

(c) *Bidets*. Vitreous china bidets shall conform to the material requirements in ANSI A112.19.2M.

1. A bidet may not be located closer than 15 inches from its center to any side wall, partition, vanity or other obstruction, nor closer than 30 inches center to center from a water closet.

2. Bidets with submerged inlet fittings shall be protected by vacuum breakers which conform to ASSE 1001.

(d) *Dishwashing machines*. 1. Residential type dishwashing machines shall conform to ASSE 1006.

2. Commercial type dishwashing machines shall conform to ASSE 1004.

(e) *Drinking fountains*. 1. Drinking fountains and water coolers shall conform to AR1 1010 or ANSI A112.19.2M.

2. Drinking fountains may not be installed in toilet rooms.

3. The water supply for drinking fountains shall be provided with an adjustable valve fitted with a loose key or an automatic self-closing valve permitting regulation of the rate of flow of water. The water supply issuing from the nozzle shall be of sufficient volume and height so that persons using the fountain need not come in direct contact with the nozzle or orifice.

4. A drinking fountain may not have a waste outlet less than 1-1/4 inches in diameter.

(f) *Floor drains*. 1. Floor drains shall be provided with removable strainers of sufficient strength to carry the anticipated loads.

2. The floor drain shall be so constructed that it can be cleaned, and the drain inlet shall be accessible at all times.

3. Floor drains shall be of a size to efficiently serve the intended purpose. The floor drain outlet shall not be less than 2 inches in diameter.

(g) *Food waste grinders*. 1. Residential type food waste grinders shall conform to ASSE 1008. Commercial type food waste grinders shall conform to ASSE 1009.

2. Food waste grinders shall be connected to a drain of sufficient size to serve the unit, but not less than 1-1/2 inches in diameter.

3. Food waste grinders shall be connected to a drain and trapped separately from any other fixtures or sink compartments.

4. All food waste grinders shall be provided with an adequate supply of cold water at a sufficient flow rate to insure proper functioning of the unit.

(h) *Laundry trays*. Each compartment of a laundry tray shall be provided with a waste outlet not less than 1-1/2 inches in diameter.

(i) *Lavatories*. 1. a. Enameled cast iron lavatories shall conform to ANSI A112.19.1M.

b. Vitreous china lavatories shall conform to ANSI A112.19.2M.

c. Stainless steel lavatories shall conform to ANSI A112.19.3.

d. Porcelain enameled formed steel lavatories shall conform to ANSI A112.19.4.

e. Plastic lavatories shall conform to ANSI Z124.3.

2. Cultured marble vanity tops with an integral lavatory shall conform to ANSI Z124.3.

3. Lavatories shall have waste outlets not less than 1-1/4 inches in diameter.

(j) *Showers.* 1. Prefabricated plastic showers and shower compartments shall conform to ANSI Z124.2.

2. Water distribution piping from the shower valve to the shower head outlet shall be securely attached to the structure.

3. Except for combination bathtub-shower units, waste outlets serving showers shall be at least 2 inches in diameter and shall have removable strainers of sufficient strength for the anticipated loads.

4. Where a waste outlet serves more than one shower space or shower head, the waste outlet shall be at least 2 inches in diameter and the waste outlet shall be so located and the floor so pitched that waste water from one shower does not flow over the floor area serving another shower.

Note: Section ILHR 52.60 (5) (a) specifies slip-resistant requirements for shower rooms and compartments in public buildings and places of employment.

5. All shower compartments, regardless of shape, shall have a minimum finished interior of 900 square inches and shall be capable of encompassing a circle with a diameter of 30 inches. The minimum required area and dimension shall be measured in a horizontal plane 24 inches above the top of the threshold and may not extend beyond the centerline of the threshold. The minimum area and dimensions shall be maintained to a point 70 inches above the shower waste outlet with no protrusions other than the fixture valve or valves, showerheads, soap dishes and safety grab bars or rails.

