

Code Of Federal Regulations

Title 10. Energy

Chapter II. DEPARTMENT OF ENERGY

Subchapter D. ENERGY CONSERVATION

Part 440. WEATHERIZATION ASSISTANCE FOR LOW-INCOME PERSONS

Current through April 25, 2013

Appendix A to Part 440. Standards for Weatherization Materials

The following Government standards are produced by the Consumer Product Safety Commission and are published in title 16, Code of Federal Regulations:

Thermal Insulating Materials for Building Elements Including Walls, Floors, Ceilings, Attics, and Roofs Insulation-organic fiber-conformance to Interim Safety Standard in 16 CFR part 1209;

Fire Safety Requirements for Thermal Insulating Materials According to Insulation Use-Attic Floor-insulation materials intended for exposed use in attic floors shall be capable of meeting the same flammability requirements given for cellulose insulation in 16 CFR part 1209;

Enclosed spaces-insulation materials intended for use within enclosed stud or joist spaces shall be capable of meeting the smoldering combustion requirements in 16 CFR part 1209.

The following standards which are not otherwise set forth in part 440 are incorporated by reference and made a part of part 440. The following standards have been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. These materials are incorporated as they exist on April 5, 1993 and a notice of any change in these materials will be published in the Federal Register. The standards incorporated by reference are available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

The standards incorporated by reference in part 440 can be obtained from the following sources:

Air Conditioning and Refrigeration Institute, 1501

Wilson Blvd., Arlington, VA 22209; (703) 524-8800.

American Gas Association, 1515 Wilson Blvd., Arlington, VA 22209; (703) 841-8400.

American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018; (212) 642-4900.

American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, NY 10017; (212) 705-7800.

American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103; (215) 299-5400.

American Architectural Manufacturers Association, 1540 East Dundee Road, Palatine, IL 60067; (708) 202-1350.

Federal Specifications, General Services Administration, Specifications Section, Room 6654, 7th and D Streets, SW, Washington, DC 20407; (202) 708-5082.

Gas Appliance Manufacturers Association, 1901 Moore St., Arlington, VA 22209; (703) 525-9565.

National Electrical Manufacturers Association, 2101 L Street, NW, Suite 300, Washington, DC 20037; (202) 457-8400.

National Fire Protection Association, Batterymarch Park, P.O. Box 9101, Quincy, MA 02269; (617) 770-3000.

National Standards Association, 1200 Quince Orchard Blvd., Gaithersburg, MD 20878; (301) 590-2300. (NSA is a local contact for materials from ASTM).

National Wood Window and Door Association, 1400 East Touhy Avenue, Des Plaines, IL 60018; (708) 299-5200.

Sheet Metal and Air Conditioning Contractors Association, P.O. Box 221230, Chantilly, VA 22022-1230; (703) 803-2980.

Steel Door Institute, 712 Lakewood Center North, 14600 Detroit Avenue, Cleveland, OH 44107; (216) 899-0100.

Steel Window Institute, 1230 Keith Building, Cleveland, OH 44115; (216) 241-7333.

Tubular Exchanger Manufacturers Association, 25 North Broadway, Tarrytown, NY 10591; (914) 332-0040.

Underwriters Laboratories, Inc., P.O. Box 75530, Chicago, IL 60675-5330; (708) 272-8800.

More information regarding the standards in this reference can be obtained from the following sources:

Environmental Protection Agency, 401 M Street, NW,

Washington, DC 20006; (202) 554-1080.

National Institute of Standards and Technology, U.S. Department of Commerce, Gaithersburg, MD 20899, (301) 975-2000

Weatherization Assistance Programs Division, Conservation and Renewable Energy, Mail Stop 5G-023, Forrestal Bldg, 1000 Independence Ave, SW, Washington, DC 20585; (202) 586-2207.

Thermal Insulating Materials for Building Elements Including Walls, Floors, Ceilings, Attics, and Roofs

[Standards for conformance]

Insulation-mineral fiber:

Blanket insulation

ASTM1C665-88.

Roof insulation board

ASTM C726-88.

Loose-fill insulation

ASTM C764-88.

Insulation-mineral cellular:

Vermiculite loose-fill insulation

ASTM C516-80 (1990).

