

## **Subpart F—Qualification and Maintenance of Tank Cars**

### **§180.501 Applicability.**

(a) This subpart prescribes requirements, in addition to those contained in parts 107, 171, 172, 173, 174, and 179 of this subchapter, applicable to any person who manufactures, fabricates, marks, maintains, repairs, inspects, or services tank cars to ensure continuing qualification.

(b) This subpart also establishes the minimum acceptable framework for an owner's qualification program for tank cars and components. Owners should follow this subpart in developing their written procedures (work instructions), as required under §179.7(d), for use by tank car facility employees. The owner's qualification program for each tank car, or a fleet of tank cars, must identify where to inspect, how to inspect, and the acceptance criteria. Alternative inspection and test procedures or intervals based on a damage-tolerance analysis or service reliability assessment must be approved by the Associate Administrator for Railroad Safety in accordance with 180.509(l). Tank car facilities must incorporate the owner's qualification program in their quality assurance program, as required under §179.7(a)(2), (b)(3), (b)(5), and (d).

(c) Any person who performs a function prescribed in this part shall perform that function in accordance with this part.

(d) Where, in this subpart, a person is required to make documents available to FRA upon request, such request means that credentialed FRA personnel or an authorized representative of the Department may view the documents and make copies of them. The document owner's may seek confidential treatment of the documents presented. See §105.30.

[Amdt. 180-8, 60 FR 49079, Sept. 21, 1995, as amended by Amdt. 179-50, 61 FR 33256, June 26, 1996; 77 FR 37986, June 25, 2012]

### **§180.503 Definitions.**

The following definitions and those contained in §§171.8 and 179.2 of this subchapter apply:

*Coating/lining owner* means the person with the financial responsibility for purchasing and maintaining the integrity of the interior coating or lining.

*Corrosive to the tank or service equipment* means a material identified in Appendix D of this part or a material when in contact with the inner shell of the tank or service equipment has a corrosion rate on steel greater than 2.5 milli-inch per year (mpy) (0.0025 inch per year).

*Defects* mean abrasions; corrosion; cracks; dents; flaws in welds; distortions; erosion; missing, damaged, leaking or loose components and fasteners; and other conditions or imperfections that may make a tank car unsafe for transportation and/or require it to be removed from service.

*Design level of reliability and safety* means the level of reliability and safety built into the tank car and, therefore, inherent in its specification, design, and manufacture.

*Inspection and test* means a careful and critical examination of a tank car and its appurtenances performed by qualified personnel following the owner's qualified procedures.

*Interior heater system* means a piping system located within the tank shell that uses a fluid medium to heat the lading for the purposes of unloading.

*Maintenance* means upkeep, or preservation, including repairs necessary and proper to ensure an in-operation tank car's specification until its next qualification.

*Modification* means any change to a tank car that affects the certificate of construction prescribed in §179.5, including an alteration prescribed in §179.6, or conversion.

*Objectively reasonable and articulable belief* means a belief based on particularized and identifiable facts that provide an objective basis to believe or suspect that a tank car or a class or design of tank cars may be in an unsafe operating condition.

*Qualification*, as relevant to a tank car, means the car and its components conforms to the specification to which it was designed, manufactured, or modified to the requirements of this subpart, to the applicable requirements of the AAR Tank Car Manual (IBR, see §171.7 of this subchapter), and to the owner's acceptance criteria. Qualification is accomplished by careful and critical examination that verifies conformance using inspections and tests based on a written program approved by the tank car owner followed by a written representation of that conformance. A tank car that passes the appropriate tests for its specification, has a signed test report, is marked to denote this passage, and is considered qualified for hazardous materials transportation under this subchapter.

<b>Qualification of</b>	<b>Tests and inspections</b>	<b>§180.509(*)</b>
Tank	Visual Inspection	d
	Structural Integrity Inspection	e
	Thickness Test: Note 1	f
	Safety System Inspection	h

Service Equipment	Service Equipment	k
Coating/lining	Internal Coatings and Linings	i

NOTE 1: Subparagraph (f)(2) may require thickness tests at an interval different from the other items for qualification of the tank.

*Railworthy, Railworthiness* for a tank car means that the tank, service equipment, safety systems, and all other components covered by this subchapter conform to the HMR, and are otherwise suitable for continued service and capable of performing their intended function until their next qualification.

*Reactive to the tank or service equipment* means a material that, in contact with the inner shell of the tank, or with the service equipment, may react to produce heat, gases, and/or pressure which could substantially reduce the effectiveness of the packaging or the safety of its use.

