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scald burn-related injuries.

EXPOSURE TIME TO RECEIVE A SEVERE BURN

Celsius Temperature	Fahrenheit Temperature	2 nd Degree Burn No Irreversible Damage	3 rd Degree Burn Full Thickness Injury
45°	113°	2 hours	3 hours
47°	116.6°	20 minutes	45 minutes
48°	118.4°	15 minutes	20 minutes
*49°	*120°	8 minutes	10 minutes
51°	124°	2 minutes	4.2 minutes
55°	131°	17 seconds	30 seconds
60°	140°	3 seconds	5 seconds

***Activation temperature = 120° max (response time is less than 5 seconds)**

The above table shows that a person will receive a second degree burn in 3 seconds of exposure and a third degree burn in 5 seconds of exposure to water of 140°F at the discharge outlet will ensure the most safety for users.

The **American Journal of Public Health** prefers a maximum temperature of 120°F for hot water.

The **Consumer Product Safety Commission** and the plumbing industry have published a voluntary standard which states that the maximum allowable temperature at the water outlet to the bathing area should be 120°F.

There are national standards set forth by the major plumbing code making bodies, which specify a maximum temperature of 120°F for delivered hot water. The major code making bodies include:

- Southern Building Code Congress International (South)
- National Association of Plumbing, Heating and Cooling Contractors (NJ, DE, MO, NE)
- Council of American Building Officials (Regulate 1 & 2 family homes in U.S.)
- International Association of Plumbing and Mechanical Officials (West)
- Building Officials and Code Administrators (Northwest and Midwest)

Other nationally recognized plumbing code bodies that have published or proposed standards specifying 120°F as the maximum allowable discharge temperature include:

American Society for Testing & Materials (ASTM F444-88) Standard Consumer Safety Specification for Scald-Prevention Devices and Systems in Bathing Areas.

American Society of Sanitary Engineers and Plumbing Manufacturers' Institute (ASSE 1016) - Individual Thermostatic Pressure Balancing and Combination Control Valves for Bathing Facilities.

American Society of Sanitary Engineers and the Plumbing Manufacturers' Institute (ASSE 1062) - Temperature Actuated Flow Reducers for Individual Fixture Fittings. Passed the ASSE Standards Committee - April 26, 1996

Other organizations that specify a maximum of 120°F for delivered water temperature include:

- American Society of Plumbing Engineers
- American Trauma Society
- Shriners' Burn Institute
- National Burn Victim Foundation
- American Correctional Association
- U.S. Dept of Health & Human Services (guidelines for hospital & medical facility construction)

REFERENCES:

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ORIGINAL SOURCE:

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Abuse A Medical Reference Second Edition. Churchill Livingstone. 1992.

Rivara FP Grossman DC Cummings P. Injury Prevention. N Engl J Med. 1997; 337: 613-618.

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