

# CHAPTER 17

## STANDARDS

### 1701.0 Scope

Part I of this chapter covers standards that are hereby declared to be part of this code. Part II of this chapter lists standards that relate to equipment and materials specified in this code, but are not adopted as part of this code.

### Part I – Standards Adopted as Part of This Code

#### UMC Standard 2-2

UMC Sections 209.0, 603.0

Title and Source: Galvanized Sheet Metals.

This standard has been deleted from UMC. The Tentative Specification A525-64T of the American Society for Testig and Materials has been withdrawn and replaced by A653/A653-03 Standard Specification for Steel Sheet, Zinc-Coat (Galvanized) or Zinc-Iron Alloy-Coat (Galvanized) by the Hot Dip Process.

#### UMC Standard 6-2

UMC Section 506.2, 602.1, 602.5

Title and Source: Metal Ducts, First Edition, 1985 HVAC Duct Construction Standards, Metal and Flexible, published by the Sheet Metal and Air-Conditioning Contractors National Association

#### UMC Standard 6-5

UMC Section 602.3

→ Title and Source: Installation of Factory-Made Air Ducts, Fibrous Glass Duct Construction Standards, published by the North America Insulation Manufacturers Association; and Flexible Duct Performance and Installation Standards – 4th Edition published by the Air Diffusion Council

### Part II – Referenced Standards

The standards listed in Table 17-1 are intended for use as a guide in the design, testing, and installation of equipment regulated by this code. These standards are mandatory when required by sections in this code.

Note: Organization abbreviations referred to in Table 17-1 are defined in a list found at the end of the table.



# CHAPTER 17

## STANDARDS

**TABLE 17-1**

### Standards for Equipment and Materials

Note: This Chapter has been revised and reformatted in its entirety.  
No arrows or side bars have been used to signify changes.

Standard Number	Standard Title [UMC References]
ACCA Manual D	Residential Duct Systems
ACCA Manual J	Residential Load Calculations
ACCA Manual N	Commercial Load Calculation
ACCA Manual Q	Low Pressure Low Velocity Duct Systems Design
ANSI A13.1-96	Scheme for the Identification of Piping Systems
ANSI A21.10-03	Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids (same as AWWA C110)
ANSI A21.51-02	Ductile-Iron Pipe, Centrifugally Cast, for Water (same as AWWA C151)
ANSI B1.20.1-1983 (R2001)	Pipe Threads, General Purpose, Inch (Except Dryseal) (replaced by ASME B1.20.1-98)
ANSI B1.20.3-1976 (R2003)	Dryseal Pipe Threads (Inch)
ASME B31.5-2001	Refrigeration Piping
ANSI Z21.1-2000 Addendum Z21.1a-2003	Household Gas Cooking Appliances
ANSI Z21.5.1-2002 ANSI Z21.5.1a-2003 Addenda Z21.5.1a-2002	Gas Clothes Dryers - Volume I, Type I
ANSI Z21.5.2-2001 •CSA 7.2-2001 ANSI Z21.5.2a-2003 Addenda Z21.5.2a-2003	Gas Clothes Dryers - Volume II, Type 2
ANSI Z21.8-(R2002)	Installation of Domestic Gas Conversion Burners [UMC 906.0]
ANSI Z21.10.1-2004•CSA 4.1a02	Gas Water Heaters, Volume I, Water Heaters with Input Ratings of 75,000 Btu per Hour or Less
ANSI Z21.10.3-2004	Gas Water Heaters, Volume III, Water Heaters with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous Water Heaters
ANSI Z21.11.2- 2002 Addenda Z21.11.2a-2003	Gas-Fired Unvented Room Heaters, Volume II
ANSI Z21.12-1990 (R2000) Addenda Z21.12a-1993 (R2000) Addenda Z21.12b-1994 (R2000)	Draft Hoods
ANSI Z21.13-2004•CSA 4.9a02	Gas-Fired Low Pressure Steam and Hot Water Boilers
ANSI Z21.15-1997 (R2003) Addenda Z21.15a-2001 (R2003)	Valves for Appliances, Appliance Connector Valves and Hose End Valves, Manually Operated Gas

Standard Number	Standard Title [UMC References]
ANSI Z21.17-1998•CSA 2.7-M98	Installation of Domestic Gas Conversion Burners
ANSI Z21.18-2000 Addenda Z21.18a-2001	Gas Appliance Pressure Regulators
ANSI Z21.19-2002	Refrigerators Using Gas Fuel
ANSI Z21.20-2000 Addenda Z21.20a-2000 Addenda Z21.20b-2001	Automatic Gas Ignition Systems and Components
ANSI Z21.21-2000 Addenda Z21.21a-2001	Automatic Valves for Gas Appliances
ANSI Z21.22-1999 (R2003) •CSA 4.4-00 Addenda Z21.22a-2000 Addenda Z21.22b-2001	Relief Valves for Hot Water Supply Systems
ANSI Z21.23-2000 Addenda Z21.23a- 2003	Gas Appliance Thermostats
ANSI Z21.24-2001 Addenda Z21.24a-2002 Addenda Z21.24b-2003	Connectors for Gas Appliances [UMC 1312.1(3)]
ANSI Z21.35-1995 (R2002) Addenda Z21.35a-1997 (R2002) Addenda Z21.35b-2000 (R2002)	Pilot Gas Filters
ANSI Z21.40.1-1996 (R2002) •CSA 2.9.1-M96	Gas-Fired, Heat Activated, Air Conditioning and Heat Pump Appliances
ANSI Z21.41-2003	Quick-Disconnect Devices for Use with Fuel Gas
ANSI Z21.42- 1997 (R2002)	Gas-Fired Illuminating Appliances
ANSI Z21.45-1995	Flexible Connectors for Other Than All-Metal Construction for Gas Appliances
ANSI Z21.47-2003/•CSA 2.3-2003	Gas-Fired Central Furnaces
ANSI Z21.50-2003 Addenda Z21.50a-2003 Addenda Z21.50b-2002	Decorative Gas Appliances, Vented
ANSI Z21.54-2002	Gas Hose Connectors for Portable Outdoor Gas-Fired Appliances
ANSI Z21.56-2001 Addenda Z21.56a-2003	Gas-Fired Pool Heaters
ANSI Z21.58a-2004	Outdoor Gas Cooking Appliances
ANSI Z21.60- 2003 Addenda Z21.60a-2003	Decorative Gas Appliances for Installation in Solid-Fuel Burning Fireplaces
ANSI Z21.61-1983 (R2004)	Gas-Fired Toilets
ANSI Z21.66-1996 (R2001)	Automatic Vent Damper Devices for Use with Gas-Fired Appliances
ANSI Z21.69- 2002•CSA 6.16-02 Addenda Z21.69a-2003/ •CGA 6.16a Addenda Z21.69b-2001/ •CGA 6.16b	Connectors for Moveable Gas Appliances [UMC 303.1(5), 1312.1(6)]

Standard Number	Standard Title [UMC References]
ANSI Z21.71-(R2002)	Automatic Intermittent Ignition Systems for Field Installation
ANSI Z21.80-2003•CSA 6.22-M97	Line Pressure Regulators [UMC 1309.7.2, 1309.9.7.5(A)]
ANSI Z21.83-1998	Fuel Cell Power Plants [UMC 1601.0]
ANSI Z21.86-2003	Gas-Fired Vented Heating Appliances
ANSI Z21.88-2002 Addenda Z21.88a-2003	Vented Gas Fireplace Heaters
ANSI Z83.4-1999•CSA 3.7-M99 Addenda Z83.4a2001 •CSA 3.7a-2001	Non-Recirculating Direct Gas-Fired Industrial Air Heaters [UMC 909.1]
ANSI Z83.7-2000	Gas-Fired Construction Heaters
ANSI Z83.8- 2002•CSA 2.6-2002 Addenda Z83.8a-2003	Gas Unit Heaters and Gas-Fired Duct Furnaces
ANSI Z83.11-2002	Gas Food Service Equipment
ANSI Z83.18-2000 Addenda Z83.18a-2001 Addenda Z83.18b-2003	Recirculating Direct Gas-Fired Industrial Air Heaters [UMC 910.1]
ANSI Z83.19a-2002	Gas-Fired High Intensity Infrared Heaters
ANSI Z83.20-2001 Addenda Z83.20a-2002 Addenda Z83.20b-2004	Gas-Fired Tube Type and Low Intensity Infrared Heaters
ANSI Z223.1-99	National Fuel Gas Code (same as NFPA 54)
ARI 700-99	Specification for Fluorocarbon Refrigerant
ARI 1010-2002	Drinking Fountains and Self-Contained, Mechanically Refrigerated Drinking Water Coolers
ASCE 25-1999	Earthquake Actuated Automatic Gas Shutoff Devices
ASHRAE Handbook	Fundamentals, Climatic Conditions for the United States; Chapter 27, Table 1A and B, 2001
ASHRAE Volume 1980	Panel Heating Systems
ASHRAE 15-2004	Safety Standard for Refrigeration Systems
ASHRAE 34-2004	Designation and Safety Classification of Refrigerants
ASHRAE 62.1-2004	Ventilation for Acceptable Indoor Air Quality, Addenda h,i,k,n,o,r,t,u,v,x,z,ab,ad,ae,and,af [UMC 403.4.2]
ASHRAE Climatic Conditions	ASHRAE Handbook - Fundamentals, Chapter 27, Table 1A&B, for the US 2001
ASME A112.4.1-93 (R02)	Water Heater Relief Valve Drain Tubes
ASME A112.18.6- 2003	Flexible Water Connectors
ASME A112.20.1-2004	Qualification of Installers of High Purity Piping Systems
ASME B1.20.1-98	Pipe Threads, General Purpose, Inch [UMC 1309.5.7(A)]
ASME B1.20.3-76 (R2003)	Dryseal Pipe Threads, Inch Joints
ASME B16.1-1998	Cast-Iron Pipe Flanges and Flanged Fittings, Classes 25, 125, 250, and 800 Piping, Ferrous [UMC 1309.5.10]
ASME B16.18-2001	Cast Copper Alloy Solder Joint Pressure Fittings
ASME B16.22-2001	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings

Standard Number	Standard Title [UMC References]
ASME B16.23-2002	Cast Copper Alloy Solder Joint Drainage Fittings
ASME B16.24-2001	Cast Copper Alloy Pipe Flanged Fittings
ASME B16.26-1988	Cast Copper Alloy Fittings for Flared Copper Tubes
ASME B16.29-2001	Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings
ASME B16.33-2002	Manually Operated Metallic Gas Valves for Use in Gas Piping Systems up to 125 psi (Sizes 1/2 NPS - 2)
ASME B16.38-(R1994)	Large Metallic Valves for Gas Distribution (Manually Operated, NPS 2-1/2 to 12, 125 psig/Maximum)
ASME B16.50-2001	Wrought Copper and Wrought Copper Alloy Braze-Joint Pressure Fittings
ASME B36.10M-2001	Welded and Seamless Wrought Steel Pipe [UMC 1309.5.2.2]
ASME Section IV	Rules for Construction of Heating Boilers
ASME Section VIII	Rules for Construction of Pressure Vessels
ASSE 1005-1999	Water Heater Drain Valves
ASTM A 53- 2002	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded, and Seamless [UMC 1309.5.2.2(2)]
ASTM A 312-2003	Seamless and Welded Austenitic Stainless Steel Pipes
ASTM A 653M- 2003	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A 733-2003	Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples
ASTM A 861- 2002	High-Silicon Iron Pipe and Fittings (Note 1)
ASTM B 32-2004	Solder Metal (see Section 1201.2.3.7 for restriction)
ASTM B 42-2002 <sup>e1</sup>	Seamless Copper Pipe, Standard Sizes
ASTM B 43-1998 <sup>e1</sup>	Seamless Red Brass Pipe, Standard Sizes
ASTM B 75-2002	Seamless Copper Tube
ASTM B 88-2003	Seamless Copper Water Tube, (K, L, M) [UMC 1309.5.3.2]
ASTM B 135-2002	Seamless Brass Tube
ASTM B 280-2003	Seamless Copper Tube for Air Conditioning and Refrigeration Field Service [UMC 1309.5.3.2]
ASTM B 302-2002	Threadless Copper Pipe (TP)
ASTM B 306-2002	Copper Drainage Tube (DWV)
ASTM B 370-1998	Copper Sheet and Strip for Building Construction
ASTM B 447-2002	Welded Copper Tube
ASTM B 584-2000	Copper Alloy Sand Casting for General Applications (Note 5)
ASTM B 587-1997 (R2003)	Welded Brass Tube
ASTM B 687-1999	Brass, Copper, and Chromium-Plated Pipe Nipples
ASTM B 813-00 <sup>e1</sup>	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
ASTM B 828-02	Standard Practice for Making Capillary Joints in Copper and Copper Alloy Tube and Fittings
ASTM C 411-1997	Hot-Surface Performance of High Temperature Thermal Insulation [UMC 605.0,1201.4.1.3]
ASTM C 518-2004 Apparatus	Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter
ASTM E 84-2004	Surface Burning Characteristics of Building Materials [UMC 602.2, 605.0, 1201.4.1.3]

Standard Number	Standard Title [UMC References]
ASTM E 814-2002	Fire Tests of Through Penetration Fire Stops
ASTM E 2231-2002	Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics [UMC 605.0, 1201.4.1.3]
ASTM F 1281-03	Crosslinked Polyethylene/ Aluminum/ Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe [UMC 1201.5, 1201.5.1.1, 1201.5.2]
ASTM F 1961-02a	Metal Mechanical Cold Flare Compression Fittings with Disc Springs for Crosslinked Polyethylene (PEX) Tubing
ASTM F 2158-2001	Residential Central-Vacuum Tube and Fittings
AWS A5.8-92	Filler Metals for Brazing and Braze Welding
AWWA C110-2003	Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in. (75 mm through 1,200 mm), for Water and Other Liquids (same as ANSI A21.10-98)
AWWA C151-2002	Ductile-Iron Pipe, Centrifugally Cast, for Water (same as ANSI A21.51-91)
AWWA C203-2002	Coal-Tar Protective Coatings and Linings for Steel Water Pipelines – Enameled and Tape – Hot Applied
AWWA C500-2002	Gate Valves for Water and Sewerage Systems Valves
CAN/CGSB 3.2-99	Heating Fuel Oil
CSA F379.1-88	Solar Domestic Hot Water Systems (Liquid to Liquid Heat Transfer)
IAPMO IS 13-2003	Installation Standard for Protectively Coated Pipe
IAPMO PS 14-2002	Flexible Metallic Field Fabricated Water Connectors
IAPMO PS 33-2000a	Flexible PVC Hose for Pools, Hot Tubs, Spas and Jetted Bathtubs
IAPMO PS 120-2004	Flashing and Stand Combination for Air Conditioning Units (Residential or Commercial Unit Curb)
IAS 1-91	U.S. Requirements for Indirect Water Heaters for Use With External Heat Source
IAS LC 1-01 • CSA 6.26-01	Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST) Fuel Gas [UMC 1309.5.3.4]
I-B-R First Edition August, 2002	Rating Procedure for Heating Boilers
ISO Guide 65:1996	General Requirements for Bodies Operating Product Certification Systems
MSS SP-58-02	Pipe Hangers and Supports – Materials, Design, and Manufacture [UMC 1311.2.6(A)]
MSS SP-67-02	Butterfly Valves
MSS SP-69-02	Pipe Hangers and Supports - Selection and Application
MSS SP-73-03	Brazing Joints for Wrought and Cast Copper Alloy Solder Joint Pressure Fittings
MSS SP-80-03	Bronze Gate-Globe, Angle, and Check Valves
MSS SP-89-98	Pipe Hangers and Supports - Fabrication and Installation Practices
MSS SP-104-03	Wrought Copper Solder Joint Pressure Fittings
MSS SP-106-03	Cast Copper Allot Flanges and Flanged Fittings, Class 125, 150, and 300
MSS SP-109-97	Welded Fabricated Copper Solder Joint Pressure Fittings
NFPA 30-2003	Flammable and Combustible Liquids Code [UMC 204.0]
NFPA 31-2006	Installation of Oil Burning Equipment [UMC 302.3, 1020.0, 1302.0]
NFPA 52-2005	Compressed Natural Gas (CNG) Vehicular Fuel Systems

Standard Number	Standard Title [UMC References]
NFPA 54-2002/ANSI Z223.1	National Fuel Gas Code [UMC 303.3(D), 516.2.1, 1309.7.5(D), 1311.4, 1311.4.1]
NFPA 58-2004	Liquefied Petroleum Gas Code [UMC 516.2.1, 1309.5.4.3, 1309.5.9(D), 1313.0]
NFPA 69-2002	Explosion Prevention Systems
NFPA 70-2005	National Electrical Code [UMC 511.1.6, 512.2.5, 516.2.5, 516.2.7(D), 602.2(5), 1311.12.5(B)]
NFPA 85-2004	Boiler and Combustion Systems Hazard Code [UMC 1002.0(9), 1020.0]
NFPA 96-2004	Ventilation Control and Fire Protection of Commercial Cooking Operations
NFPA 211-2003	Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances [UMC 517.7.1, 517.7.2, 517.7.3, 801.1, 801.2, 802.5.1.2, 802.5.1.3, 802.5.4]
NFPA 255-2005	Method of Test of Burning Characteristics of Building Materials [UMC 602.2, 605.0, 1201.4.1.3]
NFPA 262-2006	Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces [UMC 602.2(5)]
NFPA 654-2005	Prevention of Fire and Dust Explosion from the Manufacturing, Processing, and Handling of Combustible Particulate Solids [UMC 506.4]
NFPA 853-2006	Installation of Stationary Fuel Cell Power Plants [UMC 1601.0]
PPI TR-4, 2004	Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fittings Compounds
SAE J512-97	Automotive Tube Fittings
SMACNA, 1995 Addendum 1, 11/97	HVAC Duct Construction Standards - Metal and Flexible
SMACNA 1884, 2003	Fibrous Glass Duct Construction Standard
UL 17, 1994 edition 3	Vent or Chimney Connector Dampers for Oil-Fired Appliances
UL 21, 1995 edition 9	LP-Gas Hose
UL 33, 2003 edition 7	Heat Responsive Links for Fire Protection Service
UL 51, 2002 edition 9	Power-Operated Pumps for Anhydrous Ammonia and LP-Gas
UL 80, 2004 edition 11	Steel Tanks for Oil-Burner Fuel
UL 103, 2001 edition 10	Factory-Built Chimneys for Residential Type and Building Heating Appliances
UL 125-1997 edition 6	Valves for Anhydrous Ammonia and LP-Gas (Other than Safety Relief)
UL 127-1996 edition 7	Factory-Built Fireplaces
UL 132, 1997 edition 6	Safety Relief Valves for Anhydrous Ammonia and LP-Gas
UL 144, 1999 edition 7	LP-Gas Regulators
UL 174, 2004 edition 11	Household Electric Storage Tank Water Heaters
UL 180-2003 edition 7	Liquid Level Indicating Gauges for Oil Burner Fuels
UL 181, 1996 edition 10	Factory-Made Air Ducts and Air Connectors
UL 181A, 1994 edition 3	Closure Systems for Use with Rigid Air Ducts and Air Connectors
UL 181B, 1995 edition 2	Closure Systems for Use with Flexible Air Ducts and Air Connectors
UL 197, 2003 edition 9	Commercial Electric Cooking Appliances [UMC 513.2.2]
UL 207, 2001 edition 7	Non-Electrical Refrigerant-Containing Components and Accessories
UL 252, 2003 edition 8	Compressed Gas Regulators
UL 268A, 1998 edition 3	Smoke Detectors for Duct Application
UL 296, 2003 edition 10	Oil Burners

Standard Number	Standard Title [UMC References]
UL 300, 1996 edition 3	Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas [UMC 513.2.2]
UL 343, 1997 edition 8	Pumps for Oil-Burning Appliances
UL 352, 1997 edition 7	Constant-Level Oil Valves
UL 353, 1994 edition 5	Limit Controls
UL 378, 1993 edition 3	Draft Equipment
UL 391, 1995 edition 3	Solid-Fuel and Combination Fuel Central and Supplementary Furnaces
UL 404, 1997 edition 7	Indicating Pressure Gauges for Compressed Gas Service
UL 412, 2004 edition 4	Refrigeration Unit Coolers
UL 429, 1999 edition 5	Electrically Operated Valves
UL 441, 1996 edition 9	Gas Vents
UL 443, 1995 edition 5	Steel Auxilliary Tanks for Oil Burner Fuel
UL 471, 1995 edition 8	Commercial Refrigerators and Freezers
UL 525, 2004 edition 7	Flame Arresters
UL 536, 1997 edition 9	Flexible Metallic Hose
UL 555, 1999 edition 6	Fire Dampers
UL 555C, 1996 edition 2	Ceiling Dampers
UL 555S, 1999 edition 4	Smoke Dampers
UL 565, 1998 edition 5	Liquid Level Gauges and Indicators for Anhydrous Ammonia and LP-Gas
UL 569, 1995 edition 7	Pigtails and Flexible Hose Connectors for LP-Gas
UL 641, 1995 edition 7	Type L Low Temperature Venting Systems
UL 710, 1995 edition 5	Exhaust Hoods for Commercial Cooking Equipment
UL 723, 2003 edition 9	Test for Surface Burning Characteristics of Building Materials [UMC 508.3, 602.2, 605.0(E), 1201.4.1.3]
UL 726, 1995 edition 7	Oil-Fired Boiler Assemblies
UL 727, 1994 edition 8	Oil-Fired Central Furnaces
UL 729, 2003 edition 6	Oil-Fired Floor Furnaces
UL 730, 2003 edition 5	Oil-Fired Wall Furnaces
UL 731, 1995 edition 5	Oil-Fired Heater Units
UL 732, 1995 edition 5	Oil-Fired Storage Tank Water Heaters
UL 733, 1993 edition 4	Oil-Fired Water Heaters and Direct-Fired Heaters
UL 737, 1996 edition 8	Fireplace Stoves
UL 791, 1993 edition 4	Residential Incinerators
UL 795, 1999 edition 5	Commercial-Industrial Gas Heating Equipment (Inputs over 400,000 Btu per hour)
UL 834, 2004 edition 5	Electric Water Supply Heating and Power Boilers
UL 842, 1997 edition 8	Valves for Flammable Fluids
UL 858, 1993 edition 15	Household Electric Ranges