Perlite loose-fill insulation

ASTM C549-81 (1986).

Cellular glass insulation block

ASTM C552-88.

Perlite insulation board

ASTM C728-89a.

Insulation-organic fiber:

Cellulosic fiber insulating board

ASTM C208-72 (1982).

Cellulose loose-fill insulation

ASTM C739-88.

Insulation-organic cellular:

Preformed block-type polystyrene insulation

ASTM C578-87a.

Rigid preformed polyurethane insulation board

ASTM C591-85.

Polyurethane or polyisocyanurate insulation board faced with aluminum foil on both sides

FS2HH-I-1972/1 (1981).

Polyurethane or polyisocyanurate insulation board faced with felt on both sides

FS HH-I-1972/2 (1981). And Amendment 1, October 3, 1985.

Insulation-composite boards:

Mineral fiber and rigid cellular polyurethane composite roof insulation board

ASTM C726-88.

Perlite board and rigid cellular polyurethane composite roof insulation

ASTM C984-83.

Gypsum board and polyurethane or polyisocyanurate composite board

FS HH-I-1972/4 (1981).

Materials used as a patch to reduce infiltration through the building envelope

Commercially available.

1ASTM indicates American Society for Testing and Materials.

2FS indicates Federal Specifications.

Thermal Insulating Materials for Pipes, Ducts, and Equipment Such as Boilers and Furnaces

[Standards for conformance]

Insulation-mineral fiber:

Preformed pipe insulation

ASTM1C547-77.

Blanket and felt insulation (industrial type)

ASTM C553-70 (1977).

Blanket insulation and blanket type pipe insulation (metal-mesh covered) (industrial type)

ASTM C592-80.

Block and board insulation

ASTM C612-83.

Spray applied fibrous insulation for elevated temperature

ASTM C720-89.

High-temperature fiber blanket insulation

ASTM C892-89.

Duct work insulation

Selected and applied according to ASTM C971-82.

Insulation-mineral cellular:

Diatomaceous earth block and pipe insulation

ASTM C517-71 (1979)

Calcium silicate block and pipe insulation

ASTM C533-85 (1990).

Cellular glass insulation

ASTM C552-88.

Expanded perlite block and pipe insulation

ASTM C610-85.

Insulation-Organic Cellular:

Preformed flexible elastomeric cellular insulation in sheet and tubular form

ASTM C534-88.

Unfaced preformed rigid cellular polyurethane insulation

ASTM C591-85.

Insulation skirting

Commercially available.

1ASTM indicates American Society for Testing and Materials.

Fire Safety Requirements for Insulating Materials According to Insulation Use

[Standards for conformance]

Attic floor

Insulation materials intended for exposed use in attic floors shall be capable of meeting the same smoldering combustion requirements given for cellulose insulation in ASTM C739-88.

Enclosed space

Insulation materials intended for use within enclosed stud or joist spaces shall be capable of meeting the smoldering combustion requirements in ASTM C739-88.

Exposed interior walls and ceilings

Insulation materials, including those with combustible facings, which remain exposed and serve as wall or ceiling interior finish, shall have a flame spread classification not to exceed 150 (per ASTM E84-89a).

Exterior envelope walls and roofs

Exterior envelope walls and roofs containing thermal insulations shall meet applicable local government building code requirements for the complete wall or roof assembly.

Pipes, ducts, and equipment

Insulation materials intended for use on pipes, ducts and equipment shall be capable of meeting a flame spread classification not to exceed 150 (per ASTM E84-89a).

1ASTM indicates American Society for Testing and Materials.

Storm Windows

[Standards for conformance]

Storm windows:

Aluminum insulating storm windows

ANSI/AAMA11002.10-83.

Aluminum frame storm windows

ANSI/AAMA 1002.10-83.

Wood frame storm windows

ANSI/NWWDA2I.S. 2 - 87. (Section 3)

Rigid vinyl frame storm windows

ASTM3D4099-89.

Frameless plastic glazing storm

Required minimum thickness windows is 6 mil (.006 inches).

Movable insulation systems for windows

Commercially available.

1ANSI/AAMA indicates American National Standards Institute/American Architectural Manufacturers Association.