*Reinforced tank shell butt weld* means the portion of a butt weld covered by a reinforcing pad.

*Reinforcing pad* means an attachment welded directly to the tank supporting major structural components for the purpose of preventing damage to the tank through fatigue, overstressing, denting, puncturing, or tearing.

*Reliability* means the quantified ability of an item or structure to operate without failure for the specified period of its design life or until its next qualification.

*Representation* means attesting through documenting, in writing or by marking on the tank (or jacket), that a tank car is qualified and railworthy. See also §§180.511 and 180.517(b).

*Safety system* means one or more of the following: Thermal protection systems, insulation systems, tank head puncture resistance systems, coupler vertical restraint systems, and systems used to protect discontinuities (e.g., skid protection and protective housings) as required under this subchapter.

*Service equipment* means equipment used for loading and unloading (including an interior heating system), sampling, venting, vacuum relief, pressure relief, and measuring the amount of lading or the lading temperature.

*Service equipment owner* means the party responsible for bearing the cost of the maintenance of the service equipment.

*Tank car owner* means the person to whom a rail car's reporting marks are assigned, as listed in the Universal Machine Language Equipment Register (UMLER).

*Tank car tank* means the shell, heads, tank shell and head weld joints, attachment welds, sumps, nozzles, flanges, and all other components welded thereto that are either in contact with the lading or contain the lading.

*Train consist* means a written record of the contents and location of each rail car in a train.

[77 FR 37986, June 25, 2012]

**§180.505 Quality assurance program.**

The quality assurance program requirements of §179.7 of this subchapter apply.

**§180.507 Qualification of tank cars.**

(a) Each tank car marked as meeting a “DOT” specification or any other tank car used for the transportation of a hazardous material must meet the requirements of this subchapter or the applicable specification to which the tank was constructed.

(b) *Tank car specifications no longer authorized for construction.* (1) Tank cars prescribed in the following table are authorized for service provided they conform to all applicable safety requirements of this subchapter:

<b>Specification prescribed in the current regulations</b>	<b>Other specifications permitted</b>	<b>Notes</b>
105A200W	105A100W	1
105A200ALW	105A100ALW	1
105A300W	ICC-105, 105A300	
105A400W	105A400	
105A500W	105A500	
105A600W	105A600	
106A500X	ICC-27, BE-27, 106A500	

106A800X	106A800	
107A * * * *		2

NOTE 1: Tanks built as Specification DOT 105A100W or DOT 105A100ALW may be altered and converted to DOT 105A200W and DOT 105A200ALW, respectively.

NOTE 2: The test pressures of tanks built in the United States between January 1, 1941 and December 31, 1955, may be increased to conform to Specification 107A. Original and revised test pressure markings must be indicated and may be shown on the tank or on a plate attached to the bulkhead of the car. Tanks built before 1941 are not authorized.

(2) [Reserved]

(3) Specification DOT-113A175W, DOT-113C60W, DOT-113D60W, and DOT-113D120W tank cars may continue in use, but new construction is not authorized.

(4) Class DOT 105A and 105S tank cars used to transport hydrogen chloride, refrigerated liquid under the terms of DOT-E 3992 may continue in service, but new construction is not authorized.

(5) Specification DOT-103A-ALW, 103AW, 103ALW, 103ANW, 103BW, 103CW, 103DW, 103EW, and 104W tank cars may continue in use, but new construction is not authorized.

[Amdt. 180-8, 60 FR 49079, Sept. 21, 1995, as amended at 68 FR 48572, Aug. 14, 2003; 77 FR 37987, June 25, 2012]

**§180.509 Requirements for inspection and test of specification tank cars.**

(a) *General.* Each tank car owner must ensure that a tank car facility:

(1) Inspects and tests each item according to the requirements specified in this section;

(2) Evaluates each item according to the acceptable results of inspections and tests specified in §180.511;

(3) Marks each tank car as specified in §180.515 that is qualified to transport hazardous materials;

(4) Prepares the documentation as required by §180.517 for each item qualified under this section. A copy of the documentation required by §180.517 must be sent to the owner as appropriate and according to the owner's instructions.

(b) *Conditions requiring qualification of tank cars.* Without regard to the qualification compliance date requirements of any paragraph of this section, an owner of a tank car or an internal coating or lining must ensure an appropriate inspection and test according to the type of defect and the type of maintenance or repair performed if:

(1) The tank car shows evidence of abrasion, corrosion, cracks, dents, distortions, defects in welds, or any other condition that may make the tank car unsafe for transportation,

(2) The tank car was in an accident and shows evidence of damage to an extent that may adversely affect its capability to retain its contents or to otherwise remain railworthy.

