

water, and the remaining openings securely plugged, the entire system shall be subjected to a 2-inch (manometer) water column air pressure test. If the system loses pressure, leaks may be located with smoke pumped into the system, or with soap suds spread on the exterior of the piping (Bubble test).

(3) *Flood level test.* The manufactured home shall be in a level position, all fixtures shall be connected, and the entire system shall be filled with water to the rim of the water closet bowl. (Tub and shower drains shall be plugged). After all trapped air has been released, the test shall be sustained for not less than 15 minutes without evidence of leaks. Then the system shall be unplugged and emptied. The waste piping above the level of the water closet bowl shall then be tested and show no indication of leakage when the high fixtures are filled with water and emptied simultaneously to obtain the maximum possible flow in the drain piping.

(c) *Fixture test.* The plumbing fixtures and connections shall be subjected to a flow test by filling them with water and checking for leaks and retarded flow while they are being emptied.

(d) *Shower compartments.* Shower compartments and receptors shall be tested for leaks prior to being covered by finish material. Each pan shall be filled with water to the top of the dam for not less than 15 minutes without evidence of leakage.

[40 FR 58752, Dec. 18, 1975, as amended at 42 FR 961, Jan. 4, 1977; 42 FR 54383, Oct. 5, 1977. Redesignated at 44 FR 20679, Apr. 6, 1979, as amended at 58 FR 55015, Oct. 25, 1993]

## Subpart H—Heating, Cooling and Fuel Burning Systems

### § 3280.701 Scope.

Subpart H of this standard covers the heating, cooling and fuel burning equipment installed within, on, or external to a manufactured home.

### § 3280.702 Definitions.

The definitions in this subpart apply to subpart H only.

*Accessible*, when applied to a fixture, connection, appliance or equipment, means having access thereto, but which may require the removal of an

access panel, door or similar obstruction.

*Air conditioner blower coil system* means a comfort cooling appliance where the condenser section is placed external to the manufactured home and evaporator section with circulating blower attached to the manufactured home air supply duct system. Provision must be made for a return air system to the evaporator/blower section. Refrigerant connection between the two parts of the system is accomplished by tubing.

*Air conditioner split system* means a comfort cooling appliance where the condenser section is placed external to the manufactured home and the evaporator section incorporated into the heating appliance or with a separate blower/coil section within the manufactured home. Refrigerant connection between the two parts of the system is accomplished by tubing.

*Air conditioning condenser section* means that portion of a refrigerated air cooling or (in the case of a heat pump) heating system which includes the refrigerant pump (compressor) and the external heat exchanger.

*Air conditioning evaporator section* means a heat exchanger used to cool or (in the case of a heat pump) heat air for use in comfort cooling (or heating) the living space.

*Air conditioning self contained system* means a comfort cooling appliance combining the condenser section, evaporator and air circulating blower into one unit with connecting ducts for the supply and return air systems.

*Air duct* means conduits or passage-ways for conveying air to or from heating, cooling, air conditioning or ventilation equipment, but not including the plenum.

*Automatic pump (oil lifter)* means a pump, not an integral part of the oil-burning appliance, that automatically pumps oil from the supply tank and delivers the oil under a constant head to an oil-burning appliance.

*Btu. British thermal units* means the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit.

*Btuh* means British thermal units per hour.

*Burner* means a device for the final conveyance of fuel or a mixture of fuel and air to the combustion zone.

*Central air conditioning system* means either an air conditioning split system or an external combination heating/cooling system.

*Class 0 air ducts* means ducts of materials and connectors having a fire-hazard classification of zero.

*Class 1 air ducts* means ducts of materials and connectors having a flame-spread rating of not over 25 without evidence of continued progressive combustion and a smoke-developed rating of not over 50.

*Class 2 air ducts* means ducts of materials and connectors having a flame-spread rating of not over 50 without evidence of continued progressive combustion and a smoke-developed rating of not over 50 for the inside surface and not over 100 for the outside surface.

*Clearance* means the distance between the appliance, chimney, vent, chimney or vent connector or plenum and the nearest surface.

*Connector-Gas appliance:* means a flexible or semi-rigid connector used to convey fuel gas between a gas outlet and a gas appliance.

*Energy Efficiency Ratio (EER)* means the ratio of the cooling capacity output of an air conditioner for each unit of power input.

$EER = \text{Capacity (Btuh)} / \text{Power input (watts)}$

*External combination heating/cooling system* means a comfort conditioning system placed external to the manufactured home with connecting ducts to the manufactured home for the supply and return air systems.

*Factory-built fireplace* means a hearth, fire chamber and chimney assembly composed of listed factory-built components assembled in accordance with the terms of listing to form a complete fireplace.

*Fireplace stove* means a chimney connected solid fuel-burning stove having part of its fire chamber open to the room.

*Fuel gas piping system* means the arrangement of piping, tubing, fittings, connectors, valves and devices designed and intended to supply or control the flow of fuel gas to the appliance(s).

*Fuel oil piping system* means the arrangement of piping, tubing, fittings, connectors, valves and devices designed and intended to supply or control the flow of fuel oil to the appliance(s).

*Gas clothes dryer* means a device used to dry wet laundry by means of heat derived from the combustion of fuel gases.

*Gas refrigerator* means a gas-burning appliance which is designed to extract heat from a suitable chamber.

*Gas supply connection* means the terminal end or connection to which a gas supply connector is attached.

*Gas supply connector, manufactured home* means a listed flexible connector designed for connecting the manufactured home to the gas supply source.

*Gas vents* means factory-built vent piping and vent fittings listed by an approved testing agency, that are assembled and used in accordance with the terms of their listings, for conveying flue gases to the outside atmosphere.