2ANSI/NWWDA indicates American National Standards

Institute/National Wood Window & Door Association.

3ASTM indicates American Society for Testing and Materials.

Storm Doors

[Standards for conformance]

Storm doors-Aluminum:

Storm Doors

ANSI/AAMA11102.7-89.

Sliding glass storm doors

ANSI/AAMA 1002.10-83.

Wood storm doors

ANSI/NWWDA2I.S. 6 - 86.

Rigid vinyl storm doors

ASTM3D3678-88.

Vestibules:

Materials to construct vestibules

Commercially available.

Replacement windows:

Aluminum frame windows

ANSI/AAMA 101-88.

Steel frame windows

Steel Window Institute recommended specifications for steel windows, 1990.

Wood frame windows

ANSI/NWWDA I.S. 2 - 87.

Rigid vinyl frame windows

ASTM D4099-89.

1ANSI/AAMA indicates American National Standards Institute/American Architectural Manufacturers Association.

2ANSI/NWWDA indicates American National Standards Institute/National Wood Window & Door Association.

3ASTM indicates American Society for Testing and Materials.

Replacement Doors

[Standards for conformance]

Replacement doors-Hinged doors:

Steel doors

ANSI/SDI1100-1985.

Wood doors:

Flush doors

ANSI/NWWDA2I.S. 1 - 87. (exterior door provisions)

Pine, fir, hemlock and spruce doors

ANSI/NWWDA I.S. 6 - 86.

Sliding patio doors:

Aluminum doors

ANSI/AAMA3101-88.

Wood doors

NWWDA I.S. 3 - 83.

1ANSI/SDI indicates American National Standards Institute/Steel Door Institute.

2ANSI/NWWDA indicates American National Standards Institute/National Wood Window & Door Association.

3ANSI/AAMA indicates American National Standards Institute/American Architectural Manufacturers Association.

Caulks and sealants:

[Standards for conformance]

Caulks and sealants:

Putty

FS1TT-P-00791B, October 16, 1969 and Amendment 2, March 23, 1971.

Glazing compounds for metal sash

ASTM2C669-75 (1989).

Oil and resin base caulks

ASTM C570-72 (1989).

Acrylic (solvent types) sealants

FS TT-S-00230C, February 2, 1970 and Amendment 2, October 9, 1970.

Butyl rubber sealants

FS TT-S-001657, October 8, 1970.

Chlorosulfonated polyethylene sealants

FS TT-S-00230C, February 2, 1970 and Amendment 2, October 9, 1970.

Latex sealing compounds

ASTM C834-76 (1986).

Elastomeric joint sealants (normally considered to include polysulfide, polyurethane, and silicone)

ASTM C920-87.

Preformed gaskets and sealing materials

ASTM C509-84.

1FS indicates Federal Specifications.

2ASTM indicates American Society for Testing and Materials.

Weatherstripping

[Standards for conformance]

Weatherstripping

Commercially available.

Vapor retarders

Selected according to the provisions cited in ASTM1C755-85 (1990). Permeance not greater than 1 perm when determined according to the desiccant method de- scribed in ASTM E96-90.

Items to improve attic ventilation

Commercially available.

Clock thermostats

NEMA2DC 3-1989.

1ASTM indicates American Society for Testing and Materials.

2NEMA indicates National Electrical Manufacturers Association.

Heat Exchangers

[Standards for conformance]

Heat exchangers, water-to-water and steam-to-water

ASME1Boiler and Pressure Vessel Code, 1992, Sections II, V, VIII, IX, and X, as applicable to pressure vessels. Standards of Tubular Exchanger Manufacturers

Association, Seventh Edition, 1988.

Heat exchangers with gas-fired appliances²

Conformance to AGA3Requirements for Heat Reclaimer Devices for Use with Gas-Fired Appliances No. 1-80, June 1, 1980. AGA Laboratories Certification Seal.

Heat pump water heating heat recovery systems

Electrical components to be listed by UL.⁴

1ASME indicates American Society of Mechanical Engineers.

2The heat reclaimer is for installation in a section of the vent connector from appliances equipped with draft hoods or appliances equipped with powered burners or induced draft and not equipped with a draft hood.

3AGA indicates American Gas Association.

4UL indicates Underwriters Laboratories.