(3) The tank bears evidence of damage caused by fire. (4) The Associate Administrator for Railroad Safety, FRA, requires it based on the existence of an objectively reasonable and articulable belief that a tank car or a class or design of tank cars may be in an unsafe operating condition.

(c) *Frequency of inspection and tests.* Each tank car shall have an inspection and test according to the requirements of this paragraph.

(1) For Class 107 tank cars and tank cars of riveted construction, the tank car must have a hydrostatic pressure test and visual inspection conforming to the requirements in effect prior to July 1, 1996, for the tank specification.

(2) For Class DOT 113 tank cars, see §173.319(e) of this subchapter.

(3) Fusion welded tank cars must be inspected and tested to be qualified and maintained in accordance with the following table. All qualification requirements need not be done at the same time or at the same facility.

**FREQUENCY OF QUALIFICATION INSPECTION AND TESTS**

<b>Section 180.509(*)</b>	<b>Description</b>	<b>Maximum interval</b>
D	Visual inspection	10 years.
E	Structural integrity inspection	10 years.
F	Thickness test	See §180.509(f).
H	Safety Systems	10 years.

I	Internal coating or lining (for materials corrosive or reactive to the tank) (See definitions at §180.503)	See §180.509(i).
J	Leakage pressure test	After reassembly.
K	Service equipment (including pressure relief device)	See §180.509(k).

(d) *Visual inspection.* At a minimum, each tank car facility must visually inspect the tank externally and internally as follows:

(1) An internal inspection of the tank shell and heads for abrasion, corrosion, cracks, dents, distortions, defects in welds, or any other condition that makes the tank car unsafe for transportation, and except in the areas where insulation or a thermal protection system precludes it, an external inspection of the tank shell and heads for abrasion, corrosion, cracks, dents, distortions, defects in welds, or any other condition that makes the tank car unsafe for transportation, and for DOT 115 class tank cars, an internal inspection of the inner container and external inspection of the outer shell and heads for defects in welds, or any other condition that may make the tank car unsafe for transportation;

(2) When an internal coating or lining, head protection, insulation, or thermal protection is removed in part or in whole, the internal and external exposed surface of the tank must be visually inspected for defects in welds or any other condition that may make the tank car unsafe for transportation, and this inspection must precede any application or reapplication of a coating or lining;

(3) An inspection of the service equipment, including gaskets, for indications of corrosion and other conditions that may make the tank car unsafe for transportation;

(4) An inspection for missing or loose bolts, nuts, or elements that may make the tank car unsafe for transportation;

(5) An inspection of all closures on the tank car for conditions that may make the tank car unsafe for transportation, including an inspection of the protective housings for proper condition;

(6) An inspection of excess flow valves with threaded seats for tightness; and

(7) An inspection of the required markings on the tank car for legibility.

(e) *Structural integrity inspections and tests.* (1) Each tank car owner must ensure the structural elements on the tank car qualify with the applicable requirements of this subchapter. At a minimum, the structural integrity inspection and test must include:

(i) All transverse fillet welds greater than 0.64 cm (0.25 inch) within 121.92 cm (4 feet) of the bottom longitudinal centerline except body bolster pad attachment welds;

(ii) The termination of longitudinal fillet welds greater than 0.64 cm (0.25 inch) within 121.92 cm (4 feet) of the bottom longitudinal centerline; and

(iii) The tank shell butt welds within 60.96 cm (2 feet) of the bottom longitudinal centerline, unless the tank car owner can determine by analysis (e.g., finite element analysis, damage-tolerance analysis, or service reliability assessment) that the structure will not develop defects that reduce the design level of safety and reliability or fail within its operational life or prior to the next required inspection. The owner must maintain all documentation used to make such determination at its principal place of business and make the data available to FRA or an authorized representative of the Department upon request.

(2) For DOT 115 class tanks, paragraphs (e)(1)(i) through (iii) of this section apply only to the outer shell fillet welds and to the non-reinforced exposed outer shell butt welds.

(3) The inspection requirements of paragraph (e)(1)(iii) of this section do not apply to reinforced tank shell butt welds until the time of lining removal or application for tank cars with an internal lead, glass, or rubber lining.

