



DEPARTMENT OF TRANSPORTATION
HAZARDOUS MATERIALS REGULATIONS BOARD

WASHINGTON, D.C. 20590

21339

Docket No. HM-89; Amdts. Nos. 173-58,
179-9]

PART 173—SHIPPERS

**PART 179—SPECIFICATIONS FOR
TANK CARS**

**Provisions for Shipment of Flammable
Liquids**

The purpose of this amendment to the Department's Hazardous Materials Regulations is to amend § 173.119(a)(12) and to add new §§ 179.220 and 179.221 to provide for the use of a new DOT specification 115 tank cars for shipment of flammable liquids not otherwise specified (n.o.s.).

On July 21, 1971, the Hazardous Materials Regulations Board published Docket No. HM-89; Notice No. 71-23 (36 F.R. 13405) proposing these changes. Several comments were received.

One commenter requested inclusion of additional requirements to provide for the use of specification 115 cars in low temperature service (service below -20° F.). Since this was not included as subject matter in the present rule-making action and it would introduce substantial changes, the Board is of the opinion that these comments should be subject to a separate rule-making action.

This commenter also noted that the Board apparently was proposing to reject tanks having metal support members extending from inner tank to outer shell. The Board did not intend to restrict the design in this manner. Section 179.220-15 does not contain this limitation. The regulation that "the inner container must be thermally isolated from the outer shell to the best practical extent" is a rule referring to a support system of "approved design." There is no limitation on such a system provided it complies with the specification requirements. The phrase "without metal supports" found in the preamble of Notice 71-23 was meant to be descriptive of the manner in which these specification cars are now being built, and was not intended to be a restriction in future design.

Several comments were received suggesting clarification of various texts and most of these suggestions were adopted. One change relating to § 179.220-18(a)(3), location of bottom unloading valves, was set aside as a matter for separate rule-making. Another suggestion related

to the requirement for a locking arrangement on valve-operating mechanisms. This requirement does not mean that exterior actuating mechanisms must be physically connected by means of linkages to the actual seating mechanism of the valve. On valves that might otherwise be open during transportation, some securing device or arrangement must be supplied to insure that positive closure is maintained during transportation and that the valve cannot accidentally be opened.

The Bureau of Explosives, Association of American Railroads, objected to the addition of DOT specification 115A type cars to § 173.119(a)(12) on the following bases:

(1) Specification 115A cars were designed primarily for transportation of "time temperature" products as defined in DOT Special Permits for Dichlorobutene, methyl methacrylate monomer. For this service there are restrictions imposed on both the cars and the products which are not contained in the proposal.

(2) Under the special permit system the special restrictions mentioned above can be and are imposed; but the blanket authorization proposed in the instant notice would eliminate all of them, even those demonstrably necessary for safety.

(3) New-time-temperature-sensitive products may be developed that require other and different restrictions for safe transportation. These restrictions likewise could not be imposed under the proposal.

The Board does not believe the 115A car should be singled for restriction. Under the present regulations, transportation of dichlorobutene and methyl methacrylate is authorized in many specification cars that are not required to be insulated. However, this transportation is always subject to § 173.21, which states in part that,

The offering for transportation of any package or container of any liquid, solid, or gaseous material which under conditions incident to transportation may polymerize (combine or react with itself) or decompose so as to cause dangerous evolution of heat or gas is prohibited. Such materials may be offered for transportation when properly stabilized or inhibited. Refrigeration may be used as a means of stabilization only when approved by the Bureau of Explosives.

The effect of this rule would not be changed, i.e., when a time-temperature relationship is involved in safely transporting a product, this means of stabilization may be used only when approved

by the Bureau of Explosives. Therefore, if dichlorobutene not otherwise safely inhibited is proposed to be shipped safely under temperature control, such as by the use of a type 115A tank car or any other insulated car now authorized by § 173.119(a) (12), this method of stabilization or inhibition continues to be subject to the Bureau's approval and any conditions it may impose. This includes use of the car in this service. This section of the regulations presently controls nearly all shipments requiring time-temperature controls due to instability. Any permits now outstanding that involve § 173.119(c) (12) and that include a time-temperature relationship involving safety would not be obviated by this amendment. Rather, control would revert back to the Bureau by virtue of § 173.21(b). Therefore, the Board is of the opinion that the amendment as proposed should be sustained.