Boiler/Furnace Control Systems

[Standards for conformance]

Automatic set back thermostats

Listed by UL.¹Conformance to NEMA2DC 3-1989.

Line voltage or low voltage room thermostats

NEMA DC 3-1989.

Automatic gas ignition systems

ANSI3Z21.21-1987 and Z21.21a-1989. AGA4Laboratories Certification Seal.

Energy management systems

Listed by UL.

Hydronic boiler controls

Listed by UL.

Other burner controls

Listed by UL.

1UL indicates Underwriters Laboratories.

2NEMA indicates National Electrical Manufacturers Association.

3ANSI indicates American National Standards Institute.

4AGA indicates American Gas Association.

Water Heater Modifications

[Standards for conformance]

Insulate tank and distribution piping

(See insulation section of this appendix).

Install heat traps on inlet and outlet piping

Applicable local plumbing code.

Install/replace water heater heating elements

Listed by UL.1

Electric, freeze-prevention tape for pipes

Listed by UL.

Reduce thermostat settings

State or local recommendations.

Install stack damper, gas-fueled

ANSI Z221.66-1988, including Exhibits A&B, and ANSI Z223.1-1988.

Install stack damper, oil-fueled

UL 17, November 28, 1988, and NFPA 331-1987.

Install water flow modifiers

Commercially available.

1UL indicates Underwriters Laboratories.

2ANSI indicates American National Standards Institute.

3NFPA indicates National Fire Prevention Association.

Waste Heat Recovery Devices

[Standards for conformance]

Desuperheater/water heaters

ARI1470-1987.

Condensing heat exchangers

Commercially available components and in new heating furnace systems to manufacturers' specifications.

Condensing heat exchangers

Commercially available (Commercial, multi-story building, with teflon-lined tubes institutional) to manufacturers' specifications.

Energy recovery equipment

Energy Recovery Equipment and Systems Air-to-Air (1978) Sheet Metal and Air-Conditioning Contractors

National Association (SMACNA).2

1ARI indicates Air Conditioning and Refrigeration Institute.

2SMACNA denotes Sheet Metal and Air Conditioning Contractors' National Association.

Boiler Repair and Modifications/Efficiency Improvements

[Standards for conformance]

Install gas conversion burners

ANSI Z21.8-1984, (for gas or oil-fired systems) ANSI Z21.17-1984, ANSI Z21.17a-1990, and ANSI Z223.1-1988. AGA Laboratories Certification seal.

Replace oil burner

UL3296, February 28, 1989 Revision and NFPA 431-1987.

Install burners (oil/gas)

ANSI Z223.1-1988 for gas equipment and NFPA 31-1987 for oil equipment.

Re-adjust boiler water temperature or install automatic boiler temperature reset control

ASME CSD-1-1988, ASME CSD-1a-1989, ANSI Z223.1-1988, and NFPA 31-1987.

Replace/modify boilers

ASME Boiler and Pressure Vessel Code, 1992, Sections II, IV, V, VI, VIII, IX, and X. Boilers must be Institute of Boilers and Radiation Manufacturers (IBR) equipment.

Clean heat exchanger, adjust burner air shutter(s), check smoke no. on oil-fueled equipment. Check operation of pump(s) and replacement filters

Per manufacturers' instructions.

Repair combustion chambers

Refractory linings may be required for conversions.

Replace heat exchangers, tubes

Protection from flame contact with conversion burners by refractory shield.

Install/replace thermostatic radiator valves

Commercially available. One pipe steam systems require air vents on each radiator; see manufacturers' requirements.

Install boiler duty cycle control system

Commercially available. NFPA 70, National Electrical Code (NEC) 1993 and local electrical codes provisions for wiring.

1ANSI indicates American National Standards Institute.

2AGA indicates American Gas Association.

3UL indicates Underwriters Laboratories.

4NFPA indicates National Fire Prevention Association.

5ANSI/ASME indicates American National Standards Institute/American Society of Mechanical Engineers.

Heating and Cooling System Repairs and Tune-ups/Efficiency Improvements

[Standards for conformance]

Install duct insulation

FS1HH-I-558C, January 7, 1992 (see insulation sections of this appendix).