(4) Each tank car facility must inspect and test the elements identified in paragraph (e)(1) of this section by one or more of the following methods:

(i) Dye penetrant testing (PT);

(ii) Radiographic examination (RT);

(iii) Magnetic particle testing (MT);

(iv) Ultrasonic testing (UT); and

(v) Direct, remote, or enhanced visual inspection, using, for example, magnifiers, fiberscopes, borescopes, and/or machine vision technology (VT).

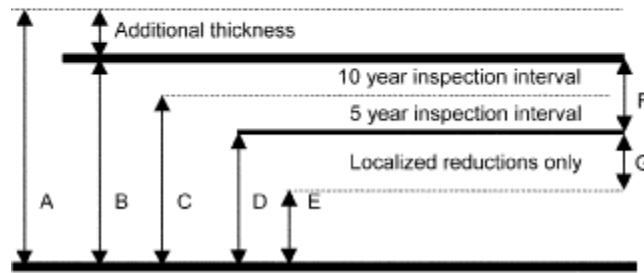
(f) *Thickness tests.* (1) The tank car owner must ensure that each tank car facility measures the thickness of the tank car shell, heads, sumps, protective housing (i.e., domes), and nozzles on each tank car by using a device capable of accurately measuring the thickness to within  $\pm 0.05$  mm ( $\pm 0.002$  inch).

(2) The tank car owner must ensure that each tank car has a thickness test measurement:



- (i) At the time of an internal coating or lining application or replacement, or
- (ii) At least once every ten (10) years for a tank that does not have an internal coating or lining, or
- (iii) At least once every five (5) years for a tank that does not have an internal coating or lining when:
  - (A) The tank is used to transport a material that is corrosive or reactive to the tank (see Appendix D of this part) or service equipment as defined §180.503, and
  - (B) The remaining shell and head thickness is tested and determined to be at or below line C in Figure A of this paragraph.

Figure A  
Tank and Shell Thickness Qualification Frequencies



Where:

- A. As-built tank shell or head thickness with additional thickness.
- B. Required minimum tank shell or head thickness after forming per part 179.
- C. Inspection frequency adjustment point (design minimum shell or head thickness, minus  $\frac{1}{2}$  of the table value in paragraph (g) of this section).
- D. Condemning limit for general corrosion (required minimum shell or head thickness, minus the value in paragraph (g) of this section).
- E. Condemning limit for localized corrosion (required minimum shell or head thickness, minus the table value in paragraph (g) of this section, minus 1.58 mm ( $\frac{1}{16}$  inch)). See Note 1 in paragraph (g) of this section for diameter limitations and minimum separation distances.
- F. Allowable shell or head thickness reduction (table value in paragraph (g) of this section).
- G. Additional thickness reduction for localized areas in paragraph (g) of this section.

(3) For a localized repair of an internal coating or lining where a material corrosive to the tank or service equipment as defined §180.503 has contacted the tank, a qualified individual must verify the coating or lining's conformance with paragraph (g) of this section by measuring the shell or head in the area of the repair. The thickness test applies only to the non-lined or coated repaired area, and is not a qualification event. Modification of the tank stencil is not required.

(4) Operation of a tank car below the condemning limit for general corrosion or the condemning limit for localized corrosion (as shown in Figure A of this section) is prohibited.

(5) For sumps, protective housing (i.e., domes), nozzles, and nozzle reinforcing pads, the tank car owner must determine if any reduction in wall thickness affects the design levels of reliability and safety built into sump, protective housing, nozzle, or nozzle reinforcement. Each tank car owner must maintain at its principal place of business documentation describing the allowable thickness reductions for sumps, protective housings, and nozzles, and nozzle reinforcements. This documentation must be made available to FRA or an authorized representative of the Department upon request.

(6) After repairs, alterations, conversions, modifications, or blasting of tank car that results in a reduction of the tank's thickness, and anytime a tank car coating or lining is removed, a qualified individual must measure the thickness of the tank in the area of reduced thickness to ensure that the thickness of the tank conforms to paragraph (g) of this section.

(g) *Service life thickness allowance.* (1) A tank car found with a thickness below the required minimum thickness after forming for its specification, as stated in part 179 of this subchapter, may continue in service if any reduction in the required minimum thickness is not more than that provided in the following table:

**ALLOWABLE SHELL THICKNESS REDUCTIONS**

<b>Marked tank test pressure</b>	<b>Top shell and tank head</b>	<b>Bottom shell</b>
60 psig <200 psig	3.17 mm 1/8 inch	1.58 mm. 1/16 inch.
≥200 psig	0.79 mm 1/32 inch	0.79 mm. 1/32 inch.