Standard Number	Standard Title [UMC References]
UL 867, 2000 edition 4	Electrostatic Air Cleaners
UL 896, 1993 edition 5	Oil-Burning Stoves
UL 900, 2004 edition 7	Air Filter Units
UL 907, 1994 edition 2	Fireplace Accessories
UL 921, 1996 edition 5	Commercial Electric Dishwashers
UL 959, 2001 edition 8	Medium Heat Appliance Factory-Built Chimneys
UL 984, 1996 edition 7	Hermetic Refrigerant Motor Compressors
UL 1026, 1995 edition 4	Electric Household Cooking and Food Serving Appliances
UL 1046, 2000 edition 3	Grease Filters for Exhaust Ducts [UMC 509.1]
UL 1206, 2003 edition 4	Electric Commercial Clothes-Washing Equipment
UL 1240, 1994 edition 3	Electric Commercial Clothes-Drying Equipment
UL 1453, 2004 edition 5	Electric Booster and Commercial Storage Tank Water Heaters
UL 1482, 1996 edition 5	Solid-Fuel Type Room Heaters
UL 1738, 1993 edition 2	Venting Systems for Gas-Burning Appliances, Categories II, III, and IV
UL 1746, 1993 edition 2	External Corrosion Protection Systems for Steel Underground Storage Tanks
UL 1777, 2004 edition 3	Chimney Liners
UL 1812, 1995 edition 2	Ducted Heat Recovery Ventilators
UL 1815, 2001 edition 3	Nonducted Heat Recovery Ventilators
UL 1820, 2004 edition 4	Fire Test of Pneumatic Tubing for Flame and Smoke Characteristics [UMC 602.2(7)]
UL 1887, 2004 edition 3	Fire Test of Plastic Sprinkler Pipe for Visible Flame and Smoke Characteristics [UMC 602.2(6)]
UL 1963, 1995 edition 2	Refrigerant Recovery / Recycling Equipment
UL 1978, 2002 edition 3	Grease Ducts
UL 1995, 1995 edition 3	Heating and Cooling Equipment
UL 2021, 1997 edition 2	Fixed and Location-Dedicated Electric Room Heaters
UL 2043, 1996 edition 2	Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air Handling Spaces [UMC 602.2(8)]
UL 2157, 1997 edition 2	Electric Clothes Washing Machines and Extractors
UL 2158, 1995 edition 2	Electric Clothes Dryers

Key Word	Standard Number	Standard Title
25 foot tunnel	ASTM E 84-03b	Surface Burning Characteristics of Building Materials
accessories	UL 907-1994	Fireplaces Accessories
aggressiveness test	ASTM B 813-00 <sup>e1</sup>	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
air conditioning flashing stand	IAPMO PS 120 -00	Flashing and Stand Combination for Air Conditioning Units (Unit Curb)
air conditioning tube	ASTM B 280-2003	Seamless Copper Tube for Air Conditioning and Refrigeration Field Service
air connectors	UL 181-1996	Factory-Made Air Ducts and Air Connectors
air duct installation	UMC Standard 6-5	Installation of Factory-Made Air Ducts, Fibrous Glass Duct Construction Standard -2nd Edition, Published by the North American Insulation Manufacturers Association; and Flexible Duct Performance & Installation Standards-4th Edition, published by the Air Diffusion Council
air ducts	UL 181-1996	Factory-Made Air Ducts and Air Connectors
air filters	UL 900-1994	Air Filter Units
air heaters	ANSI Z83.18-2000	Recirculating Direct Gas-Fired Industrial Air Heaters
	ANSI Z83.18a-2001, Addenda	Recirculating Direct Gas-Fired Industrial Air Heaters
	ANSI Z83.18b-2003, Addenda	Recirculating Direct Gas-Fired Industrial Air Heaters
	ANSI Z83.4-1999•CSA 3.7-M99	Non-Recirculating Direct Gas-Fired Industrial Air Heaters
	ANSI Z83.4a-2001•CSA 3.7a-2001, Addenda	Non-Recirculating Direct Gas-Fired Industrial Air Heaters
alloyed coating	ASTM A 653-03	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ammonia pumps	UL 51-2002	Pumps, Power Operated for Anhydrous Ammonia and LP-Gas
ammonia relief valves	UL 132-1997	Valves, Safety Relief for Anhydrous Ammonia and LP-Gas
ammonia valves	UL 125-1997	Valves for Anhydrous Ammonia and LP Gas (Other than Safety Relief)
angle valves	MSS SP-80-03	Bronze Gate-Globe, Angle, and Check Valves
appliance connectors	ANSI Z21.2-1992	Gas Hose Connectors for Portable Indoor Gas-Fired Appliances

Key Word	Standard Number	Standard Title
appliance connectors	ANSI Z21.45-1995	Flexible Connectors for Other Than All-Metal Construction for Gas Appliances
	ANSI Z21.69-02•CSA 6.16-02	Connectors for Movable Gas Appliances
	ANSI Z21.69a-2003, CSA 6.61a	Connectors for Movable Gas Appliances
appliance regulators	ANSI Z21.69b-2001, CSA 6.61b	Connectors for Movable Gas Appliances
	ANSI Z21.18-2000	Pressure Regulators, Gas Appliance
appliance valves	ANSI Z21.18a-2001, Addenda	Pressure Regulators, Gas Appliance
	ANSI Z21.15-1997 (R2003)	Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves
appliances	ANSI Z21.15a-2001 (R2003), Addenda	Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves
	ANSI Z21.21-2000	Valves, Automatic for Gas Appliances
	ANSI Z21.21a-2001, Addenda	Valves, Automatic for Gas Appliances
	ANSI Z21.21b-2001, Addenda	Valves, Automatic for Gas Appliances
	ANSI Z21.1-2000	Household Cooking Gas Appliances
	ANSI Z21.50-2003	Decorative Gas Appliances, Vented
	ANSI Z21.50b-2002	Decorative Gas Appliances, Vented
assembly	UL 197-2003	Commercial Electric Cooking Appliances
	ASTM B 828-02	Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings
austenitic stainless steel	ASTM A 312-03	Seamless and Welded Austenitic Stainless Steel Pipes
automatic	ANSI Z21.21-2000	Valves, Automatic for Gas Appliances
	ANSI Z21.21a-2001, Addenda	Valves, Automatic for Gas Appliances
	ANSI Z21.21b-2001, Addenda	Valves, Automatic for Gas Appliances
automatic dampers	ANSI Z21.66-1996 (R2001)	Vent Damper Devices for Use with Gas-Fired Appliances, Automatic
automatic ignition	ANSI Z21.20a-2000	Automatic Gas Ignition Systems and Components
	ANSI Z21.20b-2001	Automatic Gas Ignition Systems and Components
automatic pilot ignition	ANSI Z21.71-1993 (R2002)	Automatic Intermittent Pilot Ignition Systems for Field Installation

Key Word	Standard Number	Standard Title
bake hardenable steel	ASTM A 653-03	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
bar	ASTM B 32-03	Solders Metal
black steel pipe	ASTM A 53-02	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded, and Seamless
block board	ASTM C 411-97	Hot-Surface Performance of High Temperature Thermal Insulation
boiler construction	ASME Section IV	Rules for Construction of Heating Boilers
boiler hazard code	NFPA 85-2004	Boiler and Combustion Systems Hazard Code
boilers	ANSI Z21.13-1999	Gas-Fired Low Pressure Steam and Hot Water Boilers
	ANSI Z21.13a-2002, Addenda	Gas-Fired Low Pressure Steam and Hot Water Boilers
	ANSI Z21.13b-2003, Addenda	Gas-Fired Low Pressure Steam and Hot Water Boilers
	UL 834-1995	Heating, Water Supply, and Power Boilers - Electric
brass pipe/tube plated	ASTM B 687-99	Brass, Copper, and Chromium-Pipe Nipples
brass tube	ASTM B 135-02	Seamless Brass Tube
	ASTM B 587-1997 (R2003)	Welded Brass Tube
braze joint fittings	ASME B16.50-2001	Wrought Copper and Wrought Copper Alloy Braze-Joint Pressure Fittings
brazed-joint pipe fittings	ASTM B 302-2002	Threadless Copper Pipe (TP)
brazing metal	AWS A5.8 -92	Filler Metals for Brazing and Braze Welding
bronze valves	MSS SP-80-03	Bronze Gate-Globe, Angle, and Check Valves
building construction	ASTM B 370-98	Copper Sheet and Strip for Building Construction
building materials	ASTM E 814-02	Fire Tests of Through Penetration Fire Stops
burn testing	NFPA 255-2005	Standard Method of Test of Surface Burning Characteristics of Building Materials
burners	UL 296-2003	Oil Burners
butterfly valves	MSS SP-67-02	Butterfly Valves
calibration	ASTM C 518-01 <sup>et</sup>	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
capillary	ASTM B 828-02	Standard Practice for Making

Key Word	Standard Number	Standard Title
carbon steel fittings	ASTM A 733-03	Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples
cast copper alloy fittings	MSS SP-106-03	Cast Copper Alloy Flanges and Flanged Fittings, Class 125, 150, and 300
cast fittings	ASME B16.18-2001	Cast Copper Alloy Solder Joint Pressure Fittings
	ASME B16.23-2002	Cast Copper Alloy Solder Joint Drainage Fittings
	ASME B16.24-2001	Cast Copper Alloy Pipe Flanged Fittings
	ASME B16.26-88	Cast Copper Alloy Fittings for Flared Copper Tubes
copper tubes	MSS SP-73-03	Brazing Joints for Wrought and Cast Copper Alloy Solder Joint Pressure Fittings
cast iron fittings	ASME B16.1-98	Cast-Iron Pipe Flanges and Flanged Fittings, Classes 25, 125, 250, and 800
central furnaces	ANSI Z21.47-2003•CSA 2.3-2003	Central Furnaces, Gas Fired
	ANSI Z21.47b -02	Gas-Fired Central Furnaces
central vacuum	ASTM F 2158 -01	Residential Central-Vacuum Tube and Fittings
certification	ISO Guide 65:1996	Certification - Third Party Certification Programs for Products, Processes, and Services
check valves	MSS SP-80-03	Bronze Gate-Globe, Angle, and Check Valves
chimneys	NFPA 211-2003	Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances
	UL 103-01	Factory-Built Chimneys for Residential Type and Building Heating Appliances
	UL 1777-2004	Chimney Liners
	UL 959-2001	Chimneys, Factory Built, Medium-Heat Appliance
chromium plating	ASTM B 687-99	Brass, Copper, and Chromium-Plated Pipe Nipples
circulating water heaters	ANSI Z21.10.3-2001	Gas Water Heaters - Volume III, Storage, with Input Ratings above 75,000 btu per Hour, Circulating and Instantaneous Water Heaters
	ANSI Z21.10.3a-2003, Addenda	Gas Water Heaters - Volume III, Storage, with Input Ratings above 75,000 btu per Hour, Circulating and Instantaneous Water Heaters

