



# PRESSURE TEST

49 CFR, 180.407(g)

Name of Owner/Carrier: \_\_\_\_\_ Test Date: \_\_\_\_\_

Address: \_\_\_\_\_

Owner Unit #: \_\_\_\_\_ Tank serial #: \_\_\_\_\_ MAWP: \_\_\_\_\_ psi

Tank manufacturer: \_\_\_\_\_ Specification: MC/DOT \_\_\_\_\_ Tank capacity: \_\_\_\_\_ gal.

Cargo Tank: Insulated:  Lined:  Lining type: \_\_\_\_\_

Tank Service: LPG  Anhydrous Ammonia  Corrosive  Dedicated  Other

Tank equipped with heating system  Heating system pressure tested

Heat system MAWP: \_\_\_\_\_ Heat system test pressure: \_\_\_\_\_ Heat system functional Yes  No

External Inspection Performed  Internal Inspection Performed

Test Method Used: Hydrostatic  Pneumatic:

Test Pressure: \_\_\_\_\_ psig. held for: \_\_\_\_\_ min. (*Must be at least 10 min.*)

ITEMS	COMPLIANCE	DEFECT
Visual Inspection of Re-closing Pressure Relief Valves		
Removal and Testing of Re-closing Pressure Relief Valves		
Visual Inspection of Upper Coupler		
Signs of Leakage Bulging or Other Defects		
Pressure Bearing Portions of Cargo Tank Heating System		

Cargo Tank continued qualification:  Returned to service  Withdrawn from service

Inspector's Name: \_\_\_\_\_ CT Registration #: \_\_\_\_\_

Inspector's Address: \_\_\_\_\_

I CERTIFY THAT THE INSPECTION/ TEST NOTED ON THIS FORM WAS PERFORMED BY ME AND ALL REQUIRED ENTRIES WERE PROPERLY RECORDED.

Inspector's Signature \_\_\_\_\_ Date \_\_\_\_\_

Owner of Authorized Representative's Signature \_\_\_\_\_ Date \_\_\_\_\_

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**(g) Pressure test.**

All components of the cargo tank wall, as defined in § 178.320(a) of this subchapter, must be pressure tested as prescribed by this paragraph.

(1) Test Procedure—

- (i) As part of the pressure test, the inspector must perform an external and internal visual inspection, except that on an MC 338 cargo tank, or a cargo tank not equipped with a manhole or inspection opening, an internal inspection is not required.
- (ii) All self-closing pressure relief valves, including emergency relief vents and normal vents, must be removed from the cargo tank for inspection and testing.
  - (A) Each self-closing pressure relief valve that is an emergency relief vent must open at no less than the required set pressure and no more than 110 percent of the required set pressure, and must reseal to a leak-tight condition at no less than 90 percent of the start-to-discharge pressure or the pressure prescribed for the applicable cargo tank specification.
  - (B) Normal vents (1 psig vents) must be tested according to the testing criteria established by the valve manufacturer.
  - (C) Self-closing pressure relief devices not tested or failing the tests in (g) (1) (ii) must be repaired or replaced.
- (iii) Except for cargo tanks carrying lading corrosive to the tank, areas covered by the upper coupler (fifth wheel) assembly must be inspected for corroded and abraded areas, dents, distortions, defects in welds, and any other condition that might render the tank unsafe for transportation service. The upper coupler (fifth wheel) assembly must be removed from the cargo tank for this inspection.
- (iv) Each cargo tank must be tested hydrostatically or pneumatically to the internal pressure specified in the following table. At no time during the pressure test may a cargo tank be subject to pressures that exceed those identified in the following table:

Specification	Test Pressure
MC 300, 301, 302, 303, 305, 306.	20.7 kPa (3 psig) or design pressure, whichever is greater.
MC 304, 307.	275.8 kPa (40 psig) or 1.5 times the design pressure, whichever is greater.
MC 310, 311, 312.	20.7 kPa (3 psig) or 1.5 times the design pressure, whichever is greater.
MC 330, 331.	1.5 times either the MAWP or the re-rated pressure, whichever is applicable.
MC 338	1.25 times either the MAWP or the re-rated pressure, whichever is applicable.
DOT 406.	34.5 kPa (5 psig) or 1.5 times the MAWP, whichever is greater.
DOT 407.	275.8 kPa (40 psig) or 1.5 times the MAWP, whichever is greater.
DOT 412.	1.5 times the MAWP.