NOTE 1. A tank car owner may add an extra 1.58 mm (  $\frac{1}{16}$  inch) to the values in the table for local reductions. Local reductions are those that do not exceed 20.32 linear centimeters (8 linear inches) measured at the longest diameter, and are separated from the other local reductions by at least 40.64 cm (16 inches).

NOTE 2. Any reduction in the tank car shell thickness may not affect the structural strength of the tank car to the extent that the tank car no longer conforms to the applicable provisions of Section 6.2 of the AAR Specifications for Tank Cars (IBR, see §171.7 of this subchapter).

NOTE 3. For DOT 115 class tank cars, shell thickness reductions apply only to the outer shell of the tank car. There is no shell or head thickness reduction authorized for the inner tank.

(2) [Reserved]

(h) *Safety system inspections.* Each tank car owner must ensure qualification of the tank car safety systems. However, inspections of foam or cork insulation systems are not required.

(i) *Internal coating and lining inspection and test.* (1) At a minimum, the owner of an internal coating or lining applied to protect a tank used to transport a material that is corrosive or reactive to the tank must ensure an inspection adequate enough to detect defects or other conditions that could reduce the design level of reliability and safety of the tank is performed. In addition, the owner of a coating or lining of tank cars used to transport hazardous materials must ensure the lining complies with §173.24(b)(2) and (b)(3) of this subchapter.

(2) The owner of the internal coating or lining must establish and maintain a record of the service life of the coating or lining and commodity combination, that is, the specific hazardous materials that were loaded into a tank and the coating or lining in place at the time of loading. The owner of the internal coating or lining must use its knowledge of the service life of each coating or lining and commodity combination to establish an appropriate inspection interval for that coating or lining and commodity combination. This interval must not exceed eight (8) years, unless the coating or lining owner can establish, document, and show that the service history or scientific analysis of the coating or lining and commodity pairing supports a longer inspection interval. The owner must maintain at its principal place of business a written procedure for collecting and documenting the performance of the coating or lining applied within the tank car for its service life. The internal coating or lining owner must provide this documentation, including inspection and test, repair, removal, and application procedures, to the FRA or car owner upon request. Further, the offeror must provide commodity information to the car owner and the owner of the internal coating or lining upon request.

(3) The owner of the internal coating or lining must provide the test method and acceptance criteria to the tank car owner and to the person responsible for qualifying the coating or lining. The tank car facility inspecting and testing the internal coating or lining must follow the inspection and test procedure, including the acceptance requirements, established by the internal coating or lining owner.

(j) *Leakage pressure test.* Unless the design of the service equipment arrangement precludes it (e.g., there is no fitting to pressurize the tank), each owner of a tank car must ensure that the tank, service equipment, and closures installed, replaced, or reinstalled on the tank car are leak tested. The test may be conducted with the lading in the tank. When the test pressure exceeds the start-to-discharge or burst pressure of a pressure relief device, the device must be rendered inoperative. The written procedures and test method for leak testing must ensure the sensitivity and reliability of the test method to prevent premature failure. This section does not apply to facilities that remove closures for the sole purpose of loading or unloading the lading (e.g., blind flanges, pipe plugs, etc.).

(k) *Service equipment inspection and test.* (1) Each tank car owner must ensure the qualification of tank car service equipment at least once every ten (10) years. The tank car owner must analyze the service equipment inspection and test results for any given lading and, based on the analysis, adjust the inspection and test frequency to ensure that the design level of reliability and safety of the equipment is met. The owner must maintain at its principal place of business all supporting documentation used to make such analyses and inspection and test frequency adjustments. The supporting documentation must be made available to FRA or an authorized representative of the Department upon request.

(2) Each tank car facility must qualify service equipment, including reclosing pressure relief devices and interior heater systems in accordance with the applicable provisions of Appendix D of the AAR Specifications for Tank Cars (IBR, see §171.7 of this subchapter).

(l) *Alternative inspection and test procedures.* When approved by the Associate Administrator for Railroad Safety, FRA, a tank car owner, or a coating or lining owner may use an alternative inspection and test procedure or interval based on a damage-tolerance analysis (that must include a determination of the probable locations and modes of damage due to fatigue, corrosion, and accidental damage), or based on a service reliability assessment (that must be supported by analysis of systematically collected data) in lieu of the other requirements of this section.

(m) *Inspection and test compliance date for tank cars.* (1) After July 1, 2000, each tank car with a metal jacket or with a thermal protection system shall have an inspection and test conforming to this section no later than the date the tank car requires a periodic hydrostatic pressure test (i.e., the marked due date on the tank car for the hydrostatic test).

