

**ATTACHMENT 7**  
**APPENDIX A TO PART 440**  
**STANDARDS FOR WEATHERIZATION MATERIALS**

[58 FR 12529, MAR. 4, 1993, AS AMENDED AT 69 FR 18803, APR. 9, 2004]

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/federalregister/codoflrfederalregulations/ibrllocations.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 47<sup>th</sup> 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, (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, Forrester Bldg, 1000 Independence Ave, SW, Washington, DC 20585; (202) 586-2207.

**THERMAL INSULATING MATERIALS FOR BUILDING ELEMENTS  
INCLUDING WALLS, FLOORS, ATTICS, AND ROOFS  
(Standards for conformance)**

<b>Insulation—mineral fiber:</b>	
Blanket insulation.....	ASTM C665-98.
Roof insulation board.....	ASTM C726-00a.
Loose-fill insulation.....	ASTM C764-99.
<b>Insulation—mineral cellular:</b>	
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.
<b>Insulation—organic fiber:</b>	
Cellulosic fiber insulating board.....	ASTM C208-72 (1982).
Cellulose loose-fill insulation.....	ASTM C739-88.
<b>Insulation—organic cellular:</b>	
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.....	FS HH-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.
<b>Insulation—composite boards:</b>	
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.

**THERMAL INSULATING MATERIALS FOR PIPES, DUCTS,  
AND EQUIPMENT SUCH AS BOILERS AND FURNACES  
(Standards for conformance)**

<b>Insulation—mineral fiber:</b>	
Preformed pipe insulation.....	ASTM 1 C547-77.
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.
<b>Insulation—mineral cellular:</b>	
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.
<b>Insulation—Organic Cellular:</b>	
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.

**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).

**STORM WINDOWS  
(Standards for conformance)**

Storm windows:	
Aluminum insulating storm windows.....	ANSI/AAMA 1002.10-83.
Aluminum frame storm windows.....	ANSI/AAMA 1002.10-83.
Wood frame storm windows.....	ANSI/NWWDA I.S. 2-87. (Section 3)
Rigid vinyl frame storm windows.....	ASTM D4099-89.
Frameless plastic glazing storm.....	Required minimum thickness windows is 6 mil (.006 inches).
Movable insulation systems for windows.....	Commercially available.

**STORM DOORS  
(Standards for conformance)**

Storm doors—Aluminum:	
Storm Doors.....	ANSI/AAMA 1102.7-89.
Sliding glass storm doors.....	ANSI/AAMA 1002.10-83.
Wood storm doors.....	ANSI/NWWDA I.S. 6-86.
Rigid vinyl storm doors.....	ASTM D3678-88.
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.

**REPLACEMENT DOORS  
(Standards for conformance)**

Replacement doors—Hinged doors:	
Steel doors.....	ANSI/SDI 100-1985.
Wood doors:	
Flush doors.....	ANSI/NWWDA I.S. 1-87. (exterior door provisions)
Pine, fir, hemlock and spruce doors.....	ANSI/NWWDA I.S. 6-86.
Sliding patio doors:	
Aluminum doors.....	ANSI/AAMA 101-88.
Wood doors.....	NWWDA I.S. 3-83.

## CAULKS AND SEALANTS

(Standards for conformance)

Caulks and sealants:	
Putty.....	FS TT-P-00791B, October 16, 1969 and Amendment 2, March 23, 1971.
Glazing compounds for metal sash.....	ASTM C669-75 (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.

## WEATHERSTRIPPING

(Standards for conformance)

Weatherstripping.....	Commercially available.
Vapor retarders.....	Selected according to the provisions cited in ASTM C755-85 (1990). Permeance not greater than 1 perm when determined according to the desiccant method described in ASTM E96-90.
Items to improve attic ventilation.....	Commercially available.
Clock thermostats.....	NEMA DC 3-1989.

## HEAT EXCHANGERS

(Standards for conformance)

Heat exchangers, water-to-water and steam-to-water.....	ASME Boiler 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 appliances.....	Conformance to AGA Requirements 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.

## BOILER/FURNACE CONTROL SYSTEMS

(Standards for conformance)

Automatic set back thermostats.....	Listed by UL. Conformance to NEMA DC 3-1989.
Line voltage or low voltage room thermostats.....	NEMA DC 3-1989.
Automatic gas ignition systems.....	ANSI Z21.21-1987 and Z21.21a-1989. AGA Laboratories Certification Seal.
Energy management systems.....	Listed by UL.
Hydronic boiler controls.....	Listed by UL.
Other burner controls.....	Listed by UL.

## 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.
Electric, freeze-prevention tape for pipes.....	Listed by UL.
Reduce thermostat settings .....	State or local recommendations.
Install stack damper, gas-fueled .....	ANSI Z21.66-1988, including Exhibits A&B, and ANSI Z223.1-1988.
Install stack damper, oil-fueled .....	UL 17, November 28, 1988, and NFPA 31-1987.
Install water flow modifiers.....	Commercially available.

## WASTE HEAT RECOVERY DEVICES

(Standards for conformance)

Desuperheater/water heaters.....	ARI 470-1987.
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).

## 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 .....	UL 296, February 28, 1989 Revision and NFPA 31-1987.
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.

## HEATING AND COOLING SYSTEM REPAIRS AND TUNE-UPS/EFFICIENCY IMPROVEMENTS

(Standards for conformance)

Install duct insulation.....	FS HH-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 (NFPA 54-1988) 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 UL 17, 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.

## REPLACEMENT FURNACES, BURNERS, AND WOOD STOVES

(Standards for conformance)

Chimneys, fireplaces, vents and solid fuel burning Appliances.....	NFPA 211-1988.
Gas-fired furnaces.....	ANSI Z21.47-1987, Z21.47a-1988, and Z21.47b-1989. ANSI Z223.1-1988 (NFPA 54-1988).
Oil-fired furnaces.....	UL 727, 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.

## AIR CONDITIONERS AND COOLING EQUIPMENT

(Standards for conformance)

Air conditioners:	
Central air conditioners.....	ARI 210/240-1989.
Room size units.....	ANSI/AHAM RAC-1-1982.
Other cooling equipment:	
Including evaporative coolers, heat pumps and other equipment.....	UL 1995, November 30, 1990.

**SCREENS, WINDOW FILMS, AND REFLECTIVE MATERIALS**  
**(Standards for conformance)**

Insect screens.....	Commercially available.
Window films .....	Commercially available.
<b>Shade screens:</b>	
Fiberglass shade screens .....	Commercially available.
Polyester shade screens .....	Commercially available.
<b>Rigid awnings:</b>	
Wood rigid awnings.....	Commercially available.
Metal rigid awnings .....	Commercially available.
<b>Louver systems:</b>	
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.