Key Word	Standard Number	Standard Title
cleaning	ASTM B 828-02	Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings
climatic conditions	ASHRAE	Climatic Conditions for the US, 2001 ASHRAE Handbook - Fundamentals, Chapter 27, Table 1A & B
clothes dryers, gas	ANSI Z21.5.1-1999	Clothes Dryers Gas - Volume I, Type 1-Clothes Dryers
	ANSI Z21.5.1a -03	Gas Clothes Dryers Type 1 Clothes Dryer
	ANSI Z21.5.1a-2002, Addenda	Clothes Dryers Gas - Volume I, Type 1-Clothes Dryers
	ANSI Z21.5.2-2001	Clothes Dryers Gas - Volume II, Type 2-Clothes Dryers
	ANSI Z21.5.2a -03	Gas Clothes Dryers, Type 2 Clothes Dryers
	ANSI Z21.5.2a-2002, Addenda	Clothes Dryers Gas - Volume II, Type 2-Clothes Dryers
	ANSI Z21.5.2b-2003, Addenda	Clothes Dryers Gas - Volume II, Type 2-Clothes Dryers
clothes dryers, electric	UL 2158-1995	Electric Clothes Dryers
clothes washers	UL 1206-2003	Electric Commercial Clothes-Washing Equipment
	UL 2157-1997	Electric Clothes Washing Machines and Extractors
CNG vehicle fuel systems	NFPA 52-2005	Compressed Natural Gas (CNG) Vehicular Fuel Systems
coils for building construction	ASTM B 370-98	Copper Sheet and Strip for Building Construction
cold and hot water distribution	ASTM F 1961-02a	Metal Cold Flare Compression Fittings with Disk Springs for Cross-Linked Polyethylene (PEX) Tubing
cold expansion insert fittings	ASTM F 1961-02a	Metal Cold Flare Compression Fittings with Disk Springs for Cross-Linked Polyethylene (PEX) Tubing
combustible liquids	NFPA 30-2003	Flammable and Combustible Liquids Code
commercial clothes washers	UL 1206-2003	Electric Commercial Clothes-Washing Equipment
commercial cooking	NFPA 96-2004	Ventilation Control and Fire Protection of Commercial Cooking Operations
	UL 197-2003	Commercial Electric Cooking Appliances
composite	ASTM F 1281-03	Cross-Linked Polyethylene/Aluminum/ Cross-Linked Polyethylene (PEX-AL-PEX) Pressure Pipe

Key Word	Standard Number	Standard Title
compressed natural gas	NFPA 52-2005	Compressed Natural Gas (CNG) Vehicular Fuel Systems
compressors	UL 984-1996	Hermetic Refrigerant Motor Compressors
connector valves	ANSI Z21.15-1997 (R2003)	Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves
	ANSI Z21.15a-2001 (R2003), Addenda	Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves
connectors	ANSI Z21.24-2001	Connectors for Gas Appliances
	ANSI Z21.24a-2002, Addenda	Connectors for Gas Appliances
	ANSI Z21.24b-2003, Addenda	Connectors, for Gas Appliances
	ANSI Z21.45-1995	Flexible Connectors for Other Than All-Metal Construction for Gas Appliances
	ANSI Z21.69-02•CSA 6.16-02	Connectors for Movable Gas Appliances
	ANSI Z21.69a-2003, CSA 6.61a	Connectors for Movable Gas Appliances
	ANSI Z21.69b-2001, CSA 6.61b	Connectors for Movable Gas Appliances
	ASME A112.18.6-03	Flexible Water Connectors
	IAPMO PS 14-2002	Flexible Metallic Field Fabricated Water Connectors
	UL 181-1996	Factory-Made Air Ducts and Air Connectors
	UL 569-1995	Pigtails and Flexible Hose Connectors for LP-Gas construction heaters Gas-Fired
controls	ANSI Z83.7-2000	Construction Heaters Controls
	UL 353-1994	Limit Controls Conversion Burners
conversion burners	ANSI Z21.17-1998•CSA 2.7-M98	Conversion Burners, Domestic Gas
	ANSI Z21.17a-1993, Addenda	Conversion Burners, Domestic Gas
	ANSI Z21.17b-1993	Conversion Burners, Domestic Gas
conversion burner installation	ANSI Z21.8-1994 (R2002)	Conversion Burners, Domestic Gas, Installation of Household Cooking
	ANSI Z21.1-2000	Gas Appliances
cooking appliances	ANSI Z21.58a-2004	Outdoor Gas Cooking Appliances
	UL 1026-1995	Electric Household Cooking and Food Serving Appliances Cooling
copper	ASTM B 687-99	Brass, Copper, and Chromium-Plated Pipe Nipples

Key Word	Standard Number	Standard Title
	ASTM B 828-02	Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings
copper alloy castings	ASTM B 584-2000	Copper Alloy Sand Casting for General Applications
copper alloy fittings	ASME B16.18-2001	Cast Copper Alloy Solder Joint Pressure Fittings
	ASME B16.22-2001	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
	ASME B16.23-2002	Cast Copper Alloy Solder Joint Drainage Fittings
	ASME B16.24-2001	Cast Copper Alloy Pipe Flanged Fittings
	ASME B16.26-88	Cast Copper Alloy Fittings for Flared Copper Tubes
	ASME B16.29-2001	Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings
	ASME B16.50-2001	Wrought Copper and Wrought Copper Alloy Braze-Joint Pressure Fittings
	MSS SP-106-03	Cast Copper Alloy Flanges and Flanged Fittings, Class 125, 150, and 300
	MSS SP-73-03	Brazing Joints for Wrought and Cast Copper Alloy Solder Joint Pressure Fittings Copper Alloy Pipe
	ASTM B 687-99	Brass, Copper, and Chromium-Plated Pipe Nipples
copper alloy UNS No. C 23000	ASTM B 43-1998 <sup>e1</sup>	Seamless Red Brass Pipe, Standard Sizes
copper and copper alloys	ASTM B 813-00 <sup>e1</sup>	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
copper fittings	ASME B16.50-2001	Wrought Copper and Wrought Copper Alloy Braze-Joint Pressure Fittings
	MSS SP-109-97	Welded Fabricated Copper Solder Joint Pressure Fittings
copper pipe	ASTM B 42-2002 <sup>e1</sup>	Seamless Copper Pipe, Standard Sizes
	ASTM B 302-2002	Threadless Copper Pipe (TP)
copper sheet	ASTM B 370-98	Copper Sheet and Strip for Building Construction
copper tube	ASTM B 88-2003	Seamless Copper Water Tube, (K, L, M)
	ASTM B 280-2003	Seamless Copper Tube for Air Conditioning and Refrigeration Field Service

Key Word	Standard Number	Standard Title
	ASTM B 306-2002	Copper Drainage Tube (DWV)
	ASTM B 447-2002	Welded Copper Tube
copper welded tube	ASTM B 447-2002	Welded Copper Tube
copper-base alloy castings	ASTM B 584-2000	Copper Alloy Sand Casting for General Applications (Note 5)
copper strip	ASTM B 370-98	Copper Sheet and Strip for Building Construction
corrosion resistant	ASTM A 861-02	High-Silicon Iron Pipe and Fittings
corrosiveness	ASTM B 813-00 <sup>e1</sup>	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
corrosivity	ASTM B 828-02	Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings
cracking	ASTM C 411-97	Hot-Surface Performance of High Temperature Thermal Insulation
crosslinked PE	ASTM F 1281-03	Cross-Linked Polyethylene/Aluminum/Cross-Linked Polyethylene (PEX-AL-PEX) Pressure Pipe
crosslinked polyethylene	ASTM F 1961-02a	Metal Cold Flare Compression Fittings with Disk Springs for Cross-Linked Polyethylene (PEX) Tubing
CSST	IAS LC 1b-01 • CSA 6.26-01	Piping Systems Using Corrugated Stainless Steel Tubing (CSST) Fuel Gas
dampers	UL 555-1999	Fire Dampers
	UL 555S-1999	Smoke Dampers
decorative appliances	ANSI Z21.50-2003	Decorative Gas Appliances, Vented
	ANSI Z21.50b-2002	Decorative Gas Appliances, Vented
	ANSI Z21.60-2002	Decorative Gas Appliances for Installation in Solid-Fuel Burning Fireplaces
decorative fireplace appliances	ANSI Z21.60-2002	Decorative Gas Appliances for Installation in Solid-Fuel Burning Fireplaces
delamination	ASTM C 411-97	Hot-Surface Performance of High Temperature Thermal Insulation
direct vent furnaces	ANSI Z21.44-1991	Wall Furnaces, Gas-Fired Gravity and Fan Type Direct Vent
	ANSI Z21.44a-1992	Wall Furnaces, Gas-Fired Gravity and Fan Type Direct Vent
domestic	ANSI Z21.17-1998 • CSA 2.7-M98	Conversion Burners, Domestic Gas

Key Word	Standard Number	Standard Title
downspouts	ANSI Z21.17a-1993, Addenda	Conversion Burners, Domestic Gas
	ANSI Z21.17b-1993	Conversion Burners, Domestic Gas
	ASTM B 370-98	Copper Sheet and Strip for Building Construction
draft hoods	ANSI Z21.12-1990 (R2000)	Draft Hoods
	ANSI Z21.12a-1993 (R2000), Addenda	Draft Hoods
	ANSI Z21.12b-1994 (R2000), Addenda	Draft Hoods
drain tubes	ASME A112.4.1-93(R02)	Water Heater Relief Valve Drain Tubes
drain valves	ASSE 1005-1999	Water Heater Drain Valves
drainage fittings	ASME B16.23-2002	Cast Copper Alloy Solder Joint Drainage Fittings
	ASME B16.29-2001	Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings
drainage tube	ASTM B 306-2002	Copper Drainage Tube (DWV)
drinking fountains	ARI 1010-02	Drinking Fountains and Self-Contained, Mechanically Refrigerated Drinking Water Coolers
dryseal pipe threads	ANSI B1.20.3-1976 (R2003)	Dryseal Pipe Threads, Inch Duct
	ASTM E 2231-02	Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics
duct construction	SMACNA 2003	Fibrous Glass Duct Construction Standard
duct furnaces	ANSI Z83.8-2002•CSA 2.6-2002	Gas Unit Heaters and Duct Furnaces, Gas-Fired
	ANSI Z83.8a-2003, Addenda	Gas Unit Heaters and Duct Furnaces, Gas-Fired
ductile iron fittings	ANSI A21.10-03	Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids (same as AWWA C110)
	AWWA C110-03	Ductile Iron and Gray Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids (same as ANSI A21.10-98 03)
ductile iron pipe	ANSI A21.51-02	Ductile-Iron Pipe, Centrifugally Cast, for Water (same as AWWA C151)
	AWWA C151-02	Ductile-Iron Pipe, Centrifugally Cast, for Water (same as ANSI A21.51-02)
ducts	ACCA Manual J 2-2004	Residential Load Calculation
	UL 181-1996	Factory-Made Air Ducts and Air Connectors
dust explosion prevention	NFPA 654-2005	Standard for the Prevention of Fire