Note: See Appendix for further explanatory materials.

(k) *Sinks.* 1. a. Enameled cast iron sinks shall conform to ANSI A112.19.1M.

b. Vitreous china sinks shall conform to ANSI A112.19.2M.

c. Stainless steel sinks shall conform to ANSI A112.19.3.

d. Porcelain enameled formed steel sinks shall conform to ANSI A112.19.4.

2. Sinks shall be provided with waste outlets not less than 1½ inches in diameter. Sinks on which a food grinder is installed shall have a waste opening not less than 3¼ inches in diameter.

(l) *Urinals.* 1. Vitreous china urinals shall conform to ANSI A112.19.2M.

2. A urinal may not be located closer than 16 inches from its center to any side wall, partition, vanity or other obstruction, nor closer than 30 inches center to center, between urinals. When the space between stall type urinals or a stall type urinal and a side wall is less than 12 inches, the

use or consumption may not be installed downstream of the introduction of an unlisted water treatment compound.

5. Water treatment devices designed for contaminated water supplies shall be labeled to identify the following information:

- a. The name of the manufacturer of the device;
- b. The device's trade name; and
- c. The device's model number.

(p) *Other plumbing fixtures, appliances and equipment.* Plumbing fixtures, appliances and equipment not specifically covered in this subsection shall conform to the applicable performance standards of this chapter and chs. ILHR 82 and 83.

(6) FAUCETS, SPOUTS AND FIXTURE SUPPLY CONNECTORS. (a) Except for circular and semi-circular wash fountains, all faucets and showerheads shall conform to ANSI A112.18.1M.

(b) Circular and semi-circular wash fountains shall conform to the working pressure, burst pressure, discharge rate and product marking requirements of ANSI A112.18.1M.

(c) All fixture supply connectors shall be designed and constructed to withstand a minimum pressure of 100 psig at 180°F.

(d) Flexible hose and spray assemblies for residential sinks shall conform to ASSE 1025.

(e) Hand held showers shall conform to ASSE 1014.

History: Cr. Register, May, 1988, No. 389, eff. 6-1-88; r. (5) (m) 2. to 5., cr. (5) (m) 2. and 3., renum. (5) (m) 7. and 8. to be (5) (m) 4. and 5., Register, March, 1991, No. 423, eff. 4-1-91.

ILHR 84.30 Plumbing materials. (1) GENERAL. When selecting the material and size for a plumbing system, due consideration shall be given to the soil, liquid, and atmospheric environments that will eventually surround the plumbing system.

(a) The bending or offsetting of flexible or annealed pipe or tubing shall be in accordance with the applicable material standard or the instructions of the manufacturer of the pipe or tubing.

(b) Pipe or tubing with gouges, cuts or deep scratches may not be installed.

(c) Pipe or tubing which has been kinked may not be installed.

(d) The bending or offsetting of rigid pipe shall be prohibited.

(e) Nailing plates shall be installed to protect copper or plastic pipe or tubing from puncture.

Note: See s. ILHR 84.30 (4) (f) concerning the bending of polybutylene water distribution pipe and tubing.

(2) SANITARY DRAIN AND VENT SYSTEMS. Sanitary drain systems and vent systems shall be of such material and workmanship as set forth in this subsection.

(a) *Above ground drain and vent pipe.* Except as provided in s. ILHR 82.33 (2), drain pipe and vent pipe installed above ground shall conform to one of the standards listed in Table 84.30-1.

(b) *Underground drain and vent pipe.* Except as provided in par. (d), drain pipe and vent pipe installed underground shall conform to one of the standards listed in Table 84.30-2.

(c) *Sanitary building sewer pipe.* Except as provided in s. ILHR 83.15 (4) (e), sanitary building sewer pipe shall conform to one of the standards listed in Table 84.30-3.

(d) *Effluent piping.* 1. Except as provided in s. ILHR 83.15 (4) (e), non-perforated drain piping conveying effluent from a septic tank to the distribution piping of a nonpressurized soil absorption system shall conform to one of the standards listed in Table 84.30-3.

