

Basis of Design

This section applies to pressure testing of plumbing piping systems.

Design Evaluation

The following information is required to evaluate the design:

- Design Development Phase: Provide an outline specification of plumbing pipe pressure testing.
- Construction Document Phase: Provide a final specification of plumbing pipe pressure testing.

Construction Submittals

- Not applicable.

Related Sections

- Facilities Services Design Guide – Mechanical - Piping, Valves & Accessories
- Facilities Services Design Guide – Mechanical - Commissioning

Products, Material and Equipment

- Provide industry standard test apparatus.

Installation, Fabrication and Construction

General

- Pressure test all piping.
- Demonstrate to an Owner witness that the piping passes the following pressure tests before it is insulated or covered by walls or ceilings. Test piping after all fittings and valves for that portion of the piping have been installed.
- All pressure testing shall be witnessed and documented with results approved and signed off by a University representative.
- Repair leaks discovered during pressure testing. Retest failed sections of piping to demonstrate satisfactory results.
- Maintain a set of drawings for recording and sign-off of each tested section.
- After each day of testing, submit to the Owner a copy of the paperwork recording the raw test data, designating the piping system and Pipe Code, and comparing the allowable and actual results.

Pipe Testing Methods

- Hydrostatic pressure testing: Use clean, fresh city water for test. On compressed gas piping, remove water from piping systems after testing and dry by blowing dry, oil-free air or nitrogen through lines.
- Pneumatic pressure testing: Perform testing with dry, oil-free air or nitrogen on piping systems.
- The following table lists typical piping systems and the corresponding recommended test method and test pressure.

Piping System	Pipe Code	Test Method	Test Pressure, lb/in2 gage
Acid Resistant Vent	P-3	Hydrostatic	(1)
Acid Resistant Waste	P-3	Hydrostatic	(1)
Carbon Dioxide	P-1	Pneumatic	1.5 x max. (2)
Coil Condensate	P-1	Hydrostatic	60
Compressed Air (Laboratory)	P-1	Pneumatic	150
Compressed Air (Pneumatic)	P-1	Pneumatic	150
Fire Protection	P-10	(3)	(3)
Helium Recovery	P-1	Pneumatic	1.5 x max. (2)
Irrigation	P-1	Hydrostatic	150
Laboratory Cold Water	P-1	Hydrostatic	150
Laboratory Hot Water	P-1	Hydrostatic	150
Laboratory Hot Water Circulation	P-1	Hydrostatic	150
Laboratory Vacuum	P-1	Pneumatic	100
Lake Water	P-9	Hydrostatic	1.5 x max. (2)
Medical Gas	P-8	Pneumatic (4)	(4)
Medical Vacuum	P-8	Pneumatic (4)	(4)
Natural Gas	P-5	Pneumatic (4)	8
Nitrogen	P-1	Pneumatic	1.5 x max. (2)
Oxygen	P-8	Pneumatic (4)	(4)
Potable Cold Water	P-1	Hydrostatic	150
Potable Hot Water	P-1	Hydrostatic	150
Potable Hot Water Circulation	P-1	Hydrostatic	150
Propane	P-5	Pneumatic	8
Reverse Osmosis/De-ionized Water (High Purity)	P-6	Hydrostatic	150
Roof Drain	P-2	Hydrostatic	(1)
Sanitary Vent	P-2	Hydrostatic	(1)
Sanitary Sewer	P-2	Hydrostatic	(1)
Sea Water	P-9	Hydrostatic	1.5 x max. (2)
Storm Drain	P-2	Hydrostatic	(1)
Tempered Water (Safety Shower/Eyewash)	P-1	Hydrostatic	150
Trap Primer	P-1	Hydrostatic	150

Piping System	Pipe Code	Test Method	Test Pressure, lb/in² gage
Well Water	P-9	Hydrostatic	1.5 x max. (2)

Notes:

- (1) In accordance with UPC – Min. 10 ft. head.
- (2) 1.5 x Maximum Operating Pressure.
- (3) Refer to NFPA and Environmental, Health & Safety - Fire Protection System section for information.
- (4) Refer to NFPA for additional information.

END OF DESIGN GUIDE SECTION