Designation: E 1056 – 85 (Reapproved 2001)

Standard Practice for Installation and Service of Solar Domestic Water Heating Systems for One- and Two-Family Dwellings[1]

This standard is issued under the fixed designation E 1056; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice provides descriptions of solar domestic water heating systems and sets forth installation and service practices in new and existing one- and two-family dwellings to help ensure adequate operation and safety.[2,3]

1.2 This practice applies regardless of the fraction of heating requirement supplied by solar energy, the type of conventional fuel used in conjunction with solar, or the heat transfer fluid (or fluids) used as the energy transport medium. However, where more stringent requirements are recommended by the manufacturer, these manufacturer requirements shall prevail.

1.3 The values stated in inch-pound units are to be regarded as the standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific precautionary statements, see Sections 6 and 7.

2. Referenced Documents

2.1 *ASTM Standards:*

E 772 Terminology Relating to Solar Energy Conversion[4]

2.2 *SMACNA Standards:*

Medium Pressure Duct Construction Standards[5]

Fibrous Glass Duct Construction Standards[5]

Flexible Duct Performance and Installation Standards[5]

2.3 *NFPA Standard:*

NFPA 321 Basic Classifications of Flammable and Combustible Liquids[6]

2.4 *ANSI Standard:*

Z 21.22 Relief Valves and Automatic Gas Shut Off Devices for Hot Water Supply Systems[7]

3. Terminology

3.1 *Definitions:*

3.1.1 *auxiliary energy subsystem*, *n*—in solar energy application, equipment using nonsolar energy sources to supplement or backup the output provided by a solar energy system. **(E 772)**

3.1.2 *flash point*, *n*—of a liquid, the minimum temperature at which it gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid within the vessel as specified by appropriate test procedure and apparatus. (See Terminology E 772 and NFPA 321.)

3.1.3 *heat transfer fluid*, *n*—*(1)* in solar energy systems, a liquid or gas that passes through the solar collector and carries the absorbed thermal energy away from the collector. (*2*) any fluid that is used to transfer thermal energy between subsystems in solar energy systems. **(E 772)**

3.1.4 *operating conditions, extreme*, *n*—unusual physical conditions to which a component or system may be exposed and for which it is not designed or intended to withstand, nor is it required to withstand by a local regulatory agency. **(E 772)**

3.1.5 *operating conditions, normal*, *n*—the usual range of physical conditions (for example, temperature, pressure, wear and tear, weather) for which the component or system was designed. **(E 772)**

3.1.6 *solar energy system, active*, *n*—a solar energy system that uses mechanical equipment (pumps, fans), that is not an integral part of a structure, to collect and transfer thermal energy, either to the point of use or to be stored for later use. **(E 772)**

[1] This practice is under the jurisdiction of ASTM Committee E44 on Solar, Geothermal, and Other Alternative Energy Sources and is the direct responsibility of Subcommittee E44.05 on Solar Heating and Cooling Subsystems and Systems.

Current edition approved Feb. 22, 1985. Published May 1985.

[2] Dikkers, R., "Performance Criteria for Solar Heating and Cooling Systems in Residential Buildings," Department of Housing and Urban Development and National Bureau of Standards, September, 1982.

[3] Hollander, P. E., "Installation Guidelines for Solar DHW Systems in One- and Two-Family Dwellings," Franklin Research Center, U. S. Goverment Printing Office, April 1979.

[4] *Annual Book of ASTM Standards*, Vol 12.02.

[5] Available from Sheet Metal and Air Conditioning Contractors National Assoc. (SMACNA), 8224 Old Courthouse Rd., Tysons Center, VA 22180.

[6] Available from National Fire Protection Assoc., Batterymach Park, Quincy, MA 02269.

[7] Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

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