(2) After July 1, 1998, each tank car without a metal jacket shall have an inspection and test conforming to this section no later than the date the tank car requires a periodic hydrostatic pressure test (i.e., the marked due date on the tank car for the hydrostatic test).

(3) For tank cars on a 20-year periodic hydrostatic pressure test interval (i.e., Class DOT 103W, 104W, 111A60W1, 111A100W1, and 111A100W3 tank cars), the next inspection and test date is the midpoint between the compliance date in paragraph (l)(1) or (2) of this section and the remaining years until the tank would have had a hydrostatic pressure test.

[Amdt. 180-8, 60 FR 49079, Sept. 21, 1995, as amended by Amdt. 179-50, 61 FR 33256, June 26, 1996; 62 FR 51561, Oct. 1, 1997; 63 FR 52851, Oct. 1, 1998; 66 FR 45391, Aug. 28, 2001; 68 FR 75765, Dec. 31, 2003; 71 FR 54398, Sept. 14, 2006; 77 FR 37987, June 25, 2012]

**§180.511 Acceptable results of inspections and tests.**

Provided it conforms to other applicable requirements of this subchapter, a tank car is qualified for use if it successfully passes the inspections and tests set forth below conducted in accordance with this subpart. A representation of that qualification must consist of marking the tank in accordance with §180.515.

(a) *Visual inspection.* A tank car successfully passes the visual inspection when the inspection shows no structural defect that may cause leakage from or failure of the tank before the next inspection and test interval.

(b) *Structural integrity inspection and test.* A tank car successfully passes the structural integrity inspection and test when it shows no structural defect that may initiate cracks or propagate cracks and cause failure of the tank before the next inspection and test interval.

(c) *Service life shell thickness.* A tank car successfully passes the service life shell thickness inspection when the tank shell and heads show no thickness reduction below that allowed in §180.509(g).

(d) *Safety system inspection.* A tank car successfully passes the safety system inspection when each thermal protection system, tank head puncture resistance system, coupler vertical restraint system, and system used to protect discontinuities (e.g., breakage grooves on bottom outlets and protective housings) on the tank car conform to this subchapter and show no indication of a defect that may reduce reliability before the next inspection and test interval.

(e) *Lining and coating inspection.* A tank car successfully passes the lining and coating inspection and test when the lining or coating conforms to the owner's acceptance criteria.

(f) *Leakage pressure test.* A tank car successfully passes the leakage pressure test when all product piping, fittings and closures show no indication of leakage.

(g) *Hydrostatic test.* A Class 107 tank car, the inner tank of a Class 115 tank car, or a riveted tank car successfully passes the hydrostatic test when it shows no leakage, distortion, excessive permanent expansion, or other evidence of weakness that might render the tank car unsafe for transportation service.

(h) *Service equipment.* A tank car successfully passes the service equipment inspection and test when this equipment conforms to this subchapter and applicable provisions of Appendix D of the AAR Specifications for Tank Cars (IBR, see §171.7 of this subchapter),

and shows no indication of a defect that may reduce reliability during the qualification interval.

[Amdt. 180-8, 60 FR 49079, Sept. 21, 1995, as amended by Amdt. 179-50, 61 FR 33256, June 26, 1996; 66 FR 45187, Aug. 28, 2001; 77 FR 37990, June 25, 2012]

**§180.513 Repairs, alterations, conversions, and modifications.**

(a) To work on tank cars, a tank car facility must comply with the applicable requirements of this subpart, the AAR Specifications for Tank Cars (IBR, see §171.7 of this subchapter), and the owner's requirements.

(b) *Responsibilities of Tank Car Facility.* A tank car facility must obtain the permission of the equipment owner before performing work affecting alteration, conversion, repair, or qualification of the owner's equipment. For the purposes of qualification and maintenance, the tank car facility must use the written instructions furnished by the owner or have written confirmation from the owner allowing the use of written instructions furnished by the owner or have written confirmation from the owner allowing the use of written instructions furnished by another. A tank car facility must not use, copy distribute, forward or provide to another person the owner's confidential and proprietary written instructions, procedures, manuals, and records without the owner's permission. A tank car facility must report all work performed to the owner. The tank car facility must also report observed damage, deterioration, failed components, or non-compliant parts to the owner. A tank car facility must incorporate the owner's Quality Assurance Program into their own Quality Assurance Program.

