

(16) **VETRIFIED CLAY PIPE.** Joints between vitrified clay pipe or fittings shall be made by use of an elastomeric seal conforming to ASTM C425.

(17) **JOINTS BETWEEN PIPE AND FITTINGS OF DIFFERENT MATERIALS.** (a) *General.* Joints between different piping materials shall be made with a mechanical joint of the compression or mechanical sealing type, unless otherwise permitted in this chapter.

1. Connectors of adaptors shall have an elastomeric seal conforming to ASTM C425, ASTM C443, ASTM C564, ASTM D1869 or ASTM F477.

2. Joints shall be installed in accordance with the department approval and the manufacturer's instructions.

3. Joints and connections between different piping materials in the water supply system shall be accessible.

(b) *Copper or copper alloy pipe to cast iron hub pipe.* Joints between copper or copper alloy pipe and cast iron hub pipe shall be made by use of a brass ferrule. The copper or copper alloy tubing shall be properly soldered to the ferrule, and the ferrule shall be joined to the cast iron hub by a caulked joint or mechanical compression joint. If the tubing and ferrule are part of a water supply system, a lead-free solder and, when required, a lead-free flux shall be used to make the joint. Lead-free shall mean a chemical composition equal to or less than 0.2% of lead.

(c) *Copper or copper alloy pipe to galvanized steel pipe.* Joints between copper or copper alloy pipe and galvanized steel pipe shall be made by the use of a brass converter fitting or dielectric fitting. The copper tubing shall be properly soldered to the fitting, and the fitting shall be screwed to the threaded pipe. If the tubing and fitting are part of a water supply system, a lead-free solder and, when required, a lead-free flux shall be used to make the joint. Lead-free shall mean a chemical composition equal to or less than 0.2% of lead.

(d) *Cast iron pipe to steel, black iron or brass pipe.* Joints between cast iron and galvanized or nongalvanized steel, black iron or brass pipe shall be made by means of either caulked or threaded joints, or by the use of an approved adapter fitting.

(e) *Plastic pipe or tubing to other piping material.* Joints between different grades of plastic pipe, or between plastic pipe and other piping material shall be made by the use of a threaded fitting or an approved adapter fitting. Joints between plastic pipe and cast iron pipe shall be made by a caulked joint or an approved mechanical compression joint.

(f) *Lead pipe to other piping material.* Joints between lead pipe and other piping material shall be made by wiped joint to a caulking ferrule, soldering nipple, bushing or by use of an approved adapter fitting.

(18) **PROHIBITED JOINTS AND CONNECTIONS.** Unless otherwise approved by the department, the types of joints and connections specified in pars. (a) to (e) shall be prohibited:

- (a) Cement or concrete joints;
- (b) Mastic or hot pour bituminous joints;
- (c) The use of fittings not approved for the specific type of installation;
- (d) Elastomeric rolling O-rings between different diameter pipe; and

(e) Solvent cement joints between different types of plastic pipe.

(19) CONNECTION OF FIXTURES. (a) *Flanged drain connections*. 1. Floor outlet fixtures. Connections between the drain system and floor outlet, flanged fixtures with integral traps shall be made by the use of a closet flange. The flange shall be joined to the drain and fastened to the structure. The fixture shall be fastened with brass bolts or other approved materials to the closet flange and the joint shall be sealed with an approved elastomeric gasket or setting compound conforming to FS TT-P-1536a.

2. Floor mounted, wall outlet fixtures. Connections between the drain system and floor mounted, wall outlet, flanged fixtures with integral traps shall be made as specified for floor outlet fixtures in subd. 1. or by the use of an approved carrier type fitting and gasket or seal.

3. Wall mounted, wall outlet fixtures. Connections between the drainage system and wall mounted, wall outlet, flanged fixtures with integral traps shall be made by the use of an approved carrier type fitting and gasket or seal.

(b) *Drain slip joints*. 1. Slip joints for drain piping and fittings shall be made by the use of an approved plastic or metal slip joint gasket. Slip joints may be used on the trap inlet, trap outlet or within the trap seal.

2. An access panel, utility space or other convenient access shall be provided to fixtures with concealed slip joint connections so as to make the connection accessible for inspection and repair.

(c) *Ground joints*. Brass or copper ground faced ferrule type connections which allow adjustment of tubing but provide a rigid joint when made up may be used on a fixture water supply and on the discharge side of a brass tube trap, but may not be concealed.

(d) *Ground faced unions*. Ground faced unions of drainage pattern may be used in waste piping but may not be concealed.

(20) EXPANSION JOINTS. Expansion joint fittings shall be of an approved type for the piping material being joined.

History: Cr. Register, February, 1985, No. 350, eff. 3-1-85.

ILHR 84.50 Alternate, experimental materials and engineered plumbing systems. (1) **ALTERNATE AND EXPERIMENTAL MATERIALS.** The provisions of chs. ILHR 82 to 84 are not intended to prevent the use of any alternate plumbing material or alternate method of plumbing installation provided the alternative has been first approved by the department. The department shall review and make a determination on an application for approval of alternate and experimental materials or methods within 3 months of receipt of all information required to complete the review.

(a) The department may approve an alternative provided it complies with the intent of chs. ILHR 82 to 84.

(b) The department shall require that sufficient evidence or data be submitted to substantiate any claims that may be made regarding the alternate materials or method of installation.