In consideration of the foregoing, 49 CFR Parts 173 and 179 are amended as follows:

1. In § 173.119 paragraph (a) (12) is amended to read as follows:

§ 173.119 Flammable liquids not specifically provided for.

(a) * * *

(12) Specification 103,¹ 103W, 103-ALW, 103DW, 104,¹ 104W, 105A100,¹ 105A100ALW, 105A100W, 106A500X, 106A800XNC, 106A800NCI,¹ 109A100ALW, 110A500W, 111A60ALW, 111A60F1, 111A60W1, 111A100W3, 111A100W4, 111A100W6, 112A200W, 112A400F, 114A340W, 115A60W1, 115A60ALW, 115A60W6, ARA-III,¹ ARA-IV,¹ or ARA-IV-A¹ (§§ 179.100, 179.101, 179.200, 179.201, 179.220, 179.300, 179.301 of this chapter). Tank cars. For cars equipped with expansion domes, manway closures must be so designed that pressure will be released automatically by starting the operation of removing the manway cover. Openings in tank heads to facilitate application of lining are authorized and must be closed in an approved manner. (See § 173.432 for shipping instructions.)

* * * * *

2. In Part 179, Table of Contents, Subpart D heading is amended; §§ 179.220 and 179.221 are added to read as follows:

Subpart D—Specifications for Nonpressure Tank Car Tanks (Classes DOT-103, 104, 111AF, 111AW, and 115AW)

Sec.

179.220 General specifications applicable to nonpressure tank car tanks consisting of an inner container supported within an outer shell (class DOT-115).

179.221 Individual specification requirements applicable to tank car tanks consisting of an inner container supported within an outer shell.

3. Subpart D heading is amended and §§ 179.220 and 179.221 are added to read as follows:

¹ Use of existing tank cars authorized, but new construction not authorized.

Subpart D—Specifications for Nonpressure Tank Car Tanks (Classes DOT-103, 104, 111AF, 111AW, and 115AW)

§ 179.220 General specifications applicable to nonpressure tank car tanks consisting of an inner container supported within an outer shell (class DOT-115).

§ 179.220-1 Tanks built under these specifications must meet the requirements of § 179.220 and § 179.221.

§ 179.220-2 Approval.

For procedures in securing approval, see § 179.3.

§ 179.220-3 Type.

(a) Tanks built under these specifications must consist of an inner container, a support system for the inner container, and an outer shell.

(b) The inner container must be a fusion welded tank of circular cross section with formed heads designed convex outward and must have a manway on top of the tank as prescribed herein. When the inner container is divided into compartments, each compartment must be considered a separate container.

(c) The outer shell must be a fusion welded tank with formed heads designed convex outward.

§ 179.220-4 Insulation.

The annular space between the inner container and the outer shell must contain an approved insulation material.

§ 179.220-5 Bursting pressure.

The minimum required bursting pressure of the inner container is listed in § 179.221-1.

§ 179.220-6 Thickness of plates.

(a) The wall thickness, after forming of the inner container shell and 2:1 ellipsoidal heads must be not less than specified in § 179.221-1, or not less than that calculated by the following formula:

$$t = \frac{Pd}{2SE}$$

where:

d = Inside diameter in inches;
 E = 0.9 welded joint efficiency; except $E=1.0$ for seamless heads;

P = Minimum required bursting pressure in p.s.i.;

S = Minimum tensile strength of plate material in p.s.i. as prescribed in AAR Specifications for Tank Cars, Appendix M, Table M1;

t = Minimum thickness of plate in inches after forming.

(b) The wall thickness after forming of the inner container heads, if flanged and dished, must be not less than specified in § 179.221-1, or not less than that calculated by the following formula:

$$t = \frac{5PL}{6SE}$$

where:

E = 0.9 welded joint efficiency; except $E=1.0$ for seamless heads;

L = Main inside radius to which head is dished, measured on concave side in inches;

P = Minimum required bursting pressure in p.s.i.;

S = Minimum tensile strength of plate material in p.s.i. as prescribed in AAR Specifications for Tank Cars, Appendix M, Table M1;

t = Minimum thickness of plate in inches after forming.

(c) The wall thickness after forming of the cylindrical section and heads of the outer shell must be not less than seven-sixteenths of an inch.

(d) See § 179.220-9 for plate thickness requirements for inner container when divided into compartments.

