



Hydrostatic Testing For Large Dry Chemical Containers

Considerable confusion and questions have arisen with respect to hydrostatic test intervals for large dry chemical containers. It is the intent of this bulletin to address such questions and to recommend procedures for accomplishing such testing.

For large dry chemical containers of 150 pounds (68 kg) (nominal) capacity or greater, there is no nationally recognized standard which requires mandatory hydrostatic test intervals. The National Fire Protection Association Technical Committee for Dry Chemical Systems is the only standards making body which addresses this question. NFPA Standard No. 17 (Dry Chemical Systems) deals with the subject as follows:

“2-12; The following parts of dry chemical systems with dry chemical containers of less than 150 pounds (68 kg) nominal capacity (based on sodium bicarbonate agent) shall be hydrostatically tested at an interval not to exceed twelve years: dry chemical containers, auxiliary pressure containers, valve assemblies, hoses and fittings (not including field piping), check valves, directional valves, manifolds, and hose nozzles. The procedures shall be those approved by a laboratory for each type of equipment.

- a. The dry chemical removed from the container prior to testing shall be discarded.
- b. Care shall be exercised to make certain that all equipment tested is thoroughly dried prior to recharging.
- c. To protect the hazard during this operation, if there is no automatic connected reserve, alternative protection acceptable to the authority having jurisdiction shall be provided.

2-11.3.1 (e); When semiannual maintenance of any dry chemical containers or system components reveals conditions such as but not limited to corrosion or pitting in excess of manufacturer's limits, structural damage or fire damage, repairs by soldering, welding or brazing, the affected part(s) shall be replaced or hydrostatically tested in accordance with the recommendations of the manufacturer or the original certifying agency or both. The hydrostatic testing of dry chemical containers shall follow the applicable procedures outlined in 2-12.”

All pressure vessels of 150 pound (68 kg) nominal dry chemical capacity and larger that are manufactured by Johnson Controls are constructed in accordance with Section VIII, Division I, of the ASME Rules for Construction of Pressure Vessels. Although constructed to the above specifications, the 150 and 350 units do not carry ASME certification and, therefore, fall under Underwriters Laboratories, Inc. requirements for the original factory hydrostatic test pressure of 600 psi (41.36 bar).

In general, all pressure vessels larger than 350 pounds (159 kg) chemical capacity do carry ASME certification. They are designed for a maximum working pressure of 250 psi (17.23 bar), an operating pressure of 220 psi (15.16 bar) and have an original factory hydrostatic test pressure of 440 psi (30.33 bar). Exceptions include some units designed for military use and occasionally, units designed specifically to a given set of customer specifications. In such cases, however, the original factory hydrostatic test pressure is 175% of the maximum working pressure stamped on the pressure vessel.

From these excerpts taken from NFPA Standard 17, you will note that there are circumstances whereby hydrostatic testing of dry chemical system components is required. With the exception of ASME certified main dry chemical containers, such testing may be accomplished by any qualified agency.

For main dry chemical containers greater than 350 pounds (159 kg) capacity, it is necessary that the pressure vessel be re-certified prior to being placed back into service. To accomplish re-certification it is necessary that hydrotesting be done by, or in the presence of, a certified inspector who holds a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors. Such certification and testing can be accomplished by returning the pressure vessel to the manufacturer testing location. In most cases, however, it will be more economical to have such testing done on a local basis. Your State Boiler Inspection Agency, a Division of the Department of Labor and Industry, can advise you on the logistics of accomplishing such testing.

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