(c) An alternate material submitted for approval shall be at least equivalent to standards specified in this chapter for the intended use.

Alternate methods of installation submitted for approval shall conform to acceptable nationally recognized plumbing standards.

1. Tests for alternate materials and methods of installation shall be made in accordance with standards or procedures specified by the department.

2. The department may require tests to be made or repeated if, at any time, there is reason to believe that an alternate material no longer conforms to the requirements on which its approval was based.

(2) **ENGINEERED PLUMBING SYSTEMS.** The provisions of this subsection shall control the design, installation and supervision of the engineered plumbing systems.

(a) *Plans and specifications.* Plans and specifications for all engineered plumbing systems shall be submitted in accordance with s. ILHR 82.20.

1. The plans, specifications and all pertinent data shall indicate the nature and extent of the proposed system before an approval is granted.

2. Plans, specifications and data shall include complete plans indicating the fixture arrangements and the locations of drain stacks, vertical drain pipes and horizontal drains. Plans shall show the complete drain and vent systems, showing all piping in proper sequence, identifying the load value of each in drainage fixture units, the direction of flow, pipe size, grade of horizontal piping, support, and the supply fixture unit load for the water system and any branch supplies which serve more than one plumbing fixture, appliance or hose outlet.

4. When requested, additional details and data pertaining to the design, installations and materials of an engineered plumbing system shall be submitted to the department.

(b) *Inspections.* The registered architect, engineer, plumbing designer or master plumber responsible for the design of the engineered plumbing system shall provide on-site supervision of the installation.

1. Upon completion of the installation, the registered architect, engineer, plumbing designer or master plumber shall certify in writing to the department that the installation is in compliance with the approved plans, specifications and data.

2. The department may require periodic inspections of the system by the registered architect, engineer, plumbing designer or master plumber after the installation is completed to monitor the performance of the system.

Note: See Appendix for further explanatory material.

History: Cr. Register, February, 1985, No. 350, eff. 3-1-85; reprinted to restore dropped copy in (1), Register, August, 1985, No. 356.

ILHR 84.60 Incorporation of standards by reference. (1) **CONSENT.** Pursuant to s. 227.025, Stats., the attorney general and the revisor of statutes have consented to the incorporation by reference of the standards listed in sub. (4).

(2) **COPIES.** Copies of the adopted standards are on file in the offices of the department, the secretary of state and the revisor of statutes. Copies also may be purchased through the respective organizations.

(3) **INTERIM AMENDMENTS.** Interim amendments of the adopted standards shall have no effect in the state until such time as this section is correspondingly revised to reflect the changes.

(4) **ADOPTION OF STANDARDS.** The following standards are hereby incorporated by reference into this chapter.

History: Cr. Register, February, 1985, No. 350, eff. 3-1-85.

AHAM	Association of Home Appliance Manufacturers 20 North Wacker Drive Chicago, Illinois 60606
Standard Reference Number	Title
DW-1-82	Household Dishwashers
ANSI	American National Standards Institute, Inc. 1430 Broadway New York, New York 10018
Standard Reference Number	Title
A112.6.1M-79	Supports for Off-the-Floor Plumbing Fixtures for Public Use
A112.14.1-75	Backwater Valves
A112.18.1M-79	Finished and Rough Brass Plumbing Fixture Fittings
A112.19.1M-79	Enameled Cast Iron Plumbing Fixtures
A112.19.2M-82	Vitreous China Plumbing Fixtures
A112.19.3-76	Stainless Steel Plumbing Fixtures (Designed for Residential Use)
A112.19.4-77	Porcelain Enameled Formed Steel Plumbing Fixtures
A112.19.5-79	Trim for Water Closet Bowls, Tanks and Urinals (Dimensional Standards)
A112.21.1M-80	Floor Drains
A112.21.2-71	Roof Drains
A112.26.1- 69(R1975)	Water Hammer Arrestors
B1.20.1-83	Pipe Threads, General Purpose (Inch)
B16.3-77	Malleable Iron Threaded Fittings, Class 150 and 300
B16.4-77	Cast Iron Threaded Fittings, Class 125 and 250
B16.9-78	Factory-Made Wrought Steel Buttwelding Fittings
B16.11-80	Forged Steel Fittings, Socket-Welded and Threaded
B16.12-83	Cast Iron Threaded Drainage Fittings
B16.15-78	Cast Bronze Threaded Fittings, Class 125 and 250
B16.18-78	Cast Copper Alloy Solder-Joint Pressure Fittings
B16.22-80	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings

Standard Reference Number	Title
B16.23-76	Cast Copper Alloy Solder Joint Drainage Fittings (DWV)
B16.26-83	Cast Copper Alloy Fittings for Flared Copper Tubes
B16.28-78	Wrought Steel Buttwelding Short Radius Elbows and Returns
B16.29-80	Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings (DWV)
B16.32-79	Cast Copper Alloy Solder Joint Fittings for Solvent Drainage Systems
B16.43-82	Wrought Copper and Copper Alloy Solder Joint Fittings for Solvent Drainage Systems
Z21.22-79	Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems
Z124.1-80	Plastic Bathtub Units
Z124.2-80	Plastic Shower Receptors and Shower Stalls
Z124.3-80	Plastic Lavatories
Z124.4-83	Plastic Water Closet Bowls and Tanks