

design, fabrication, and installation practices comply with the requirements of this code. [NFPA 54:8.1.1.1]

1213.1.2 Inspection shall consist of visual examination during or after manufacture, fabrication, assembly, or pressure tests; as appropriate. Supplementary types of non-destructive inspection techniques, such as magnetic particle, radiographic, and ultrasonic; shall not be required unless specifically listed herein or in the engineering design. [NFPA 54:8.1.1.2]

1213.1.3 Where repairs or additions are made following the pressure test, the affected piping shall be tested. Minor repairs and additions are not required to be pressure-tested, provided that the work is inspected and connections are tested with a noncorrosive leak-detecting fluid or other leak-detecting methods approved by the Authority Having Jurisdiction. [NFPA 54:8.1.1.3]

1213.1.4 Where new branches are installed from the point of delivery to new appliances, only the newly installed branches shall be required to be pressure tested. Connections between the new piping and the existing piping shall be tested with a noncorrosive leak-detecting fluid or approved leak-detecting methods. [NFPA 54:8.1.1.4]

1213.1.5 A piping system shall be tested as a complete unit or in sections. Under no circumstances shall a valve in a line be used as a bulkhead between gas in one section of the piping system and test medium in an adjacent section, unless two valves are installed in series with a pressure indicating valve located between these valves. A valve shall not be subjected to the test pressure, unless it can be determined that the valve, including the valve-closing mechanism, is designed to safely withstand the pressure. [NFPA 54:8.1.1.5]

1213.1.6 Regulator and valve assemblies fabricated independently of the piping system in which they are to be installed shall be permitted to be tested with inert gas or air at the time of fabrication. [NFPA 54:8.1.1.6]

1213.1.7 Test Medium. The test medium shall be air, nitrogen, carbon dioxide, or an inert gas. OXYGEN SHALL NEVER BE USED. [NFPA 54:8.1.2]

1213.2 Test Preparation.

1213.2.1 Pipe joints, including welds, shall be left exposed for examination during the test. [NFPA 54:8.1.3.1]

Exception: Covered or concealed pipe end joints that have been previously tested in accordance with this code.

1213.2.2 Expansion joints shall be provided with temporary restraints, if required for the additional thrust load under test. [NFPA 54:8.1.3.2]

1213.2.3 Appliances and equipment that are not to be included in the test shall be either disconnected from the piping or isolated by blanks, blind flanges, or caps. Flanged joints at which blinds are inserted to blank off other equipment during the test shall not be required to be tested. [NFPA 54:8.1.3.3]

1213.2.4 Where the piping system is connected to appliances, equipment, or equipment components designed for operating pressures of less than the test pressure, such appliances, equipment, or equipment components shall be isolated from the piping system by disconnecting them and capping the outlets. [NFPA 54:8.1.3.4]

1213.2.5 Where the piping system is connected to appliances, equipment, or equipment components designed for operating pressures equal to or exceeding the test pressure, such appliances shall be isolated from the piping system by closing the individual appliance equipment shutoff valves. [NFPA 54:8.1.3.5]

1213.2.6 Testing of piping systems shall be done with due regard for the safety of employees and the public during the test. Bulkheads, anchorage, and bracing suitably designed to resist test pressures shall be installed if necessary. Prior to testing, the interior of the pipe shall be cleared of foreign material. [NFPA 54:8.1.3.6]

1213.3 Test Pressure.

1213.3.1 Test pressure shall be measured with a manometer or with a pressure-measuring device designed and calibrated to read, record, or indicate a pressure loss due to leakage during the pressure test period. The source of pressure shall be isolated before the pressure tests are made. Mechanical gauges used to measure test pressures shall have a range such that the highest end of the scale does not exceed five times the test pressure. [NFPA 54:8.1.4.1]

1213.3.2 The test pressure to be used shall be not less than one and one-half times the proposed maximum working pressure, but not less than 21kPa (3 psi), irrespective of design pressure. [NFPA 54:8.1.4.2]

1213.3.3 Test duration shall be not less than one-half hour for each 14m³ (500 ft.³) of pipe volume or fraction thereof. When testing a system having a volume less than 0.3m³ (10 ft.³), or a system in a single-family dwelling, the test duration shall be not less than 10 minutes. The