(c) Unless the exterior tank car shell or interior tank car jacket has a protective coating, after a repair that requires the complete removal of the tank car jacket, the exterior tank car shell and the interior tank car jacket must have a protective coating applied to prevent the deterioration of the tank shell and tank jacket. Previously applied coatings that still provide effective protection need not be covered over.

(d) After repair, replacement, or qualification of tank car service equipment, the tank service equipment must successfully pass the leak test prescribed in §180.509(j).

[77 FR 37990, June 25, 2012]

**§180.515 Markings.**

(a) When a tank car passes the required inspection and test with acceptable results, the tank car facility must mark the date of the inspection and test and due date of the next inspection and test qualified on the tank car in accordance with the applicable provisions of Appendix C of the AAR Specifications for Tank Cars (IBR, see §171.7 of this subchapter). When a tank car facility performs multiple inspections and tests at the same time, one date may be used to satisfy the requirements of this section. One date also may be shown when multiple

inspections and tests have the same due date. Dates displayed on the “consolidated stencil” (see the applicable provisions of Appendix C of the AAR Specifications for Tank Cars) take precedence over dates modified, and not stenciled, pursuant to interval adjustments for service equipment, linings, and granted alternative inspection intervals.

(b) Converted DOT 105, 109, 112, 114, or 120 class tank cars must have the new specification and conversion date permanently marked in letters and figures at least 0.95 cm (0.375 inch) high on the outside of the manway nozzle or the edge of the manway nozzle flange on the left side of the car. The marking may have the last numeral of the specification number omitted (e.g., “DOT 111A100W” instead of “DOT 111A100W1”).

(c) When qualified within six months of installation and protected from deterioration, the test date marking of a reclosing pressure relief device is the installation date on the tank car.

[Amdt. 180-8, 60 FR 49079, Sept. 21, 1995, as amended by Amdt. 179-50, 61 FR 33256, June 26, 1996; 63 FR 52851, Oct. 1, 1998; 66 FR 45391, Aug. 28, 2001; 68 FR 75765, Dec. 31, 2003; 77 FR 37991, June 25, 2012]

#### **§180.517 Reporting and record retention requirements.**

(a) *Certification and representation.* Each owner of a specification tank car must retain the certificate of construction (AAR Form 4-2) and related papers certifying that the manufacture of the specification tank car identified in the documents is in accordance with the applicable specification. The builder's signature on the certificate of construction and the marking of the tank car with the tank specification is the representation that all of the appropriate inspections and tests were successfully performed to qualify the tank for use. The owner must retain the documents throughout the period of ownership of the specification tank car and for one year thereafter. Upon a change of ownership, the applicable provisions prescribed in Section 1.3.15 of the AAR Specifications for Tank Cars (IBR, see §171.7 of this subchapter) apply. The builder of the car or a facility performing work on the car may retain copies of relevant records.

(b) *Inspection and test reporting.* Each tank car that is inspected and tested as specified in §180.509 must have a written report, in English, prepared according to this paragraph. Marking the tank car with the specification (or retaining the specification marking on the tank) is the representation that all of the appropriate inspections and tests were performed and the results meet the tank car owner's acceptance criteria to qualify the car for continued use. The report may be created and retained electronically, but, upon request by FRA for a copy of the report, it must be made available in common readable form. The owner must retain a copy of the inspection and test reports until successfully completing the next inspection and test of the same type. The inspection and test report must include the following:

(1) Type of inspection and test performed (a checklist is acceptable);

- (2) The results of each inspection and test performed;
- (3) Tank car reporting mark and number;
- (4) Tank car specification;
- (5) Inspection and test date (month and year);
- (6) Location and description of defects found and method used to repair each defect;
- (7) The name and address of the tank car facility and the name and signature of inspector;  
and
- (8) The unique code (station stencil) identifying the facility.

[Amdt. 180-2, 54 FR 25032, June 12, 1989, as amended at 68 FR 75765, Dec. 31, 2003; 77 FR 37991, June 25, 2012]

**§180.519 Periodic retest and inspection of tank cars other than single-unit tank car tanks.**

(a) *General.* Unless otherwise provided in this subpart, tanks designed to be removed from cars for filling and emptying and tanks built to a Class DOT 107A specification and their safety relief devices must be retested periodically as specified in Retest Table 1 of paragraph (b)(5) of this section. Retests may be made at any time during the calendar year the retest falls due.