§ 179.220-7 Materials.

(a) The plate material used to fabricate the inner container and nozzles must meet one of the following specifications and with the indicated minimum tensile strength and elongation in the welded condition.

(b) Carbon steel plate: The maximum allowable carbon content must be 0.31 percent when the individual specification allows carbon content greater than this amount. The plates may be clad with other approved materials.

Specifications	Minimum tensile strength (p.s.i.) welded condition ¹	Minimum elongation in 2 inches (percent) welded condition (longitudinal)
ASTM A 515-70, Gr. 55....	55,000	
ASTM A 515-70, Gr. 60....	60,000	
ASTM A 515-70, Gr. 65....	65,000	
ASTM A 515-70, Gr. 70....	70,000	
ASTM A 285-70a, Gr. A....	45,000	29
ASTM A 285-70a, Gr. B....	50,000	20
ASTM A 285-70a, Gr. C....	55,000	20
ASTM A 516-70a, Gr. 55....	55,000	23
ASTM A 516-70a, Gr. 60....	60,000	25
ASTM A 516-70a, Gr. 65....	65,000	20
ASTM A 516-70a, Gr. 70....	70,000	20
AAR TC128-70, Gr. A&B..	81,000	19

¹ Maximum stresses to be used in calculations.

(c) Aluminum alloy plate: Aluminum alloy plate must be suitable for welding and comply with one of the following specifications:

Specifications	Minimum tensile strength (p.s.i.) 0 temper, welded condition ²	Minimum elongation in 2 inches (percent) welded condition (longitudinal)
ASTM B 209-70, Alloy 5052 ¹	25,000	18
ASTM B 209-70, Alloy 5083 ²	38,000	16
ASTM B 209-70, Alloy 5086 ¹	35,000	14
ASTM B 209-70, Alloy 5154 ¹	30,000	18
ASTM B 209-70, Alloy 5254 ¹	30,000	18
ASTM B 209-70, Alloy 5454 ¹	31,000	18
ASTM B 209-70, Alloy 5652 ¹	25,000	18
ASTM B 209-70, Alloy 6061 ⁴	24,000	5

¹ For fabrication, the parent plate material may be O, H112, or H132 temper, but design calculations must be based on the minimum tensile strength shown.

² 0 temper only.

³ Weld filler metal 5556 must not be used.

⁴ Not authorized for tank shells, manways or domes.

⁵ T6 temper only.

⁶ Maximum stresses to be used in calculations.

(d) High alloy steel plate: High alloy steel plate must comply with one of the following specifications:

Specifications	Minimum tensile strength (p.s.i.) welded condition ¹	Minimum elongation in 2 inches (percent) welded condition (longitudinal)
ASTM A 240-70, Type 304	75,000	30
ASTM A 240-70, Type 304L	70,000	30
ASTM A 240-70, Type 316	75,000	30
ASTM A 240-70, Type 316L	70,000	30
ASTM A 240-70, Type 430A	65,000	22

¹ Maximum stresses to be used in calculations.

(e) Manganese-molybdenum steel plate: Manganese-molybdenum steel plate must be suitable for fusion welding and must comply with the following specification:

Specifications	Minimum tensile strength (p.s.i.) welded condition ¹	Minimum elongation in 2 inches (percent) welded condition (longitudinal)
ASTM A 302-70a, Gr. B	80,000	20

¹ Maximum stresses to be used in calculations.

(f) Plate materials used to fabricate the outer shell and heads must be those listed in paragraphs (b), (c), (d), or (e) of this section. The maximum allowable carbon content must be 0.31 percent when the individual specification allows carbon content greater than this amount. The plates may be clad with other approved materials.

(g) All appurtenances on the inner container in contact with the lading must be made of approved material compatible with the plate material of the inner container. These appurtenances must not be subject to rapid deterioration by the lading, or must be coated or lined with suitable corrosion resistant material. See AAR Specifications for Tank Cars, Appendix M, M4.05 for approved material specifications for castings for fittings.

§ 179.220-8 Tank heads.

(a) Tank heads of the inner container, inner container compartments and outer shell must be of approved contour, and may be flanged and dished or ellipsoidal for pressure on concave side.

(b) Flanged and dished heads must have main inside radius not exceeding 10 feet and inside knuckle radius must be not less than 3¾ inches for steel and alloy steel tanks nor less than 5 inches for aluminum alloy tanks.