Key Word	Standard Number	Standard Title
		and Dust Explosion from the Manufacturing, Processing, and Handling of Combustible Particulate Solids
earthquake valves	ASCE 25-99	Earthquake Actuated Automatic Gas Shutoff Devices
electric appliances	UL 1026-1995	Electric Household Cooking and Food Serving Appliances
	UL 197-2003	Commercial Electric Cooking Appliances
electric boilers	UL 834-1995	Heating, Water Supply, and Power Boilers - Electric
electric ranges	UL 858-1993	Household Electric Ranges
electric water heaters	UL 1453-1995	Electric Booster and Commercial Storage Tank Water Heaters
em tube	ASTM B 687-99	Brass, Copper, and Chromium-Plated Pipe Nipples
error analysis	ASTM C 518-01 <sup>e1</sup>	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
exhaust hoods	UL 710-1995	Exhaust Hoods for Commercial Cooking Equipment
explosion prevention	NFPA 69-2002	Explosion Prevention Systems
extra strong	ASTM B 42-2002 <sup>e1</sup>	Seamless Copper Pipe, Standard Sizes
extractors	UL 2157-1997	Electric Clothes Washing Machines and Extractors
fabricated fittings	MSS SP-109-97	Welded Fabricated Copper Solder Joint Pressure Fittings
fiberglass ducts	SMACNA 2003	Fibrous Glass Duct Construction Standard
field service tube	ASTM B 280-2003	Seamless Copper Tube for Air Conditioning and Refrigeration Field Service
filters	ANSI Z21.35-1995 (R2002)	Pilot Gas Filters
	ANSI Z21.35a-1997 (R2002)	Pilot Gas Filters
	ANSI Z21.35b-2000 (R2002)	Pilot Gas Filters
	UL 900-1994	Air Filter Units
fire protection	NFPA 96-2004	Ventilation Control and Fire Protection of Commercial Cooking Operations
fire testing-building materials	ASTM E 814-02	Fire Tests of Through Penetration Fire Stops
fire testing-hose stream test	ASTM E 814-02	Fire Tests of Through Penetration Fire Stops

Key Word	Standard Number	Standard Title
fireplace heaters	ANSI Z21.88-2002	Vented Gas Fireplace Heaters
	ANSI Z21.88a-2003, Addenda	Vented Gas Fireplace Heaters
fireplaces	ANSI Z21.50a-2003, Addenda	Gas Fireplaces, Vented
	NFPA 211-2003	Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances
	UL 127-1996	Fireplaces, Factory-Built
firestop devices	ASME A112.20.2	Qualification of Installers of Firestop Systems and Devices for Piping Systems
firestop systems	ASME A112.20.2	Qualification of Installers of Firestop Systems and Devices for Piping Systems
fittings	ANSI A21.10-03	Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids (same as AWWA C110)
	ASTM A 861-02	High-Silicon Iron Pipe and Fittings
	ASTM B 828-02	Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings
	ASTM F 2158 -01	Residential Central-Vacuum Tube and Fittings
flame	ASTM E 2231-02	Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning
Characteristics		
flame arrestors	UL 525-2004	Flame Arrestors
flame spread	ASTM E 84-03b	Surface Burning Characteristics of Building Materials
flame spread index	ASTM E 84-03b	Surface Burning Characteristics of Building Materials
flame travel testing	NFPA 262-2006	Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces
flammable liquids	NFPA 30-2003	Flammable and Combustible Liquids Code
flanged fittings	ASME B16.1-98	Cast-Iron Pipe Flanges and Flanged Fittings, Classes 25, 125, 250, and 800
	ASME B16.24-2001	Cast Copper Alloy Pipe Flanged Fittings
	MSS SP-106-03	Cast Copper Alloy Flanges and Flanged Fittings, Class 125, 150, and 300
flared tube fittings	ASME B16.26-88	Cast Copper Alloy Fittings for Flared Copper Tubes
flashing	ASTM B 370-98	Copper Sheet and Strip for Building Construction

Key Word	Standard Number	Standard Title
flexible connectors	ANSI Z21.45-1995	Flexible Connectors for Other Than All-Metal Construction for Gas Appliances
	ASME A112.18.6-03	Flexible Water Connectors
	IAPMO PS 14-2002	Flexible Metallic Field Fabricated Water Connectors
flexible hose	IAPMO PS 33 -00a	Flexible PVC Hose for Pools, Hot Tubs, Spas and Jetted Bathtub
floor furnaces	UL 729-2003	Oil-Fired Floor Furnaces
flushing	ASTM B 813-00 <sup>e1</sup>	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
flux	ASTM B 32-03	Solders Metal
	ASTM B 828-02	Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings
flux cored solder	ASTM B 32-03	Solders Metal
food service equipment	ANSI Z83.11-2002	Gas Food Service Equipment
freezers	UL 471-1995	Commercial Refrigerators and Freezers
fuel cell power plants	NFPA 853-2003	Standard for the Installation of Stationary Fuel Cell Power Plants
fuel cells	NFPA 853-2003	Standard for the Installation of Stationary Fuel Cell Power Plants
fuel gas code	ANSI Z223.1-02	National Fuel Gas Code (same as NFPA 54)
	NFPA 54-2005	National Fuel Gas Code
fuel gas tubing	IAS LC 1b-01•CSA 6.26-01	Piping Systems Using Corrugated Stainless Steel Tubing (CSST) Fuel Gas
fuel oil	CAN/CGSB 3.2-99	Heating Fuel Oil
fusible links	UL 33-2003	Heat Responsive Links for Fire Protection Service
gas appliances	ANSI Z21.1-2000	Household Cooking Gas Appliances
	ANSI Z21.86-2003	Heating Appliances, Vented Gas-Fired
gas burners	ANSI Z21.17-1998•CSA 2.7-M98	Conversion Burners, Domestic Gas
	ANSI Z21.17a-1993, Addenda	Conversion Burners, Domestic Gas
	ANSI Z21.17b-1993	Conversion Burners, Domestic Gas
	ANSI Z21.8-1994 (R2002)	Conversion Burners, Domestic Gas, Installation of
gas connectors	ANSI Z21.2-1992	Gas Hose Connectors for Portable Indoor Gas-Fired Appliances

Key Word	Standard Number	Standard Title
	ANSI Z21.24-2001	Connectors for Gas Appliances
	ANSI Z21.24a-2002, Addenda	Connectors for Gas Appliances
	ANSI Z21.24b-2003, Addenda	Connectors for Gas Appliances
	ANSI Z21.54-2002	Gas Hose Connectors for Portable Outdoor Gas-Fired Appliances
	UL 569-1995	Pigtails and Flexible Hose Connectors for LP-Gas
gas fired air conditioning	ANSI Z21.40.1-1996/CGA 2.91-M96	Air-Conditioning and Heat Pump Appliances, Gas Fired, Heat Activated
	ANSI Z21.40.1a-1982, Addenda	Air Conditioning Appliances, Gas Fired Absorption Summer
gas fired boilers	ANSI Z21.13-02•CSA 4.9a02	Gas-Fired Low-Pressure Steam and Hot-Water Boilers
	ANSI Z21.13a-2002, Addenda	Boilers, Gas-Fired, Low-Pressure Steam and Hot-Water
	ANSI Z21.13b-2003, Addenda	Boilers, Gas-Fired, Low-Pressure Steam and Hot-Water
gas fired heat pump	ANSI Z21.40.1-1996/CGA 2.91-M96	Air-Conditioning and Heat Pump Appliances, Gas Fired, Heat Activated
gas fired heaters	ANSI Z21.56-01•CSA 4.7-2001	Gas-Fired Pool Heaters and Spas
	ANSI Z21.56a-2003, Addenda	Pool Heaters, Gas-Fired
gas fireplaces	ANSI Z21.50a-2003, Addenda	Gas Fireplaces, Vented
gas heaters	ANSI Z21.88-2002	Vented Gas Fireplace Heaters
	ANSI Z21.88a-2003, Addenda	Vented Gas Fireplace Heaters
gas ignition	ANSI Z21.20a-2000	Automatic Gas Ignition Systems and Components
	ANSI Z21.20b-2001	Automatic Gas Ignition Systems and Components
gas refrigerators	ANSI Z21.19-2002	Refrigerators Using Gas Fuel
	ANSI Z21.18-2000	Pressure Regulators, Gas Appliance
	ANSI Z21.18a-2001, Addenda	Pressure Regulators, Gas Appliance
gas shutoff	ANSI Z21.22-00•CSA 4.4-00	Relief Valves and Automatic Gas Shutoff Devices for Hot-Water Supply Systems
gas valve	ASME B16.33-2002	Manually Operated Metallic Gas Valves for Use in Gas Piping Systems up to 125 PSIG (Sizes 1/2 through 2)
	ASME B16.38-85 (R94)	Large Metallic Valves for Gas Distribution (Manually Operated, NPS 2-1/2 to 12, 125 psig maximum)
	ANSI Z21.15-1997 (R2003)	Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves

Key Word	Standard Number	Standard Title
	ANSI Z21.15a-2001 (R2003), Addenda	Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves
	ANSI Z21.21-2000	Valves, Automatic for Gas Appliances
	ANSI Z21.21a-2001, Addenda	Valves, Automatic for Gas Appliances
	ANSI Z21.21b-2001, Addenda	Valves, Automatic for Gas Appliances
gas vent systems	UL 1738-1993	Venting Systems for Gas-Burning Appliances, Categories II, III, and IV
gas water heaters	ANSI Z21.10.1-01a 02•CSA 4.1a02	Gas Water Heaters - Volume I - Storage Water Heaters with Input Ratings of 75,000 Btu per Hour or Less (22 kW)
	ANSI Z21.10.1a-2002	Gas Water Heaters - Volume I, Water Heaters with Input Ratings of 75,000 Btu per Hour or Less
	ANSI Z21.10.1b-2003	Gas Water Heaters - Volume I, Water Heaters with Input Ratings of 75,000 Btu per Hour or Less
	ANSI Z21.10.3-2001	Gas Water Heaters - Volume III, Storage, with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous Water Heaters
	ANSI Z21.10.3a-2003, Addenda	Gas Water Heaters - Volume III, Storage, with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous Water Heaters
	ANSI Z21.10.3b-2003, Addenda	Gas Water Heaters - Volume III, Storage, with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous Water Heaters
gate valves	AWWA C500-02	Gate Valves for Water and Sewerage Systems
	MSS SP-80-03	Bronze Gate-Globe, Angle, and Check Valves
gauges	UL 180-2003	Liquid Level Indicating Gauges for Oil Burner Fuels
globe valves	MSS SP-80-03	Bronze Gate-Globe, Angle, and Check Valves
gravity vent furnaces	ANSI Z21.44-1991	Wall Furnaces, Gas-Fired Gravity and Fan Type Direct Vent
	ANSI Z21.44a-1992	Wall Furnaces, Gas-Fired Gravity and Fan Type Direct Vent
gray iron fittings	ANSI A21.10-03	Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids (same as AWWA C110)

Key Word	Standard Number	Standard Title
gutters	AWWA C110-03	Ductile Iron and Gray Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids (same as ANSI A21.10-98 03)
	ASTM B 370-98	Copper Sheet and Strip for Building Construction Handling Combustible Particulates
	NFPA 654-2005	Standard for the Prevention of Fire and Dust Explosion from the Manufacturing, Processing, and Handling of Combustible Particulate Solids
heat flow meter apparatus	ASTM C 518-01 <sup>e1</sup>	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
heat flux	ASTM C 518-01 <sup>e1</sup>	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
heating	ASTM B 828-2002	Soldering Procedure for Capillary Space Joints in Copper and Copper Alloy Tube and Fittings
heating appliance chimneys	UL 103-01	Factory-Built Chimneys for Residential Type and Building Heating Appliances
heating boilers	ASME Section IV	Rules for Construction of Heating Boilers
high intensity heaters	ANSI Z83.19a-2002	Infrared Heaters, Gas-Fired High Intensity
high purity piping	ASME A112.20.1-2004	Qualification of Installers of High Purity Piping Systems
high strength low alloy	ASTM A 653-03	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
high-silicon iron	ASTM A 861-02	High-Silicon Iron Pipe and Fittings
hoods	ANSI Z21.12-1990 (R2000)	Draft Hoods
	ANSI Z21.12a-1993 (R2000), Addenda	Draft Hoods
	ANSI Z21.12b-1994 (R2000), Addenda	Draft Hoods
hoods	UL 710-1995	Exhaust Hoods for Commercial Cooking Equipment
hose	IAPMO PS 33 -00a	Flexible PVC Hose for Pools, Hot Tubs, Spas and Jetted Bathtub
	UL 21-1995	Hose, LP-Gas
	UL 536-1997	Flexible Metallic Hose
	ANSI Z21.54-2002	Gas Hose Connectors for Portable