(b) *Pressure test.* (1) Each tank must be subjected to the specified hydrostatic pressure and its permanent expansion determined. Pressure must be maintained for 30 seconds and for as long as necessary to secure complete expansion of the tank. Before testing, the pressure gauge must be shown to be accurate within 1 percent at test measure. The expansion gauge must be shown to be accurate, at test pressure, to within 1 percent. Expansion must be recorded in cubic cm. Permanent volumetric expansion may not exceed 10 percent of total volumetric expansion at test pressure and the tank must not leak or show evidence of distress.

(2) Each tank, except tanks built to specification DOT 107A, must also be subjected to interior air pressure test of at least 100 psig under conditions favorable to detection of any leakage. No leaks may appear.

(3) Safety relief valves must be retested by air or gas, must start-to-discharge at or below the prescribed pressure and must be vapor tight at or above the prescribed pressure.

(4) Rupture discs and fusible plugs must be removed from the tank and visually inspected.



(5) Tanks must be retested as specified in Retest Table 1 of this paragraph (b)(5), and before returning to service after repairs involving welding or heat treatment:

**RETEST TABLE 1**

Specification	Retest interval—years		Minimum Retest pressure—psig		Pressure relief valve pressure—psig	
	Tank	Pressure relief devices <sup>d</sup>	Tank hydrostatic expansion <sup>c</sup>	Tank air test	Start-to-discharge	Vapor tight
DOT 27	5	2	500	100	375	300
106A500	5	2	500	100	375	300
106A500X	5	2	500	100	375	300
106A800	5	2	800	100	600	480
106A800X	5	2	800	100	600	480
106A800NCI	5	2	800	100	600	480
107A * * * * *	<sup>d</sup> 5	<sup>a</sup> 2	( <sup>b</sup> )	None	None	None
110A500-W	5	2	500	100	375	300
110A600-W	5	2	600	100	500	360
110A800-W	5	2	800	100	600	480
110A1000-W	5	2	1,000	100	750	600
BE-27	5	2	500	100	375	300

NOTES:

<sup>a</sup>If DOT 107A \* \* \* \* tanks are used for transportation of flammable gases, one rupture disc from each car must be burst at the interval prescribed. The sample disc must burst at a pressure not exceeding the marked test pressure of the tank and not less than 70 percent of the marked test pressure. If the sample disc does not burst within the prescribed limits, all discs on the car must be replaced.

<sup>b</sup>The hydrostatic expansion test pressure must at least equal the marked test pressure.

<sup>c</sup>See §180.519(b)(1).

<sup>d</sup>Safety relief valves of the spring-loaded type on tanks used exclusively for fluorinated hydrocarbons and mixtures thereof which are free from corroding components may be retested every 5 years.

(6) The month and year of test, followed by a “V” if visually inspected as described in paragraph (c) of this section, must be plainly and permanently stamped into the metal of one head or chime of each tank with successful test results; for example, 01-90 for January 1990. On DOT 107A\*\*\*\* tanks, the date must be stamped into the metal of the marked end, except that if all tanks mounted on a car have been tested, the date may be stamped into the metal of a plate permanently applied to the bulkhead on the “A” end of the car. Dates of previous tests and all prescribed markings must be kept legible.

(c) *Visual inspection.* Tanks of Class DOT 106A and DOT 110A-W specifications (§§179.300 and 179.301 of this subchapter) used exclusively for transporting fluorinated hydrocarbons and mixtures thereof, and that are free from corroding components, may be given a periodic complete internal and external visual inspection in place of the periodic hydrostatic retest. Visual inspections shall be made only by competent persons. The tank must be accepted or rejected in accordance with the criteria in CGA C-6 (IBR, see §171.7 of this subchapter).

(d) *Written records.* The results of the pressure test and visual inspection must be recorded on a suitable data sheet. Completed copies of these reports must be retained by the owner and by the person performing the pressure test and visual inspection as long as the tank is in service. The information to be recorded and checked on these data sheets are: Date of test and inspection; DOT specification number; tank identification (registered symbol and serial number, date of manufacture and ownership symbol); type of protective coating (painted, etc., and statement as to need for refinishing or recoating); conditions checked (leakage, corrosion, gouges, dents or digs, broken or damaged chime or protective ring, fire, fire damage, internal condition); test pressure; results of tests; and disposition of tank (returned to service, returned to manufacturer for repair, or scrapped); and identification of the person conducting the retest or inspection.

[Amdt. 180-8, 60 FR 49079, Sept. 21, 1995, as amended by Amdt. 179-50, 61 FR 33257, June 26, 1996; 65 FR 58633, Sept. 29, 2000; 66 FR 45187, 45392, Aug. 28, 2001; 68 FR 75765, Dec. 31, 2003]