2. Perforated drain piping distributing septic tank effluent in a nonpressurized soil absorption system shall conform to one of the standards listed in Table 84.30-4.

3. Except as provided in s. ILHR 83.15 (4) (e), nonperforated drain piping conveying effluent from a septic tank to the distribution piping of a pressurized soil absorption system shall conform to one of the standards listed in Table 84.30-5 or as otherwise approved by the department.

4. Drain piping distributing septic tank effluent in a pressurized soil absorption system shall conform to one of the standards listed in Table 84.30-5 and shall be perforated in accordance with s. ILHR 83.14 (3) (c).

(e) *Pressurized drain pipe.* Except as provided in par. (f) 3, pressurized drain pipe shall conform to one of the standards listed in Table 84.30-5 and shall be rated for the working pressure and temperature to which it will be subjected for a specific installation.

(f) *Chemical drain and vent pipe.* Drain systems and vent systems for chemical wastes shall be of approved corrosion resistant material. The manufacturer of the pipe shall indicate to the department the material's suitability for the concentrations of chemicals involved.

(g) *Catch basins, interceptors and sumps.* Catch basins, interceptors and sumps shall be constructed in a watertight manner of precast reinforced concrete, reinforced monolithic concrete, cast iron, coated 12-gauge steel, vitrified clay, fiberglass, plastic or other approved materials.

(h) *Manholes.* Manholes shall be constructed in a watertight manner of precast reinforced concrete, reinforced monolithic concrete, brick or block, fiberglass or other approved materials. Fiberglass manholes may be approved for use in traffic areas if the top section of the manhole is not made of fiberglass.

Table 84.30-1
ABOVE GROUND DRAIN AND VENT PIPE AND TUBING

Material	Standard
Acrylonitrile butadiene styrene (ABS)	ASTM D1527; ASTM D2661; ASTM F628
Brass	ASTM B43
Cast iron	ASTM A74; CISPI 301
Copper	ASTM B42; ASTM B88; ASTM B306
Galvanized steel	ASTM A53; ASTM A120
Lead	FS-WW-P-325B
Polyvinyl chloride (PVC)	ASTM D2665; ASTM D1785
Synthetic rubber hose ^a	AHAM DW-1

Note a: The installation of synthetic rubber hose is limited in use to indirect waste piping or local waste piping from dishwashers in accordance with s. ILHR 82.33 (9) (d).

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Table 84.30-2
UNDERGROUND DRAIN AND VENT PIPE AND TUBING

Material	Standard
Acrylonitrile butadiene styrene (ABS)	ASTM D1527; ASTM D2661; ASTM F628
Cast iron	ASTM A74; CISPI 301
Concrete	ASTM C14; ASTM C76
Copper ^a	ASTM B42; ASTM B88
Polyvinyl chloride (PVC)	ASTM D2665; ASTM D1785
Vitrified clay	ASTM C700

Note a: Copper tubing, type M, may not be installed underground.

Table 84.30-3
SANITARY BUILDING SEWER PIPE AND TUBING

Material	Standard
Acrylonitrile butadiene styrene (ABS) ^a	ASTM D1527; ASTM D2661; ASTM D2751; ASTM F628
Acrylonitrile butadiene styrene (ABS) composite	ASTM D2680
Cast iron	ASTM A74; CISPI 301
Concrete	ASTM C14; ASTM C76
Copper ^b	ASTM B42; ASTM B88
Polyvinyl chloride (PVC) ^a	ASTM D2665; ASTM D3033; ASTM D3034 ASTM D1785
Vitrified clay	ASTM C700

Note a: Thermoplastic sewer pipe shall be installed in accordance with ASTM D2321.

Note b: Copper tubing, type M, may not be installed underground.