(c) Ellipsoidal heads must be an ellipsoid of revolution in which the major axis must equal the diameter of the shell and the minor axis must be one-half the major axis.

§ 179.220-9 Compartment tanks.

(a) The inner container may be divided into compartments by inserting

interior heads, or by fabricating each compartment as a separate container and joining with a cylinder, or by fabricating each compartment as a separate tank without a joining cylinder. Each compartment must be capable of withstanding, without evidence of yielding or leakage, the required test pressure applied in each compartment separately, or in any combination of compartments.

(b) When the inner container is divided into compartments by fabricating each compartment as a separate container and joining with a cylinder, the cylinder must have a plate thickness not less than that required for the inner container shell and must be applied to the outside surface of the straight flange portion of the container head. The cylinder must fit the straight flange tightly for a distance of at least two times the plate thickness, or 1 inch, whichever is greater and must be joined to the straight flange by a full fillet weld. Distance from fillet weld seam to container head seam must be not less than 1½ inches or three times the plate thickness, whichever is greater.

§ 179.220-10 Welding.

(a) All joints must be fusion-welded in compliance with AAR Specifications for Tank Cars, Appendix W. Welding procedures, welders, and fabricators shall be approved.

(b) Radioscopy of the outer shell is not a specification requirement.

(c) Welding is not permitted on or to ductile iron or malleable iron fittings.

§ 179.220-11 Postweld heat treatment.

(a) Postweld heat treatment of the inner container is not a specification requirement.

(b) Postweld heat treatment of the cylindrical portions of the outer shell to which the anchorage or draft sills are attached must comply with AAR Specifications for Tank Cars, Appendix W.

(c) When cold formed heads are used on the outer shell they must be heat treated before welding to shell if postweld heat treatment is not practicable due to assembly procedures.

§ 179.220-12 Tank mounting.

See § 179.10.

§ 179.220-13 Inner container manway nozzle and cover.

(a) Inner container manway nozzle must be of approved design with access opening at least 18 inches inside diameter, or at least 14 inches by 18 inches obround or oval.

(b) Manway covers must be of approved type. Design must provide a secure closure of the manway and must make it impossible to remove the cover while the tank interior is under pressure.

(c) All joints between manway covers and their seats must be made tight against leakage of vapor and liquid by use of suitable gaskets.

(d) Manway covers must be cast, forged, or fabricated metal complying with subsection § 179.220-7(g) of this section.

(e) A seal must be provided between the inner container manway nozzle and the opening in the outer shell.

§ 179.220-14 Openings in the tanks.

Openings in the inner container and the outer shell must be reinforced in compliance with AAR Specifications for Tank Cars, Appendix E. In determining the required reinforcement area for openings in the outer shell, *t* shall be one-fourth inch.

§ 179.220-15 Support system for inner container.

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

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.

§ 179.220-16 Expansion capacity.

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

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

(a) When installed, each device must be of approved design which will prevent 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 gaging 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 have walls of such thickness and must be so reinforced that the stresses in the walls caused by a given internal pressure are not greater than the circumferential stress which would exist under the same internal pressure in the wall of a tank of circular cross section designed in accordance with §§ 179.220-6(a) and 179.220-9. In no case shall the wall thickness be less than that specified in § 179.221-1 (a).

(f) Protective housing, when required, must be of approved material and must have cover and sidewalls not less than 0.119 inch in thickness.

§ 179.220-18 Bottom outlets.

(a) The inner container may be equipped with a bottom outlet of approved design and an opening provided in the outer shell for its access. If applied, the bottom outlet must comply with the following requirements:

(1) On newly built empty cars with truck centers through 60 feet, 6 inches, the extreme projection of the bottom outlet equipment including insulated enclosure must be at least 12 inches above the top of the rail on level track. On cars with truck centers greater than 60 feet, 6 inches, the minimum rail clearance must be in accordance with the graph in Appendix E of the AAR Specifications for Tank Cars. Each bottom outlet reducer and closure and their attachments must be secured to the car by at least a 3/8-inch chain or its equivalent. However, outlet closure plugs may be attached by 1/4-inch chain. When the bottom outlet closure is of the combination cap and valve type, the pipe connection to the valve must be closed by a plug or cap.

(2) Each bottom outlet must be provided with a liquid tight closure at its lower end.

