the car is equipped with a conventional AAR Specification M-901 draft gear.

Longitudinal	7G
Transverse	3G
Vertical	3G

(b) The longitudinal acceleration may be reduced to 3G where a cushioning device of approved design, which has been tested to demonstrate its ability to limit body forces to 400,000 pounds maximum at a 10 miles per hour impact, is used between the coupler and the tank structure. The support system must be of approved design and the inner container must be thermally isolated from the outer shell to the best practical extent. The inner container and outer shell must be permanently bonded to each other electrically either by the support system used, piping, or by a separate electrical connection of approved design.

[Amdt. 179-9, 36 FR 21341, Nov. 6, 1971, as amended by Amdt. 179-28, 46 FR 49906, Oct. 8, 1981]

§ 179.220-16 Expansion capacity.

Expansion capacity must be provided in the shell of the inner container as prescribed in § 179.221-1.

[Amdt. 179-9, 36 FR 21341, Nov. 6, 1971]

§ 179.220-17 Gauging devices, top loading and unloading devices, venting and air inlet devices.

(a) When installed, each device must be of approved design which will pre-

vent interchange with any other fixture and must be tightly closed. Each unloading pipe must be securely anchored within the inner container. Each inner container or compartment thereof may be equipped with one separate air connection.

(b) When the characteristics of the commodity for which the car is authorized require these devices to be equipped with valves or fittings to permit the loading and unloading of the contents, these devices including valves, shall be provided with a protective housing except when plug or ball-type valves with operating handles removed are used. Provision must be made for closing pipe connections of valves.

(c) Inner container may be equipped with a vacuum relief valve of approved design. Protective housing is not required.

(d) When a gauging device is required in § 179.221-1, an outage scale visible through the manway opening must be provided. If loading devices are applied to permit tank loading with cover closed, a telltale pipe may be provided. The telltale pipe must be capable of determining that required outage is provided. The pipe must be equipped with 1/4-inch maximum, NPT control valve mounted outside tank and enclosed within a protective housing. Other approved devices may be used in place of an outage scale or a telltale pipe.

(e) The bottom of the tank shell may be equipped with a sump or siphon bowl, or both, welded or pressed into the shell. These sumps or siphon bowls, if applied, are not limited in size and must be made of cast, forged, or fabricated metal. Each sump or siphon bowl must be of good welding quality in conjunction with the metal of the tank shell. When the sump or siphon bowl is pressed in the bottom of the tank shell, the wall thickness of the pressed section must not be less than that specified for the shell. The section of a circular cross section tank to which a sump or siphon bowl is attached need not comply with the out-of-roundness requirement specified in appendix W, W14.06 of the AAR Specifications for Tank Cars. Any portion of a sump or siphon bowl not forming a part of a cylinder of revolution must