(v) Reserved

(vi) Each cargo tank of a multi-tank cargo tank motor vehicle must be tested with the adjacent cargo tanks empty and at atmospheric pressure.

(vii) All closures except pressure relief devices must be in place during the test. All prescribed loading and unloading venting devices rated at less than test pressure may be removed during the test. If retained, the devices must be rendered inoperative by clamps, plugs, or other equally effective restraining devices. Restraining devices may not prevent detection of leaks or damage the venting devices and must be removed immediately after the test is completed.

(viii) **Hydrostatic test method.** Each cargo tank, including its domes, must be filled with water or other liquid having similar viscosity, at a temperature not exceeding 100 °F. The cargo tank must then be pressurized to not less than the pressure specified in paragraph (g) (1) (iv) of this section. The cargo tank, including its closures, must hold the prescribed test pressure for at least 10 minutes during which time it shall be inspected for leakage, bulging or any other defect.

- (ix) **Pneumatic test method.** Pneumatic testing may involve higher risk than hydrostatic testing. Therefore, suitable safeguards must be provided to protect personnel and facilities should failure occur during the test. The cargo tank must be pressurized with air or an inert gas. The pneumatic test pressure in the cargo tank must be reached by gradually increasing the pressure to one-half of the test pressure. Thereafter, the pressure must be increased in steps of approximately one-tenth of the test pressure until the required test pressure has been reached. The test pressure must be held for at least 5 minutes. The pressure must then be reduced to the MAWP, which must be maintained during the time the entire cargo tank surface is inspected. During the inspection, a suitable method must be used for detecting the existence of leaks. This method must consist either of coating the entire surface of all joints under pressure with a solution of soap and water, or using other equally sensitive methods.
- (2) When testing an insulated cargo tank, the insulation and jacketing need not be removed unless it is otherwise impossible to reach test pressure and maintain a condition of pressure equilibrium after test pressure is reached, or the vacuum integrity cannot be maintained in the insulation space. If an MC 338 cargo tank used for the transportation of a flammable gas or oxygen, refrigerated liquid is opened for any reason, the cleanliness must be verified prior to closure using the procedures contained in § 178.338–15.
- (3) Each MC 330 and MC 331 cargo tank constructed of quenched and tempered steel in accordance with Part UHT in Section VIII of the ASME Code or constructed of other than quenched and tempered steel but without post weld heat treatment, used for the transportation of anhydrous ammonia or any other hazardous materials that may cause corrosion stress cracking, must be internally inspected by the wet fluorescent magnetic particle method immediately prior to and in conjunction with the performance of the pressure test. Each MC 330 and MC 331 cargo tank constructed of quenched and tempered steel in accordance with Part UHT in Section VIII of the ASME Code and used for the transportation of liquefied petroleum gas must be internally inspected by the wet fluorescent magnetic particle method immediately prior to and in conjunction with the performance of the pressure test. The wet fluorescent magnetic particle inspection must be in accordance with Section V of the ASME Code and CGA Technical Bulletin TB-2. This paragraph does not apply to cargo tanks that do not have manholes. (See 180.417(c) for reporting requirements.)
- (4) All pressure bearing portions of a cargo tank heating system employing a medium such as, but not limited to, steam or hot water for heating the lading must be hydrostatically pressure tested at least once every 5 years. The test pressure must be at least the maximum system design operating pressure and must be maintained for five minutes. A heating system employing flues for heating the lading must be tested to ensure against lading leakage into the flues or into the atmosphere.
- (5) Exceptions.
- (i) Pressure testing is not required for MC 330 and MC 331 cargo tanks in dedicated sodium metal service.
  - (ii) Pressure testing is not required for uninsulated lined cargo tanks, with a design pressure or MAWP of 15 psig or less, which receive an external visual inspection and a lining inspection at least once each year.
- (6) Acceptance criteria. A cargo tank that leaks, fails to retain test pressure or pneumatic inspection pressure, shows distortion, excessive permanent expansion, or other evidence of weakness that might render the cargo tank unsafe for transportation service, may not be returned to service, except as follows:  
A cargo tank with a heating system which does not hold pressure may remain in service as an unheated cargo tank if:
- (i) The heating system remains in place and is structurally sound and no lading may leak into the heating system, and
  - (ii) The specification plate heating system information is changed to indicate that the cargo tank has no working heating system.
- (7) The inspector must record the results of the pressure test as specified in § 180.417(b)