Key Word	Standard Number	Standard Title
hose end valves	ANSI Z21.15-1997 (R2003)	Outdoor Gas-Fired Appliances Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves
	ANSI Z21.15a-2001 (R2003), Addenda	Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves
hose valves	ANSI Z21.15-1992	Valves and Hose Valves, Manually Operated Gas
hot water	ANSI Z21.22-00•CSA 4.4-00	Relief Valves and Automatic Gas Shutoff Devices for Hot-Water Supply Systems
	ANSI Z21.22-1999 (R2003)	Valves, Relief for Hot Water Supply Systems
hot water boilers	ANSI Z21.13-02•CSA 4.9a02	Gas-Fired Low-Pressure Steam and Hot-Water Boilers
	ANSI Z21.13a-2002, Addenda	Boilers, Gas-Fired, Low-Pressure Steam and Hot-Water
	ANSI Z21.13b-2003, Addenda	Boilers, Gas-Fired, Low-Pressure Steam and Hot-Water
hot-surface performance evaluation	ASTM C 411-97	Hot-Surface Performance of High Temperature Thermal Insulation
household appliances	ANSI Z21.1-2000	Household Cooking Gas Appliances
hubless	ASTM A 861-02	High-Silicon Iron Pipe and Fittings
hub/plain-end	ASTM A 861-02	High-Silicon Iron Pipe and Fittings
identification	ANSI A13.1-96	Scheme for the Identification of Piping Systems
identification of piping	ANSI A13.1-96	Scheme for the Identification of Piping Systems
IEEE	ASTM E 2231-02	Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics
ignition	ANSI Z21.20a-2000	Automatic Gas Ignition Systems and Components
ignition	ANSI Z21.20b-2001	Automatic Gas Ignition Systems and Components
illuminating appliances	ANSI Z21.42-1997 (R2002)	Illuminating Appliances, Gas Fired
	ANSI Z21.42a-1973	Illuminating Appliances, Gas Fired
	ANSI Z21.42b-1981	Illuminating Appliances, Gas Fired
indirect water heaters	IAS 1-91	U.S. Requirements for Indirect Water Heaters for Use With External Heat Source Indoor
	ANSI Z21.2-1992	Gas Hose Connectors for Portable Indoor Gas-Fired Appliances
indoor air quality	ASHRAE 62, 2001	Ventilation for Acceptable Indoor Air

Key Word	Standard Number	Standard Title
industrial heaters, recirculating	ANSI Z83.18-2000	Quality, Addenda h, i, k, n, o, r, t, u, v, x, z, ab, ad, ae, and af Recirculating Direct Gas-Fired Industrial Air Heaters
	ANSI Z83.18a-2001, Addenda	Recirculating Direct Gas-Fired Industrial Air Heaters
	ANSI Z83.18b-2003, Addenda	Recirculating Direct Gas-Fired Industrial Air Heaters
industrial heaters, non-recirculating	ANSI Z83.4-1999•CSA 3.7-M99	Non-Recirculating Direct Gas-Fired Industrial Air Heaters
	ANSI Z83.4a-2001•CSA 3.7a-2001, Addenda	Non-Recirculating Direct Gas-Fired Industrial Air Heaters
infrared heaters	ANSI Z83.19a-2002	Infrared Heaters, Gas-Fired High Intensity
	ANSI Z83.20-2001	Infrared Heaters, Gas-Fired Tube-Type and Low Intensity
	ANSI Z83.20a-2002, Addenda	Infrared Heaters, Gas-Fired Tube-Type and Low Intensity
	ANSI Z83.20b-2004, Addenda	Infrared Heaters, Gas-Fired Tube-Type and Low Intensity
ingot	ASTM B 32-03	Solders Metal
installing pipe hanger	MSS SP-89-98	Pipe Hangers and Supports - Fabrication and Installation Practices
installers	ASME A112.20.1-2004	Qualification of Installers of High Purity Piping Systems
	ASME A112.20.2	Qualification of Installers of Firestop Systems and Devices for Piping Systems
installing pipe supports	MSS SP-89-98	Pipe Hangers and Supports - Fabrication and Installation Practices
instantaneous water heaters	ANSI Z21.10.3-2001	Gas Water Heaters - Volume III, Storage, with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous Water Heaters
	ANSI Z21.10.3a-2003, Addenda	Gas Water Heaters - Volume III, Storage, with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous Water Heaters
	ANSI Z21.10.3b-2003, Addenda	Gas Water Heaters - Volume III, Storage, with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous Water Heaters
instrument verification	ASTM C 518-01 <sup>e1</sup>	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
insulation	ASTM E 2231-02	Specimen Preparation and Mounting of Pipe and Duct Insulation Materials

Key Word	Standard Number	Standard Title
iron fittings	ANSI A21.10-03	to Assess Surface Burning Characteristics Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids (same as AWWA C110)
iron pipe	ANSI A21.51-02	Ductile-Iron Pipe, Centrifugally Cast, for Water (same as AWWA C151)
lead-silver alloys	ASTM B 32-03	Solders Metal
lead-tin alloys	ASTM B 32-03	Solders Metal
lead-tin-silver alloys	ASTM B 32-03	Solders Metal
level gauges	UL 180-2003	Liquid Level Indicating Gauges for Oil Burner Fuels
liners	UL 1777-2004	Chimney Liners
liquid and paste fluxes	ASTM B 813-00 <sup>e1</sup>	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
low intensity heaters	ANSI Z83.20-2001	Infrared Heaters, Gas-Fired Tube-Type and Low Intensity
	ANSI Z83.20a-2002, Addenda	Infrared Heaters, Gas-Fired Tube-Type and Low Intensity
	ANSI Z83.20b-2004, Addenda	Infrared Heaters, Gas-Fired Tube-Type and Low Intensity
low pressure boilers	ANSI Z21.13-02•CSA 4.9a02	Gas-Fired Low-Pressure Steam and Hot-Water Boilers
	ANSI Z21.13a-2002, Addenda	Boilers, Gas-Fired, Low-Pressure Steam and Hot-Water
	ANSI Z21.13b-2003, Addenda	Boilers, Gas-Fired, Low-Pressure Steam and Hot-Water
LPG	UL 144-1999	Regulators, LP-Gas
LPG code	NFPA 58-2004	Liquefied Petroleum Gas Code
LPG hose	UL 21-1995	Hose, LP-Gas
LPG pumps	UL 51-2002	Pumps, Power Operated for Anhydrous Ammonia and LP-Gas
LPG relief valves	UL 132-1997	Valves, Safety Relief for Anhydrous Ammonia and LP-Gas
LPG valves	UL 125-1997	Valves for Anhydrous Ammonia and LP Gas (Other than Safety Relief)
manual valve	ASME B16.33-2002	Manually Operated Metallic Gas Valves for Use in Gas Piping Systems up to 125 PSIG (Sizes 1/2 through 2)
	ASME B16.38-85 (R94)	Large Metallic Valves for Gas Distribution (Manually Operated, NPS 2-1/2 to 12, 125 psig Maximum)
manually operated valves	ANSI Z21.15-1997 (R2003)	Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves

Key Word	Standard Number	Standard Title
	ANSI Z21.15a-2001 (R2003), Addenda	Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves
markings	ANSI A13.1-96	Scheme for the Identification of Piping Systems
metallic hose	UL 536-1997	Flexible Metallic Hose
minimized spangle coating	ASTM A 653-03	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
no-hub	ASTM A 861-02	High-Silicon Iron Pipe and Fittings
non-recirculating heaters	ANSI Z83.4-1999•CSA 3.7-M99	Non-Recirculating Direct Gas-Fired Industrial Air Heaters
	ANSI Z83.4a-2001•CSA 3.7a-2001, Addenda	Non-Recirculating Direct Gas-Fired Industrial Air Heaters
oil burning equipment	NFPA 31-2006	Installation of Oil Burning Equipment
oil fired furnaces	UL 729-2003	Oil-Fired Floor Furnaces
oil pumps	UL 343-1997	Pumps for Oil Burning Appliances
oil tanks	UL 443-1995	Steel, Auxiliary Tanks for Oil-Burner Fuel
	UL 80-1996	Steel, Tanks for Oil-Burner Fuel
oil valves	UL 352-1997	Constant-Level Oil Valves Petroleum and Petroleum Products
	ASTM D 396-02a	Specification for Fuel Oil
PEX	ASTM F 1961-02a	Metal Cold Flare Compression Fittings with Disk Springs for Cross-Linked Polyethylene (PEX) Tubing
PEX-AL-PEX	ASTM F 1281-03	Cross-Linked Polyethylene/Aluminum/Cross-Linked Polyethylene (PEX-AL-PEX) Pressure Pipe
pilot filters	ANSI Z21.35-1995 (R2002)	Pilot Gas Filters
	ANSI Z21.35a-1997 (R2002)	Pilot Gas Filters
	ANSI Z21.35b-2000 (R2002)	Pilot Gas Filters
pilot ignition systems	ANSI Z21.71-1993 (R2002)	Automatic Intermittent Pilot Ignition Systems for Field Installation
pipe	ANSI A21.51-02	Ductile-Iron Pipe, Centrifugally Cast, for Water (same as AWWA C151)
	ASTM E 2231-02	Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics
	ASTM F 1281-03	Cross-Linked Polyethylene/Aluminum/Cross-Linked Polyethylene (PEX-AL-PEX) Pressure Pipe
pipe and fittings compounds	PPI TR-4, 2004	Thermoplastic Pipe and Fittings