Table 84.30-4
PERFORATED
EFFLUENT DISTRIBUTION PIPING FOR
NONPRESSURIZED SOIL ABSORPTION SYSTEMS

Material	Standard
Polyethylene (PE) ^a	ASTM F405; ASTM F810
Polyvinyl chloride (PVC)	ASTM D2729
Styrene rubber (SR)	ASTM D3298

Note a: Polyethylene (PE) pipe shall have 2 rows, and only 2 rows, of perforations parallel to the axis of the pipe and $120^\circ \pm 5^\circ$ apart. The perforations shall be at the nominal 4 and 8 o'clock positions when the pipe is installed.

**Table 84.30-5
PRESSURIZED DRAIN PIPE AND TUBING**

Material	Standard
Acrylonitrile butadiene styrene (ABS) ^a	ASTM D1527; ASTM D2282; ASTM D2661; ASTM F628
Acrylonitrile butadiene styrene (ABS) composite	ASTM D2680
Brass	ASTM B43
Cast iron	ASTM A74; ASTM A377; AWWA C115; A21.15; CISPI 301
Chlorinated polyvinyl chloride (CPVC) ^a	ASTM D2846; ASTM F441; ASTM F442; ASTM F443
Concrete	ASTM C14; ASTM C76
Copper ^b	ASTM B42; ASTM B88; ASTM B306
Ductile iron	ASTM A377; AWWA C115; A21.15; AWWA C151; A21.51
Polyvinyl chloride (PVC) ^a	ASTM D1785; ASTM D2241; ASTM D2665; ASTM D2672; ASTM D2740; AWWA C900
Stainless Steel	ANSI B36.19M; ASTM A270; ASTM A450

Note a: Thermoplastic sewer pipe shall be installed in accordance with ASTM D2321.

Note b: Copper tubing, type M, may not be installed underground.

(3) **STORM AND CLEAR WATER DRAIN AND VENT SYSTEMS.** Storm and clear water drain and vent systems shall be of such material and workmanship as set forth in this subsection.

(a) *Above ground drain and vent pipe.* Drain pipe and vent pipe installed above ground and inside a building shall conform to one of the standards listed in Table 84.30-1, except black steel pipe conforming to ASTM A53 or ASTM A120 may be used for storm water conductors. Black steel conductors may not be embedded in concrete or masonry.

(b) *Underground drain and vent pipe.* Drain pipe and vent pipe installed underground shall conform to one of the standards listed in Table 84.30-2.

(c) *Storm building sewer pipe.* Storm building sewer pipe shall conform to one of the standards listed in Table 84.30-6.

(d) *Subsoil drain pipe.* Subsoil drains shall be open jointed, horizontally split, or perforated pipe conforming to one of the standards listed in Table 84.30-7.

(e) *Roof drains.* 1. Roof drains shall be provided with removable strainers of sufficient strength to carry the anticipated loads.

2. Roof drains shall be so constructed that the drains can be cleaned and the drain inlets accessible at all time.

3. Roof drains shall be sized in accordance with s. ILHR 82.36 and the drain outlet shall not be less than 2½ inches in diameter.

Note: See s. ILHR 82.36 (18) for additional roof drain requirements.

(f) *Area drain inlets.* Area drain inlets shall be constructed in a water-tight manner of precast concrete, reinforced monolithic concrete, brick or block, cast iron, coated 12 gauge steel, vitrified clay, fiberglass or other approved materials.

**Table 84.30-6
STORM BUILDING SEWER PIPE AND TUBING**

Material	Standard
Acrylonitrile butadiene styrene (ABS) ^a	ASTM D1527; ASTM D2661; ASTM D2751; ASTM F628
Acrylonitrile butadiene styrene (ABS) composite	ASTM D2680
Cast iron	ASTM A74; CISPI 301
Concrete	ASTM C14; ASTM C76
Copper ^b	ASTM B42; ASTM B88
Corrugated steel ^c	FS-WW-P-405a
Polyvinyl chloride (PVC) ^a	ASTM D2665; ASTM D3033; ASTM D3034; ASTM D1785
Vitrified clay	ASTM C700

Note a: Thermoplastic sewer pipe shall be installed in accordance with ASTM D2321.