(3) The valve and its operating mechanism must be applied to the outside bottom of the inner container. The valve operating mechanism must be provided with a suitable locking arrangement to insure positive closure during transportation.

(4) Valve outlet nozzle and valve body must be of cast, fabricated or forged metal. If welded to inner container, they must be of good weldable quality in conjunction with metal of tank.

(5) To provide for the attachment of unloading connections, the bottom of the main portion of the outlet nozzle or valve body, or some fixed attachment thereto, must be provided with threaded cap closure arrangement or bolted flange closure arrangement having minimum 1-inch threaded pipe plug.

(6) If the outlet nozzle and its closure extend below the bottom of the outer shell, a breakage groove or its equivalent must be applied. If a breakage groove is applied, a "V" must be cut (not cast) in the upper part of outlet nozzle at a point immediately below lowest part of valve to a depth that will leave thickness of nozzle wall at the root of the "V" not over one-fourth inch. The outlet nozzle or the valve body may be steam jacketed in which case the breakage groove or its equivalent must be below the steam chamber but above the bottom of the center sill construction. If the outlet nozzle is not a single piece or if exterior valves are applied, provision must be made for the equivalent of the breakage groove. On cars without continuous center sills, the breakage groove or its equivalent must not be more than 15 inches below the outer shell.

(7) The valve body must be of a thickness which will prevent distortion of the valve seat or valve by any change in contour of the shell resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the outlet nozzle will occur at or below the "V" groove, or its equivalent.

(8) The valve must have no wings or stem projection below the "V" groove or its equivalent. The valve and seat must be readily accessible or removable for repairs, including grinding.

(b) Inner container may be equipped with bottom washout of approved design. If applied, bottom washout must comply with the following requirements:

(1) On newly built empty cars with truck centers through 60 feet, 6 inches, the extreme projection of the bottom washout equipment must be at least 12 inches above the top of rail on level track. On cars with truck centers greater than 60 feet, 6 inches, the minimum rail clearance must be in accordance with the graph in Appendix E of the AAR Specifications for Tank Cars.

(2) Bottom washout must be of cast, forged or fabricated metals. If it is welded to the inner container, it must be of good weldable quality in conjunction with metal of tank.

(3) If the washout nozzle extends below the bottom of the outer shell, a "V" groove must be cut (not cast) in the upper part of the nozzle at a point immedi-

ately below the lowest part of the inside closure seat or plug to a depth that will leave the wall thickness of nozzle at the root of the "V" not over one-fourth inch. Where the nozzle is not a single piece, provision must be made for the equivalent of the breakage groove. The nozzle must be of a thickness to insure that accidental breakage will occur at or below the "V" groove or its equivalent. On cars without continuous center sills, the breakage groove or its equivalent must not be more than 15 inches below the outer shell. On cars with continuous center sills, the breakage groove or its equivalent must be above the bottom of center sill construction.

(4) The closure plug and seat must be readily accessible or removable for repairs.

(5) The closure of the washout nozzle must be equipped with a 3/4-inch solid screw plug. Plug must be attached by at least a 1/4-inch chain.

(6) Joints between closures and their seats may be gasketed with suitable material.

§ 179.220-19 Safety relief devices.

(a) Each inner container or compartment must be equipped with safety relief devices of approved design as prescribed in § 179.221-1.

(b) When used, each safety relief valve must be made of metal not subject to rapid deterioration by the lading, and mounted on the top of the inner container. Total valve discharge capacity must be sufficient to prevent building up of pressure in the inner container to more than 10 p.s.i. above the start-to-discharge pressure. See AAR Specifications for Tank Cars, Appendix A, for formula for calculating discharge capacity. The start-to-discharge pressures and vapor tight pressures must comply with § 179.221-1.

(c) Each inner container or compartment used for the transportation of a corrosive liquid, a flammable solid, an oxidizing material, or a poisonous liquid or solid Class B, need not be equipped with a safety relief valve, but if not so equipped, it must have one safety vent at least 1 3/4 inches inside diameter made of material not subject to rapid deterioration by the lading. Each safety vent must be mounted on the top of the inner container. This vent must be of an approved design which will prevent interchange with fixtures prescribed in § 179.220-17. It must be closed with a frangible disc of lead or other approved material. Vent bursting pressure must comply with § 179.221-1. Tanks equipped with vents must be stenciled "Not for flammable liquids".