Reduce input of burner; derate gas-fueled equipment

Local utility company and procedures if applicable for gas-fueled furnaces and ANSI Z223.1-1988 (NFPA354-1988) including appendix H.

Repair/replace oil-fired equipment

NFPA 31-1987.

Replace combustion chamber in oil-fired furnaces or boilers

NFPA 31-1987.

Clean heat exchanger and adjust burner: adjust air shutter and check CO₂ and stack temperature. Clean or replace air filter on forced air furnace

ANSI Z223.1-1988 (NFPA 54-1988) including appendix H.

Install vent dampers for gas-fueled heating systems

Applicable sections of ANSI Z223.1-1988 (NFPA 54-1988) including appendices H, I, J, and K. ANSI Z21.66-1988 and exhibits A & B for electrically operated dampers.

Install vent dampers for oil-fueled heating systems

Applicable sections of NFPA 31-1987 for installation and in conformance with UL417, November 28, 1988.

Reduce excess combustion air:

A: Reduce vent connector size of gas-fueled appliances

ANSI Z223.1-1988 (NFPA 54-1988) part 9 and appendices G & H.

B: Adjust barometric draft regulator for oil fuels

NFPA 31-1987 and per manufacturers' (furnace or boiler) instructions.

Replace constant burning pilot with electric ignition device on gas-fueled furnaces or boilers

ANSI Z21.71-1981, Z21.71a-1985, and Z21.71b-1989.

Readjust fan switch on forced air gas or oil-fueled furnaces

Applicable sections and appendix H of ANSI Z223.1-1988 (NFPA 54-1988) for gas furnaces and NFPA 31-1987 for oil furnaces.

Replace burners

See power burners (oil/gas).

Install/replace duct furnaces (gas)

ANSI Z223.1-1988 (NFPA 54-1988).

Install/replace heat pumps

Listed by UL.

Replace air diffusers, intakes, registers, and grilles

Commercially available.

Install/replace warm air heating metal ducts

Commercially available.

Filter alarm units

Commercially available.

1FS indicates Federal Specifications.

2ANSI indicates American National Standards Institute.

3NFPA indicates National Fire Prevention Association.

4UL indicates Underwriters Laboratories.

Replacement Furnaces, Boilers, and Wood Stoves

[Standards for conformance]

Chimneys, fireplaces, vents and solid fuel burning appliances

NFPA1211-1988.

Gas-fired furnaces

ANSI Z221.47-1987, Z21.47a-1988, and Z21.47b-1989.
ANSI Z223.1-1988 (NFPA 54-1988).

Oil-fired furnaces

UL3727, August 27, 1991 Revision and NFPA 31-1987.

Liquified petroleum gas storage

NFPA 58-1989.

Ventilation fans:

Including electric attic, ceiling, and whole house fans

UL 507, August 23, 1990 Revision.

1NFPA indicates National Fire Prevention Association.

2ANSI indicates American National Standards Institute.

3UL indicates Underwriters Laboratories.

Air Conditioners and Cooling Equipment

[Standards for conformance]

Air conditioners:

Central air conditioners

ARI1210/240-1989.

Room size units

ANSI/AHAM2RAC-1-1982.

Other cooling equipment:

Including evaporative coolers, heat pumps and other equipment

UL31995, November 30, 1990.4

1ARI indicates Air Conditioning and Refrigeration Institute.

2AHAM/ANSI indicates American Home Appliance Manufacturers/American National Standards Institute.

3UL indicates Underwriters Laboratories.

4This standard is a general standard covering many different types of heating and cooling equipment.

Screens, Window Films, and Reflective Materials

[Standards for conformance]

Insect screens

Commercially available.

Window films

Commercially available.

Shade screens:

Fiberglass shade screens

Commercially available.

Polyester shade screens

Commercially available.

Rigid awnings:

Wood rigid awnings

Commercially available.

Metal rigid awnings

Commercially available.

Louver systems:

Wood louver systems

Commercially available.

Metal louver systems

Commercially available.

Industrial-grade white paint used as a heat-reflective measure on awnings, window louvers, doors, and exterior duct work (exposed)

Commercially available.

History. 58 FR 12529, Mar. 4, 1993, as amended at 69 FR 18803, Apr. 9, 2004