

# Hot Water and Water Heaters Safety Devices

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As plumbing designers and engineers, we design systems to provide domestic hot and cold water to plumbing fixtures used for washing, bathing, cleaning, and culinary purposes. The American Society of Plumbing Engineers (ASPE) has published a design manual for hot water systems. Currently, ASPE has established a working group to develop a standard on Hot Water Temperature and Control. The purpose of this committee is to develop a standard "to regulate the hot-water outlet temperature for plumbing fixtures and appliances. The standard will also specify the acceptable methods for controlling the hot-water temperature at the fixture or appliance outlet. Until

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this standard is developed, plumbing engineers must rely on other documents to determine what is the proper temperature for hot water to specific fixtures."

The International Plumbing Code specifically requires hot water to specific plumbing fixtures (IPC Section 607.1). The Uniform Plumbing Code does not specifically state that hot water be provided to specific plumbing fixtures, but does state that when hot water is provided there are specific requirements (UPC Chapter 6).

The International Plumbing Code (IPC Section 607.1) requires that hot

water be provided for plumbing fixtures in residential occupancies used for bathing, washing, culinary purposes, cleansing, laundry, or building maintenance. IPC also requires hot water or tempered water be provided for plumbing fixtures in nonresidential occupancies utilized for culinary purposes, cleansing, laundry, or building maintenance and that tempered water be provided to accessible hand-washing facilities.

The IPC distinguishes between hot water and tempered water. By definition in the International Plumbing Code (IPC Chapter 2), hot water is water with a temperature greater than 110°F.

Tempered water is water with a temperature between 85°F and 110°F. The Uniform Plumbing Code does not have any definitions that specify the difference in temperature between hot water, tempered water, or cold water. The Uniform Plumbing Code does limit the water temperature for public lavatories and bath-

tubs to 120°F.

ANSI A117.1 "Standard on Accessible and Useable Building and Facilities" states that the maximum water temperature for bathtubs and showers should be 120°F.

Water used in residential or commercial buildings usually comes from a public water source or a private well and is usually in the 40°F to 70°F temperature range, depending on time of year and location. To raise the water temperature to an acceptable hot-water temperature some type of water heater or hot-water generator must be used. The International Plumbing Code (IPC

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Section 504) and Uniform Plumbing Code (UPC Section 505) require numerous safety devices be installed on a water heater to prevent it from overheating and causing physical damage to the building or its occupants. IPC-required devices include an antisiphon device, a vacuum relief valve (where necessary), a disconnect switch for electric water heaters, a gas shut-off device for gas water heaters, a pressure and temperature relief valve, and a drain pan (where necessary). The UPC requires the use of pressure- and temperature-limiting devices, and where necessary, a vacuum-relief valve and an automatic gas-shutoff device.

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