Key Word	Standard Number	Standard Title
pipe coatings	AWWA C203-02	Compounds, Recommended Hydrostatic Strengths and Design Stresses
	IAPMO IS 13-2000	Coal-Tar Protective Coatings and Linings for Steel Water Pipelines - Enameled and Tape - Hot Applied
pipe fittings	ASTM A 733-03	Protectively Coated Pipe (Installation Standard for)
		Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples
pipe hangers	MSS SP-58-02	Pipe Hangers and Supports - Materials, Design, and Manufacture
	MSS SP-69-02	Pipe Hangers and Supports - Selection and Application
pipe linings	AWWA C203-02	Coal-Tar Protective Coatings and Linings for Steel Water Pipelines - Enameled and Tape - Hot Applied
pipe nipples	ASTM A 733-03	Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples
	ASTM B 687-99	Brass, Copper, and Chromium-Plated Pipe Nipples
pipe supports	MSS SP-58-02	Pipe Hangers and Supports - Materials, Design, and Manufacture
	MSS SP-69-02	Pipe Hangers and Supports - Selection and Application
pipe thermal insulation	ASTM C 411-97	Hot-Surface Performance of High Temperature Thermal Insulation
pipe threads	ANSI B1.20.1-1983 (R2001)	Pipe Threads, General Purpose (Inch)
	ANSI B1.20.3-1976 (R2003)	Dryseal Pipe Threads (Inch)
pipng	ANSI B31.5-2001	Refrigeration Piping
pool heaters	ANSI Z21.56-01•CSA 4.7-2001	Gas-Fired Pool Heaters and Spas
	ANSI Z21.56a-2003, Addenda	Pool Heaters, Gas-Fired
portable	ANSI Z21.2-1992	Gas Hose Connectors for Portable Indoor Gas-Fired Appliances
portable appliance connectors	ANSI Z21.54-2002	Gas Hose Connectors for Portable Outdoor Gas-Fired Appliances
powder	ASTM B 32-03	Solders Metal
preparation	ASTM E 2231-02	Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics
pressure	ASTM F 1281-03	Cross-Linked Polyethylene/Aluminum/Cross-Linked Polyethylene (PEX-AL-PEX) Pressure Pipe
pressure fittings	ASME B16.18-2001	Cast Copper Alloy Solder Joint

Key Word	Standard Number	Standard Title
		Pressure Fittings
	ASME B16.22-2001	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
	ASME B16.50-2001	Wrought Copper and Wrought Copper Alloy Braze-Joint Pressure Fittings
	MSS SP-104-03	Wrought Copper Solder Joint Pressure Fittings
	MSS SP-109-97	Welded Fabricated Copper Solder Joint Pressure Fittings
	MSS SP-73-03	Brazing Joints for Wrought and Cast Copper Alloy Solder Joint Pressure Fittings
pressure regulators	ANSI Z21.18-2000	Pressure Regulators, Gas Appliance
	ANSI Z21.18a-2001, Addenda	Pressure Regulators, Gas Appliance
	ANSI Z21.80-03•CSA 6.22-M97	Line Pressure Regulators
pressure relief	ANSI Z21.22a-1999	Valves, Pressure Relief and Vacuum Relief
	ANSI Z21.22b-2001, Addenda	Valves, Relief for Hot Water Supply Systems
pressure vessel construction	ASME Section VIII	Rules for Construction of Pressure Vessels
pressure vessels	ASME Section VIII	Rules for Construction of Pressure Vessels
pumps	UL 343-1997	Pumps for Oil Burning Appliances
	UL 51-2002	Pumps, Power Operated for Anhydrous Ammonia and LP-Gas
PVC	ASTM F 2158 -01	Residential Central-Vacuum Tube and Fittings
PVC hose	IAPMO PS 33 -00a	Flexible PVC Hose for Pools, Hot Tubs, Spas and Jetted Bathtub
quick disconnect	ANSI Z21.41-2003	Quick-Disconnect Devices for use with Gas Fuel
	ANSI Z21.41a-1990 Addenda	Quick-Disconnect Devices for use with Gas Fuel
	ANSI Z21.41b-1992, Addenda	Quick-Disconnect Devices for use with Gas Fuel
ranges	UL 858-1993	Household Electric Ranges
recirculating heaters	ANSI Z83.18-2000	Recirculating Direct Gas-Fired Industrial Air Heaters
	ANSI Z83.18a-2001, Addenda	Recirculating Direct Gas-Fired Industrial Air Heaters
	ANSI Z83.18b-2003, Addenda	Recirculating Direct Gas-Fired Industrial Air Heaters

Key Word	Standard Number	Standard Title
red brass pipe	ASTM B 43-1998 <sup>e1</sup>	Seamless Red Brass Pipe, Standard Sizes
refrigerant classification	ASHRAE 34-2001	Refrigerants, Designation and Safety Classification of
refrigerants	ARI 700-99	Refrigerants, Specifications for Fluorocarbon
refrigeration	UL 412-1993	Unit Coolers, Refrigeration
refrigeration components	UL 207-2001	Refrigerant-Containing Components and Accessories, Non-Electrical
refrigeration piping	ANSI B31.5-2001	Refrigeration Piping
refrigeration systems	ASHRAE 15- (2001)	Safety Standards for Refrigeration Systems
refrigeration tube	ASTM B 280-2003	Seamless Copper Tube for Air Conditioning and Refrigeration Field Service
refrigerators	ANSI Z21.19-2002 UL 471-1995	Refrigerators Using Gas Fuel Commercial Refrigerators and Freezers
regular	ASTM B 42-2002 <sup>e1</sup>	Seamless Copper Pipe, Standard Sizes
regulators	ANSI Z21.80-03 • CSA 6.22-M97 UL 144-1999 UL 252-2003	Line Pressure Regulators Regulators, LP-Gas Regulators, Compressed Gas
relief valve drains	ASME A112.4.1-93(R02)	Water Heater Relief Valve Drain Tubes
relief valves	ANSI Z21.22-00 • CSA 4.4-00  ANSI Z21.22-1999 (R2003) UL 132-1997	Relief Valves and Automatic Gas Shutoff Devices for Hot-Water Supply Systems  Valves, Relief for Hot Water Supply Systems Valves, Safety Relief for Anhydrous Ammonia and LP-Gas
residential chimneys	UL 103-01	Factory-Built Chimneys for Residential Type and Building Heating Appliances
resistivity	ASTM B 813-00 <sup>e1</sup>	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
restaurant fire protection	UL 300-1996	Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas
ribbon	ASTM B 32-03	Solders Metal
roofing	ASTM B 370-98	Copper Sheet and Strip for Building Construction
room heaters	ANSI Z21.11.1-1991 ANSI Z21.11.2-2002  ANSI Z21.11.2a-2003, Addenda	Volume I, Vented Room Heaters Unvented Room Heaters, Gas-Fired, Volume II  Unvented Room Heaters, Gas-Fired,

Key Word	Standard Number	Standard Title
		Volume II
	UL 1482-1996	Room Heaters, Solid Fuel Type
sand castings	ASTM B 584-2000	Copper Alloy Sand Casting for General Applications (Note 5)
sanitary tube	ASTM B 306-02	Copper Drainage Tube (DWV)
seamless	ASTM B 88-2003	Seamless Copper Water Tube, (K, L, M)
seamless brass tube	ASTM B 135-02	Seamless Brass Tube
seamless copper tube	ASTM B 280-2003	Seamless Copper Tube for Air Conditioning and Refrigeration Field Service
	ASTM B 306-02	Copper Drainage Tube (DWV)
	ASTM B 75-2002	Seamless Copper Tube
seamless pipe	ASME B36.10M-01	Welded and Seamless Wrought Steel Pipe
seamless steel pipe	ASTM A 312-03	Seamless and Welded Austenitic Stainless Steel Pipes
	ASTM A 53-02	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded, and Seamless
seamless tube	ASTM B 135-02	Seamless Brass Tube
seamless tube	ASTM B 75-2002	Seamless Copper Tube
sheet steel	ASTM A 653-03	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
sheet/strip in flat lengths	ASTM B 370-98	Copper Sheet and Strip for Building Construction
shutoff valves	ASCE 25-99	Earthquake Actuated Automatic Gas Shutoff Devices
smoke detectors	UL 268A-1998	Smoke Detectors for Duct Application
smoke developed	ASTM E 84-03b	Surface Burning Characteristics of Building Materials
smoke developed index	ASTM E 84-03b	Surface Burning Characteristics of Building Materials
smoke testing	NFPA 262-2006	Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces
solar heating systems	CSA F379.1 -88	Solar Domestic Hot Water Systems (Liquid to Liquid Heat Transfer)
solder fittings	ASME B16.18-2001	Cast Copper Alloy Solder Joint Pressure Fittings
	ASME B16.22-2001	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
	ASME B16.23-2002	Cast Copper Alloy Solder Joint Drainage Fittings
	ASME B16.29-2001	Wrought Copper and Wrought Copper Alloy Solder Joint Drainage

Key Word	Standard Number	Standard Title
		Fittings
	MSS SP-104-03	Wrought Copper Solder Joint Pressure Fittings
	MSS SP-109-97	Welded Fabricated Copper Solder Joint Pressure Fittings
	MSS SP-73-03	Brazing Joints for Wrought and Cast Copper Alloy Solder Joint Pressure Fittings
soldering	ASTM B 813-00 <sup>e1</sup>	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
solid fuel appliances	NFPA 211-03	Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances
solid fuel heaters	UL 1482-1996	Room Heaters, Solid Fuel Type
spa heaters	ANSI Z21.56-01 • CSA 4.7-2001	Gas-Fired Pool Heaters and Spas
spangle	ASTM A 653-03	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
specifications	ASTM D 396-02a	Specification for Fuel Oil
spreading factor	ASTM B 813-00 <sup>e1</sup>	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
stainless steel fittings	ASTM A 733-03	Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples
stainless steel pipe	ASTM A 312-03	Seamless and Welded Austenitic Stainless Steel Pipes
stainless steel tubing	IAS LC 1b-01 • CSA 6.26-01	Piping Systems Using Corrugated Stainless Steel Tubing (CSST) Fuel Gas
standard sizes	ASTM B 42-2002 <sup>e1</sup>	Seamless Copper Pipe, Standard Sizes
steam boilers	ANSI Z21.13-02 • CSA 4.9a02	Gas-Fired Low-Pressure Steam and Hot-Water Boilers
	ANSI Z21.13a-2002, Addenda	Boilers, Gas-Fired, Low-Pressure Steam and Hot-Water
	ANSI Z21.13b-2003, Addenda	Boilers, Gas-Fired, Low-Pressure Steam and Hot-Water
steel	ASTM A 653-03	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
steel pipe	ASME B36.10M-01	Welded and Seamless Wrought Steel Pipe
	ASTM A 312-03	Seamless and Welded Austenitic Stainless Steel Pipes
	ASTM A 53-02	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded, and Seamless

Key Word	Standard Number	Standard Title
steel sheet	ASTM A 653-03	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process Steiner Tunnel
	ASTM E 84-03b	Surface Burning Characteristics of Building Materials
stoves	UL 737-1996	Fireplace Stoves
	UL 896-1993	Oil-Burning Stoves
structural analysis/ applications	ASTM E 814-02	Fire Tests of Through Penetration Fire Stops
structural steel	ASTM A 653-03	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
surface analysis-building construction materials	ASTM C 411-97	Hot-Surface Performance of High Temperature Thermal Insulation
surface burning test	UL 723-2003	Test for Surface Burning Characteristics of Building Materials
surface burning characteristics	ASTM E 84-03b	Surface Burning Characteristics of Building Materials
surface burning test	NFPA 255-2005	Standard Method of Test of Surface Burning Characteristics of Building Materials
tanks	UL 443-1995	Steel, Auxiliary Tanks for Oil-Burner Fuel
	UL 80-1996	Steel, Tanks for Oil-Burner Fuel
tarnish	ASTM B 813-00 <sup>e1</sup>	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
temperature tests - insulation	ASTM C 411-97	Hot-Surface Performance of High Temperature Thermal Insulation
thermal conductivity	ASTM C 518-01 <sup>e1</sup>	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
thermal insulating materials	ASTM C 411-97	Hot-Surface Performance of High Temperature Thermal Insulation
thermal resistance	ASTM C 518-01 <sup>e1</sup>	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
thermal testing	ASTM C 518-01 <sup>e1</sup>	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
thermoplastic compounds	PPI TR-4, 2004	Thermoplastic Pipe and Fittings Compounds, Recommended