(1) *Type B gas vent* means a gas vent for venting gas appliances with draft hoods and other gas appliances listed for use with Type B gas vents.

(2) *Type BW gas vent* means a gas vent for venting listed gas-fired vented wall furnaces.

*Heat producing appliance* means all heating and cooking appliances and fuel burning appliances.

*Heating appliance* means an appliance for comfort heating or for domestic water heating.

*Liquefied petroleum gases.* The terms *Liquefied petroleum gases*, *LPG* and *LP-Gas* as used in this standard shall mean and include any material which is composed predominantly of any of the following hydrocarbons, or mixtures of them: propane, propylene butanes (normal butane or isobutane), and butylenes.

*Plenum* means an air compartment which is part of an air-distributing system, to which one or more ducts or outlets are connected.

(1) *Furnace supply plenum* is a plenum attached directly to, or an integral part of, the air supply outlet of the furnace.

(2) *Furnace return plenum* is a plenum attached directly to, or an integral part of, the return inlet of the furnace.

*Quick-disconnect device* means a hand-operated device which provides a means for connecting and disconnecting a gas supply or connecting gas systems and which is equipped with an automatic means to shut off the gas supply when the device is disconnected.

*Readily accessible* means direct access without the necessity of removing any panel, door, or similar obstruction.

*Roof jack* means that portion of a manufactured home heater flue or vent assembly, including the cap, insulating means, flashing, and ceiling plate, located in and above the roof of a manufactured home.

*Sealed combustion system appliance* means an appliance which by its inherent design is constructed so that all air supplied for combustion, the combustion system of the appliance, and all products of combustion are completely isolated from the atmosphere of the space in which it is installed.

*Water heater* means an appliance for heating water for domestic purposes other than for space heating.

[40 FR 58752, Dec. 18, 1975. Redesignated at 44 FR 20679, Apr. 6, 1979, as amended at 52 FR 4586, Feb. 12, 1987; 58 FR 55015, Oct. 25, 1993]

### § 3280.703 Minimum standards.

Heating, cooling and fuel burning appliances and systems in manufactured homes shall be free of defects, and shall conform to applicable standards in the following table unless otherwise specified in this standard. (See § 3280.4) When more than one standard is referenced, compliance with any one such standard shall meet the requirements of this standard.

#### APPLIANCES

Central Cooling Air Conditioners—UL 465-Seventh Edition-1987 With Revisions through December 24, 1987.

Liquid Fuel-Burning Heating Appliances for Manufactured Homes and Recreational Vehicle—UL 307A-Sixth Edition-1990, With Revisions through August 21, 1990.

Electrical Air Heaters—UL 1025—Second Edition-1987 With Revisions July 13, 1989, February 6, 1990 and December 3, 1991.

Electric Baseboard Heating Equipment—UL 1042-Third Edition-1987 With Revision July 15, 1993.

Electric Central Air Heating Equipment—UL 1096-Fourth Edition-1986 With Revisions July 16, 1986 and January 30, 1988.

Gas Burning Heating Appliances for Mobile Homes and Recreational Vehicles—UL 307B-First Edition-1982 With Revision May 18, 1987.

Gas Clothes Dryers Vol. 1, Type 1 Clothes Dryers—ANSI Z21.5.1-1992.

Gas Fired Absorption Summer Air Conditioning Appliances—ANSI Z21.40.1-1981, With Addenda Z21.40.1a-1982.

Gas-Fired Central Furnaces [Except Direct Vent System Central Furnaces]—ANSI Z21.47-1990, With Addendum Z21.47a-1990 and Z21.47b-1992.

Household Cooking Gas Appliances ANSI Z21.1-1990 With Addenda Z21.1a-1991 and Z21.1b-1993.

Refrigerators Using Gas Fuel—ANSI Z21.19-1990, With Addenda Z21.19a-1992.

Gas Water Heaters Vol. 1, Storage Water Heaters With Input Ratings of 75,000 BTU per hour or Less—ANSI Z21.10.1-1990, With Addendum Z21.10.1a-1991 and Z21.10.1b-1992.

Household Electric Storage Tank Water Heaters—UL 174-Seventh Edition-1989 With Revisions May 8, 1990 and January 22, 1991.

#### FERROUS PIPE AND FITTINGS

Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless—ASTM A53-93.

Standard Specification for Electric-Resistance-Welded Coiled Steel Tubing for Gas and Fuel Oil Lines—\*ASTM A539-90a.

Pipe Threads, General Purpose (Inch)—ANSI/ASME B1.20.1-1983.

Welding and Seamless Wrought Steel Pipe—ANSI/ASME B36.10-1979.

#### NONFERROUS PIPE, TUBING AND FITTINGS

Standard Specification for Seamless Copper Water Tube—ASTM B88-93.

Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service—ASTM B280-93.

Metal Connectors for Gas Appliances—ANSI Z21.24-1987, With Addenda Z21.24a 1990 and Z21.24b-1992.

Manually Operated Gas Valves for Appliances, Appliance Connector Valves and Hose End Valves—ANSI Z21.15-1992.

Standard for Gas Supply Connectors for Manufactured Homes—IAPMO TSC 9-92.

Standard Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tubes—ASTM B251-93.

Standard Specification for Seamless Copper Pipe, Standard Sizes—ASTM B42-93.

Direct Vent Central Furnaces—ANSI Z21.64-1990, With Addenda Z21.64a-1992.

#### Miscellaneous

Factory-Made Air Ducts and Connectors—UL 181-Seventh Edition-1990, With Revision November 20, 1990.