Note b: Copper tubing, type M, may not be installed underground.

Note c: Corrugated steel pipe may be used for storm building sewers subject to the following conditions:

1. The pipe shall be sized according to ch. ILHR 82 with adjustments considered to allow for flow characteristics and configuration of the pipe; and
2. The pipe may not be installed closer than 10 feet from a building's exterior wall or foundation.

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1. Pipe saddles may be installed on private interceptor main sewers, building sewers, underground drain and vent pipe and tubing, and where otherwise approved by the department;

2. A saddle for drain piping shall have a radius in accordance with s. ILHR 82.30 (8) (a);

3. The material of the saddle shall be compatible with the materials of the pipes which are to be connected to the saddle;

4. The hole in the pipe which is to receive the saddle shall be drilled or cored to match the saddle outlet;

5. Straps or clamps which wrap around the pipe and saddle shall be provided by the manufacturer of the saddle;

6. Saddles shall be installed with straps or clamps which wrap around the pipe and saddle; and

7. Proper hangers or bedding shall be provided to maintain alignment between the opening in the pipe and the saddle.

Table 84.30-11
PIPE FITTINGS

Material	Standard
Acrylonitrile butadiene styrene (ABS)	ASTM D2465; ASTM D2468; ASTM D2469; ASTM D3311; ASTM F409
Cast bronze	ANSI B16.15; ANSI B16.24
Cast copper alloy	ANSI B16.18; ANSI B16.23; ANSI B16.26; ANSI B16.32
Cast iron	ANSI B16.4; ANSI B16.12; ANSI B16.1
Chlorinated polyvinyl chloride (CPVC)	ASTM F437; ASTM F438; ASTM F439
Copper	ANSI B16.22; ANSI B16.29; ANSI B16.43
Ductile iron and gray iron	ANSI/AWWA C110/A21.10; ANSI/AWWA C153/A21.53; ANSI B16.42
Malleable iron	ANSI B16.3
Polybutylene (PB)	ASTM D3309; ASTM F845
Polyethylene (PE)	ASTM D2609; ASTM D2683; ASTM D3197; ASTM D3261
Polyvinyl chloride (PVC)	ASTM D2464; ASTM D2466; ASTM D2467; ASTM D3036; ASTM D3311; ASTM F409
Stainless steel	ASTM A403
Steel ^a	ANSI B16.5; ANSI B16.9; ANSI B16.11; ANSI B16.28
Styrene-rubber (SR)	ASTM D2852

Note a: Steel fittings and malleable iron fittings to be used in a water supply system shall be galvanized-coated in accordance with ASTM A123.

Note b: See s. ILHR 84.30 (4) (intro.) concerning the maximum lead content for fittings.

(6) SPECIAL MATERIALS. (a) *Sheet lead*. Sheet lead for the following uses may not weigh less than indicated in subs. 1. to 3.

1. Safe pans, 4 pounds per square foot;

2. Site-fabricated flashings for vent pipes, 3 pounds per square foot; and

3. Prefabricated flashings for vent pipes, 2½ pounds per square foot.

(b) *Traps and fixture drain connection fittings.* Copper or tubular brass traps and fixture drain connections fittings shall be at least of 20 gage material.

(c) *Sheet copper.* Sheet copper for the following uses may not weigh less than indicated in subs. 1. and 2. and shall conform to ASTM B152.

1. Safe pans, 12 ounces per square foot;
2. Flashing for vent pipes, 8 ounces per square foot; and
3. Flush tank linings, 10 ounces per square foot.

(d) *Cleanout plugs.* Cleanout plugs shall be of brass or plastic. Brass cleanout plugs shall be used with metallic piping only and shall conform to ASTM A74. Plastic cleanout plugs shall conform to the requirements of sub. (5) (a).