§ 179.220-20 Reinforcements, when used, and appurtenances not otherwise specified.

All attachments to inner container and outer shell must be applied by approved means.

§ 179.220-21 Interior heating system.

For heater system inside of inner container see § 179.12.

§ 179.220-22 Closure for openings.

(a) All plugs must be solid, with NPT threads, and must be of a length which will screw at least six threads inside the face of fitting or tank. Plugs, when inserted from the outside of the outer shell tank heads, must have the letter "S" at least three-eighths inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

(b) Openings in the outer shell used during construction for installation must be closed in an approved manner.

§ 179.220-23 Test of tanks.

(a) Each inner container or compartment must be tested hydrostatically to the pressure specified in § 179.221-1. The temperature of the pressurizing medium must not exceed 100° F. during the test. The container must hold the prescribed pressure for at least 10 minutes without leakage or evidence of distress. Safety relief devices must not be in place when the test is made.

(b) The inner container must be pressure tested before installation within the outer shell. Items which, because of assembly sequence, must be welded to inner container after its installation within outer shell must have their attachment welds thoroughly inspected by a non-destructive dye penetrant method or its equivalent.

(c) Pressure testing of outer shell is not a specification requirement.

§ 179.220-24 Tests of safety relief valves.

Each safety relief valve must be tested

by air or gas for compliance with § 179.221-1 before being put into service.

§ 179.220-25 Stamping.

To certify that the tank complies with all specification requirements, each outer shell must be plainly and permanently stamped in letters and figures at least 3/8-inch high into the metal near the center of both outside heads as follows:

	<i>Examples of required stamping</i>
Specifications -----	DOT-115A60W6.
Inner container:	
Material -----	ASTM A240-316L.
Shell thickness -----	Shell 0.167 in.
Head thickness -----	Head 0.150 in.
Tank builders initials --	ABC.
Date of original test --	00-0000.
Outer shell:	
Material -----	ASTM A285-C.
Tank builders initials --	WYZ.
Car assembler (if other than inner container or outer shell builders).	DEF.

§ 179.220-26 Stenciling.

(a) The outer shell, or the jacket if the outer shell is insulated, must be stenciled in compliance with AAR Specifications for Tank Cars, Appendix C.

(b) Stenciling must be applied on both sides of the outer shell or jacket near the center in letters and figures at least 1 1/2 inches high to indicate the safe upper temperature limit, if applicable, for the inner tank, insulation, and the support system.

§ 179.220-27 Certificate of construction. See § 179.5.

§ 179.221 Individual specification requirements applicable to tank car tanks consisting of an inner container supported within an outer shell.

§ 179.221-1 Individual specification requirements.

In addition to § 179.220, the individual specification requirements for the inner container are as follows:

Specification	115A60W1	115A60ALW	115A60W6
Inner container material (see § 179.220-7) ..	Steel	Al alloy	Alloy steel.
Bursting pressure, p.s.i. (see § 179.220-5) ..	240	240	240.
Minimum plate thickness, shell and heads, inches (see § 179.220-6) ..	1/4	3/16	1/4.
Minimum expansion capacity (see § 179.220-16) ..	2 percent in tank	2 percent in tank	2 percent in tank.
Test pressure, p.s.i. (see § 179.220-23) ..	60	60	60.
Safety relief device (see § 179.220-19) ..	Valve or vent	Valve or vent	Valve or vent.
Valvestart-to-discharge pressure, p.s.i. (±3 p.s.i.) ..	35	35	35.
Valve vapor tight pressure (minimum, p.s.i.) ..	28	28	28.
Valve flow rating pressure (maximum, p.s.i.) ..	45	45	45.
Vent rupture pressure (maximum, p.s.i.) ..	45	45	45.
Gaging devices (see § 179.220-17) ..	Required	Required	Required.
Top loading and unloading devices (see § 179.220-17) ..	Optional	Optional	Optional.

This amendment is effective December 31, 1971, however, compliance with the regulations as amended herein is authorized immediately.

(Secs. 831-835, title 18, U.S.C.; sec. 9, Department of Transportation Act, 49 U.S.C 1657)

Issued in Washington, D.C., on October 29, 1971.

G. H. READ,
Captain, Alternate Board Member for the U.S. Coast Guard.

MAC E. ROGERS,
Board Member for the Federal Railroad Administration.