Key Word	Standard Number	Standard Title
thermostats	ANSI Z21.23-2000	Hydrostatic Strengths and Design Stresses Thermostats, Gas Appliance
	ANSI Z21.23a-2003, Addenda	Thermostats, Gas Appliance
	ANSI Z21.23b-1993, Addenda	Thermostats, Gas Appliance
threadless copper pipe	ASTM B 302-2002	Threadless Copper Pipe (TP)
threadless pipe	ASTM B 302-2002	Threadless Copper Pipe (TP)
threadless pipe (TP)	ASTM B 302-2002	Threadless Copper Pipe (TP)
threads	ANSI B1.20.1-1983 (R2001)	Pipe Threads, General Purpose (Inch)
	ANSI B1.20.3-1976 (R2003)	Dryseal Pipe Threads (Inch)
	ASME B1.20.1-83 (R01)	Pipe Threads, General Purpose, Inch
	ASME B1.20.3-76 (R03)	Dryseal Pipe Threads, Inch
toilets	ANSI Z21.61-1983 (R2004)	Toilets, Gas-Fired
tube	ASTM B 75-2002	Seamless Copper Tube
	ASTM F 2158 -01	Residential Central-Vacuum Tube and Fittings
tube fittings	SAE J512 -97	Automotive Tube Fittings
tunnel test	ASTM E 84-03b	Surface Burning Characteristics of Building Materials
unit heaters	ANSI Z83.8-2002•CSA 2.6-2002	Gas Unit Heaters and Duct Furnaces, Gas-Fired
	ANSI Z83.8a-2003, Addenda	Gas Unit Heaters and Duct Furnaces, Gas-Fired
UNS No. C10200	ASTM B 88-2003	Seamless Copper Water Tube, (K, L, M)
UNS No. C12000	ASTM B 88-2003	Seamless Copper Water Tube, (K, L, M)
UNS No. C12200	ASTM B 88-2003	Seamless Copper Water Tube, (K, L, M)
unvented heaters	ANSI Z21.11.2-2002	Unvented Room Heaters, Gas-Fired, Volume II
	ANSI Z21.11.2a-2003, Addenda	Unvented Room Heaters, Gas-Fired, Volume II
vacuum relief	ANSI Z21.22a-1999	Valves, Pressure Relief and Vacuum Relief
	ANSI Z21.22b-2001, Addenda	Valves, Relief for Hot Water Supply Systems
valves	ANSI Z21.15-1997 (R2003)	Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves
	ANSI Z21.15a-2001 (R2003), Addenda	Valves for Appliances, Manually Operated Gas, Appliance Connector and Hose End Valves
	ANSI Z21.21-2000	Valves, Automatic for Gas Appliances
	ANSI Z21.21a-2001, Addenda	Valves, Automatic for Gas Appliances

Key Word	Standard Number	Standard Title
	ANSI Z21.21b-2001, Addenda	Valves, Automatic for Gas Appliances
	ANSI Z21.22a-1999	Valves, Pressure Relief and Vacuum Relief
	ANSI Z21.22b-2001, Addenda	Valves, Relief for Hot Water Supply Systems
	MSS SP-67-02	Butterfly Valves
	MSS SP-80-03	Bronze Gate-Globe, Angle, and Check Valves
	UL 125-1997	Valves for Anhydrous Ammonia and LP Gas (Other than Safety Relief)
	UL 352-1997	Constant-Level Oil Valves
	UL 429-1999	Valves, Electronically Operated
	UL 842-1997	Valves for Flammable Liquids
vent dampers	ANSI Z21.66-1996 (R2001)	Vent Damper Devices for Use with Gas-Fired Appliances, Automatic
	UL 17-1994	Vent or Chimney Connector Dampers for Oil-Fired Appliances
vent systems	UL 1738-1993	Venting Systems for Gas-Burning Appliances, Categories II, III, and IV
vent tube	ASTM B 306-02	Copper Drainage Tube (DWV)
vented heaters	ANSI Z21.11.1-1991	Volume I, Vented Room Heaters
	ANSI Z21.86-2003	Vented Gas Fireplace Heaters
	ANSI Z21.88a-2003, Addenda	Vented Gas Fireplace Heaters
ventilation	ASHRAE 62, 2001	Ventilation for Acceptable Indoor Air Quality, Addenda h, i, k, n, o, r, t, u, v, x, z, ab, ad, ae, and af
vents	UL 441-1996	Gas Vents
wall furnaces	ANSI Z21.44-1991	Wall Furnaces, Gas-Fired Gravity and Fan Type Direct Vent
	ANSI Z21.44a-1992	Wall Furnaces, Gas-Fired Gravity and Fan Type Direct Vent
waste tube	ASTM B 306-02	Copper Drainage Tube (DWV)
water connectors	ASME A112.18.6-03	Flexible Water Connectors
water connectors	IAPMO PS 14-2002	Flexible Metallic Field Fabricated Water Connectors
water coolers	ARI 1010-02	Drinking Fountains and Self-Contained, Mechanically Refrigerated Drinking Water Coolers
water fittings	ANSI A21.10-03	Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids (same as AWWA C110)
	AWWA C110-03	Ductile Iron and Gray Iron Fittings, 3

Key Word	Standard Number	Standard Title
		in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids (same as ANSI A21.10-98 03)
water heater drain valves	ASSE 1005-1999	Water Heater Drain Valves
water heater drains	ASME A112.4.1-93(R02)	Water Heater Relief Valve Drain Tubes
water heaters	ANSI Z21.10.1-01a 02•CSA 4.1a02	Gas Water Heaters - Volume I - Storage Water Heaters with Input Ratings of 75,000 Btu per Hour or Less (22 kW)
	ANSI Z21.10.1a-2002	Gas Water Heaters - Volume I, Water heaters with Input Ratings of 75,000 Btu per Hour or Less
	ANSI Z21.10.1b-2003	Gas Water Heaters - Volume I, Water Heaters with Input Ratings of 75,000 Btu per Hour or Less
	ANSI Z21.10.3-2001	Gas Water Heaters - Volume III, Storage, with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous Water Heaters
	ANSI Z21.10.3a-2003, Addenda	Gas Water Heaters - Volume III, Storage, with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous Water Heaters
	ANSI Z21.10.3b-2003, Addenda	Gas Water Heaters - Volume III, Storage, with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous Water Heaters
	UL 1453-1995	Electric Booster and Commercial Storage Tank Water Heaters
	UL 732-1995	Oil-Fired Storage Tank Water Heaters
water pipe	ANSI A21.51-02	Ductile-Iron Pipe, Centrifugally Cast, for Water (same as AWWA C151)
	AWWA C151-02	Ductile-Iron Pipe, Centrifugally Cast, for Water (same as ANSI A21.51-02)
water tube	ASTM B 88-2003	Seamless Copper Water Tube, (K, L, M)
welded brass tube	ASTM B 587-1997 (R2003)	Welded Brass Tube
welded copper fittings	MSS SP-109-97	Welded Fabricated Copper Solder Joint Pressure Fittings
welded pipe	ASME B36.10M-01	Welded and Seamless Wrought Steel Pipe
welded steel pipe	ASTM A 312-03	Seamless and Welded Austenitic Stainless Steel Pipes
	ASTM A 53-02	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded, and Seamless
welded tube	ASTM B 447-2002	Welded Copper Tube
	ASTM B 587-1997 (R2003)	Welded Brass Tube
wrought copper fittings	MSS SP-104-03	Wrought Copper Solder Joint

Key Word	Standard Number	Standard Title
wrought fittings	ASME B16.22-2001	Pressure Fittings Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
	ASME B16.29-2001	Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings
	ASME B16.50-2001	Wrought Copper and Wrought Copper Alloy Braze-Joint Pressure Fittings
	MSS SP-73-03	Brazing Joints for Wrought and Cast Copper Alloy Solder Joint Pressure Fittings
wrought steel pipe	ASME B36.10M-01	Welded and Seamless Wrought Steel Pipe
zinc coated steel pipe	ASTM A 53-02	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded, and Seamless

Although these standards are referenced in Chapter 17, some of the materials and equipment in the standards may not be acceptable for use under the provisions of this code.

**ABBREVIATIONS IN CHAPTER 17**

<b>ACCA</b>	Air Conditioning Contractors of America, 2800 Shirlington Road, Suite 300, Arlington, VA 22206; 703-575-4477
<b>ANSI</b>	American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018; 212-642-4900
<b>ARI</b>	Air Conditioning and Refrigeration Institute, 4100 North Fairfax Drive, Suite 200, Arlington, VA 22203; 703-524-8800
<b>ASCE</b>	American Society of Civil Engineers, 1081 Alexander Bell Drive, Reston, VA 20191-4400; 800-548-2723
<b>ASHRAE</b>	American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 1791 Tullie Circle, NE, Atlanta, GA 30329-2305, 404-636-8400
<b>ASME</b>	American Society of Mechanical Engineers, United Engineering Center, 345 E. 47th St. New York, NY 10017; 212-705-7722
<b>ASTM</b>	American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959; 610-832-9500
<b>AWS</b>	American Welding Society, 550 N.W. LeJeune Road, Miami, FL, 33126; 305-443-9353
<b>AWWA</b>	American Water Works Association, 6666 W. Quincy Ave., Denver, CO 80235; 303-794-7711
<b>CGSB</b>	Canadian General Standards Board, Place du Portage III, 6B1, 11 Laurier Street, Gatineau, Quebec, Canada K1A 1G6; 819-956-0425
<b>CGA</b>	Canadian Gas Association, 350 Sparks Street, Suite 809, Ottawa, Ontario, Canada K1R 7S8; 613-748-0057
<b>CSA</b>	Canadian Standards Association, 5060 Spectrum Way, Mississauga, Ontario, Canada L4W 5N6; 416-747-4000
<b>IAPMO</b>	International Association of Plumbing and Mechanical Officials, 5001 E. Philadelphia Street, Ontario, CA 91761-2816; 909-472-4100
<b>IAS</b>	International Approval Services, A Division of CSA, 8501 East Pleasant Vally Road Cleveland, OH 44131; 216-524-4990
<b>I-B-R</b>	Institute of Boiler and Radiator Manufacturers, 393 Seventh Avenue, New York, NY 10001
<b>ISO</b>	International Organization for Standardization, 1 rue de Varembe', Casa postale 56, CH-1211 Geneva 20, Switzerland; +41 22 749 01 011
<b>MSS</b>	Manufacturers Standardization Society, 127 Park St. NE, Vienna, VA 22180; 703-281-6613
<b>NFPA</b>	NFPA International, 1 Batterymarch Park, Quincy, MA 02169, 617-770-3000
<b>PPI</b>	Plastic Pipe Institute, 1825 Connecticut Ave NW, Suite 680, Washington, DC 20009; 202-462-9607
<b>SAE</b>	Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001; 724-776-0790
<b>SMACNA</b>	Sheet Metal and Air Conditioning Contractors National Association, 4021 Lafayette Center Road, Chantilly, VA 22021
<b>UL</b>	Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062; 847-272-8800