(e) *Flush pipes and fittings.* Flush pipes and fittings shall be of nonferrous material and shall conform to ANSI A112.19.5.

(f) *Safing materials.* Safing materials made from chlorinated polyethylene shall conform to ASTM D4068.

History: Cr. Register, May, 1988, No. 389, eff. 6-1-88; am. (4) (intro.), Register, August, 1988, No. 392, eff. 9-1-88; renun. (2) (e) to (g) to (f) to (h), cr. (2) (e), am. Table 84.30-4, r. and rec. Table 84.30-5, Register, August, 1991, No. 428, eff. 9-1-91.

ILHR 84.40 Joints and connections. (1) **GENERAL.** (a) *Tightness.* Joints and connections in the plumbing system shall be watertight and gastight for the pressure required by test or the system design, whichever is greater, with the exception of perforated or open joint piping.

Note: The testing requirements for tightness are in s. ILHR 82.21.

(b) *Preparation of pipe ends.* Pipe ends shall be prepared in accordance with the applicable pipe standard or the pipe or fitting manufacturer's instructions.

(c) *Prohibited joints and connections.* Unless otherwise permitted in this chapter or ch. ILHR 82 or 83, the following types of joints and connections shall be prohibited:

1. Cement or concrete joints;
2. Mastic or hot poured bituminous joints;
3. Elastomeric rolling o-rings between different diameter pipes;
4. Solvent cement joints between different types of plastic pipe; and
5. Roll grooving of galvanized steel pipe.

(2) **ABS PLASTIC PIPE.** Joints between acrylonitrile butadiene styrene plastic pipe or fittings shall be installed in accordance with pars. (a) to (c).

(a) *Mechanical joints.* Mechanical joints shall be installed in accordance with the manufacturer's instructions.

1. Drain and vent systems. Mechanical push-on joints for drain and vent systems shall conform to ASTM D3212.

Register, August, 1991, No. 428

Standard Reference Number	Title
57. D2855-83	Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings, Recommended Practice for
58. D3000-73(R1981)	Polybutylene (PB) Plastic Pipe (SDR-PR) Based on Outside Diameter, Specification for
59. D3033-83	Type PSP Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings, Specification for
60. D3034-83	Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings, Specification for
61. D3035-81	Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter, Specification for
62. D3036-73	Socket-Type Polyvinyl Chloride (PVC) Plastic Line Couplings, Specification for
63. D3139-77	Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals, Specification for
64. D3140-72(R1977)	Flaring Polyolefin Pipe and Tubing, Recommended Practice for
65. D3197-73	Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals, Specification for
66. D3212-81	Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals, Specification for
67. D3261-82	Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing, Specification for
68. D3298-81	Perforated Styrene-Rubber (SR) Plastic Drain Pipe, Specification for
69. D3309-83	Polybutylene (PB) Plastic Hot-and Cold-Water Distribution Systems, Specification for
70. D3311-82	Drain, Waste, and Vent (DWV) Plastic Fittings Patterns, Specification for
71. D4068-81	Chlorinated Polyethylene (CPE) Sheeting for Concealed Water Containment Membrane, Specification for
72. F402-80	Safe Handling of Solvent Cements and Primers Used for Joining Thermoplastic Pipe and Fittings, Practice for
73. F405-82a	Corrugated Polyethylene (PE) Tubing and Fittings, Specification for
74. F409-81	Thermoplastic Accessible and Replaceable Plastic Tube and Tubular Fittings, Specification for

