Designation: F444 – 88 (Reapproved 2009)

Standard Consumer Safety Specification for Scald-Preventing Devices and Systems in Bathing Areas[1]

This standard is issued under the fixed designation F444; 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.

INTRODUCTION

This consumer safety specification addresses certain hazards in connection with bathtub areas as identified by the Abt Associates, Inc., final report, "A Systematic Program to Reduce the Incidence and Severity of Bathtub and Shower Area Injuries," June 4, 1975, to the U.S. Consumer Product Safety Commission (CPSC).[2]

This consumer safety specification is directed towards scalds. The general requirements of this specification are intended to establish a maximum allowable discharge temperature and to provide for automatic compensation if that temperature is exceeded.

This specification establishes the necessary requirements to ensure safety from scalds for both the normal user capacity and limited user capacity of some aged, infirm, or young. These requirements can be attained through the utilization of devices, series of devices, or plumbing system designs that are available in the marketplace. Many of these devices are applicable to both new construction and retrofit installations. Specifications for the reliability and testing of these devices and systems are available in most cases from organizations such as the American National Standards Institute or the American Society of Sanitary Engineering.

1. Scope

1.1 This consumer safety specification covers scald-preventing devices and systems delivering water in bathing areas.

1.2 This specification establishes the minimum performance requirements for the devices and systems to minimize the risks associated with the hazards of scalds.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

2. Terminology

2.1 *bathing area*—bathing space that consists of a tub, tub-shower, or shower stall bounded by four walls, real or imaginary, extending vertically to the ceiling from the outside edge of the tub or stall.

2.2 *check valve*—valve designed to allow the flow of water in one direction only.

2.3 *device*—piece of equipment or mechanism designed to serve a special purpose or perform a special function.

2.4 *mixing valve*—device for mixing cold and hot water to produce an intermediate temperature as required, either manually, pressure-equalizing, or thermostatically controlled, and which is adjustable manually or by other means.

2.5 *safety shut-off device*—maximum temperature-limiting device that reduces the flow of water to a specified amount.

2.6 *scald*—first-, second-, or third-degree burn injury caused by the contact of hot water on the skin.

2.7 *stop-check valve*—valve designed to allow the flow of water in one direction only and which also has the capability to control the supply of water.

2.8 *stop valve*—valve used for the control of water supply.

2.9 *water outlet*—discharge opening through which water is supplied to a bathing area.

3. Compliance

3.1 No device or system produced after the approval date of this consumer safety specification shall either by label or other means indicate compliance with this specification unless it conforms to all requirements contained herein.

[1] This consumer safety specification is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.03 on Safety Standards for Bathtub and Shower Structures.

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[2] Available from U.S. Consumer Product Safety Commission (CPSC), 4330 East-West Hwy., Bethesda, MD 20814.

4. Materials

4.1 The materials used in the scald-preventing devices or systems shall conform to the following:

4.1.1 All parts, external or internal, shall be capable of resisting deterioration in the environment to which they are exposed to the degree that the intended performance of the device or system will not be adversely affected.

4.1.2 Any materials in contact with the water flowing through the device or system that can contaminate the water so that it is injurious to humans are unacceptable.

5. General Requirements

5.1 The scald-preventing devices or systems shall meet the following minimum requirements:

5.1.1 The maximum allowable temperature at the water outlet to the bathing area shall be 120°F (49°C) or, if the temperature of the water discharging from the water outlet of the devices or systems exceeds 120°F (49°C), the flow shall automatically be reduced to 0.5 gal/min in 5 s or less.

5.1.2 The devices or systems shall be so constructed that when repair is required, it can be effected without disturbing the piping supply system.

5.1.3 Devices or systems shall withstand, without damage or impairment of the performance capabilities, a supply pressure of 125 psi (862 kPa).

6. Instructions

6.1 *Installer's Instructions:*

6.1.1 Full instructions for installing, adjusting, and maintaining, where required, shall be packaged with each device or system.

6.1.2 The instructions to installers should prominently display the fact that responsibility for installation and adjustment in accordance with the manufacturer's instructions lies with the installer.

6.1.3 At the time of installation, the installer shall follow the manufacturer's instructions for proper installation and adjustment of the unit. In addition, with mixing valves the instructions shall state the following:

6.1.3.1 When not equipped with an integral shut-off or when there is a shut-off installed after the mixing valve, there shall be stop and check valves on the inlets or in the water distribution piping to the mixing valve. On multiple installations when equipped with integral shut-off, there shall be service stop valves on the inlets.

6.1.4 Instructions for adjusting devices or systems, where required, shall include information on temperature settings based on cold-water variations and hot-water capabilities as a guide to allow the installer to properly set the maximum water-outlet temperature.

NOTE 1—The installer should also affix his name and company affiliation to the warning note in 6.2.2.1.

6.2 *User's Instructions:*

6.2.1 Instructions that describe the operation of the unit and any care requirements necessary to maintain the device or system shall be applied or attached to the device or system by the installer for the user.

6.2.2 The user instructions shall contain the following warning:

6.2.2.1 **Warning—**This device/system has been preset by (to be filled in by the installer) to ensure safe, maximum temperature. Any change in the setting may raise the discharge temperature above the limit considered safe and lead to scalds.

7. Marking

7.1 *Temperature-Control Marking Identification:*

7.1.1 *Single-Handle Devices*—Single-handle, adjustable devices shall have identifiable control markings, such as cold and hot in letters or graphic identification, and shall indicate the direction of knob or handle rotation to regulate the temperature. Markings shall be clear and permanent.

7.1.2 *Dual-Handle Devices*—Dual-handle, adjustable devices shall have color, letter, or graphic markings that will identify the hot and cold handles. Markings shall be clear and permanent.

7.1.3 *Safety Shut-Off Devices*—Safety shut-off devices, for use on any valve, shall have the maximum operating temperature and operating instructions clearly defined in an accompanying instruction sheet. Markings shall be clear and permanent.

7.2 *General*—All devices shall bear the following markings:

7.2.1 Manufacturer's name or trademark,

7.2.2 Water temperature marking as in 7.1, and

7.2.3 Direction of movement of the control knob or handle in accordance with 7.1.1 or 7.1.2.

8. Keywords

8.1 bathing; discharge temperature; flow; safety; scald prevention