Standard Reference Number	Title
75. F437-82	Threaded Chlorinated Polyvinyl Chloride (CPVC) Plastic Pipe Fittings, Schedule 80, Specification for
76. F438-82	Socket-Type Chlorinated Polyvinyl Chloride (CPVC) Plastic Pipe Fittings, Schedule 40, Specification for
77. F439-82	Socket-Type Chlorinated Polyvinyl Chloride (CPVC) Plastic Pipe Fittings, Schedule 80, Specification for
78. F441-82	Chlorinated Polyvinyl Chloride (CPVC) Plastic Pipe, Schedules 40 and 80, Specification for
79. F442-82	Chlorinated Polyvinyl Chloride (CPVC) Plastic Pipe (SDR-PR), Specification for
80. F443-77	Bell-End Chlorinated Polyvinyl Chloride (CPVC) Pipe, Schedule 40, Specification for
81. F477-76(R1981)	Elastomeric Seals (Gaskets) for Joining Plastic Pipe, Specification for
82. F493-80	Solvent Cements for Chlorinated Polyvinyl Chloride (CPVC) Plastic Pipe and Fittings, Specification for
83. F628-81	Acrylonitrile-Butadiene-Styrene (ABS) Plastic Drain, Waste, and Vent Pipe Having a Foam Core, Specification for
84. F656-80	Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride)(PVC) Plastic Pipe and Fittings Specification for
84m. F810-85	Smoothwall Polyethylene (PE) Pipe for Use in Drainage and Waste Disposal Absorption Fields, Specification for
85. F845-84	Plastic Insert Fittings for Polybutylene (PB) Tubing, Specification for

Table 84.60-6

AWS	American Welding Society 2501 N.W. 7th Street Miami, Florida 33125
Standard Reference Number	Title
AWS A5.8-81	Brazing Filler Metal, Specification for

Table 84.60-7

AWWA		American Water Works Association Data Processing Department 6666 West Quincy Avenue Denver, Colorado 80235
Standard Reference Number	Title	
1. C110/A21.10-82	American National Standard for Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in., for Water and Other Liquids	
2. C111/A21.11-80	American National Standard for Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings	
3. C115/A21.15-83	American National Standard for Flanged Ductile-Iron and Gray-Iron Pipe with Threaded Flanges	
4. C151/A21.51-81	American National Standard for Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids	
5. C153/A21.53-84	American National Standard for Ductile-Iron Compact Fittings, 3 in. through 12 in. for Water and Other Liquids	
6. C900-81	American National Standard for Pressure Pipe, 4 in. through 12 in. for Water, Polyvinyl Chloride (PVC)	

Table 84.60-8

CISPI		Cast Iron Soil Pipe Institute 1499 Chain Bridge Road, Suite 203 McLean, Virginia 22101
Standard Reference Number	Title	
1. 301-82	Cast Iron Soil Pipe and Fittings for Hubless Cast Iron Systems for Drain, Waste or Vent, Sewer, Rainwater or Storm Drain Systems, Specification for	
2. 310-82	CISPI's Patented Joints for Use in Connection with Cast Iron Systems for Drain, Waste or Vent, Sewer, Rainwater or Storm Drain Systems, Specification for	

Table 84.60-9

FS	Federal Specifications* National Bureau of Standards Office of Engineering Standards U.S. Department of Commerce Washington, D.C. 20234
	*Standards are available from the Superintendent of Documents U.S. Government Printing Office, Washington, D.C. 20402
WW-P-325B	Pipe, Bends, Traps, Caps and Plugs; Lead (For Industrial Pressure, and Soil and Waste Applications), June 9, 1976
WW-P-405a	Corrugated Pipe (Iron or Steel, Zinc Coated), September 1968, with Amend- ment I, September 1970

Table 84.60-10

NSF	National Sanitation Foundation 3475 Plymouth Road P.O. Box 1468 Ann Arbor, Michigan 48106
Standard Reference Number	Title
Standard 14-85	Plastic Piping Compounds and Related Materials

Table 84.60-11

WQA	Water Quality Association 4151 Naperville Road Lisle, Illinois 60532
Standard Reference Number	Title
S-100-85	Household, Commercial and Portable Ex- change Water Softeners

History: Cr. Register, May, 1988, No. 389, eff. 6-1-88; am. Table 84.60-5, r. and recr. Table 84.60-9, Register, August, 1991, No. 428, eff. 9-1-91.