

## HOT WATER SCALD HAZARDS

**“Expected hot water temperatures lack fidelity** because of inaccuracies or defects in the thermostats and because tempering valves are rarely included in the heaters for residential use. These problems are further compounded by the layering or stacking phenomenon. **The layering problem** in hot water heaters is the condition where, because of laminar flow, the hottest water rises to the top of the heater after a hot water draw is completed. **So the next hot water draw temporarily produces water at an excessively high temperature.”**

*NB: The design specifications for controls on water heaters allow  $\pm 10^\circ$  variation*

Scald/Burn Times: *Approximate Time In Seconds*

<i>Burn Type/Victim</i>	<i>120 °</i>	<i>130°</i>	<i>140°</i>	<i>150°</i>	<i>160°</i>
Child Second Degree	72	4.0	0.8	0.2	< 0.1
Adult Second Degree	288	18	2.8	0.9	0.4
<b>Child Third Degree</b>	<b>186</b>	<b>10</b>	<b>1.5</b>	<b>0.5</b>	<b>0.2</b>
<b>Adult Third Degree</b>	<b>558</b>	<b>30</b>	<b>5.4</b>	<b>1.8</b>	<b>0.9</b>

*Note: Mobility and the ability to avoid long exposures is limited or non-existent in infants, children, elderly and some physically compromised people.*

Burns are normally classified as 1st, 2nd, 3rd, and 4th degree burns:

- A first degree burn is a low skin penetration burn like sunburn.
- Second degree is a middle penetration burn causing blisters which often become infected when the blister breaks.
- Third degree is a full skin penetration burn that destroys nerves and will require skin grafts.
- *Fourth degree is a deep burn that goes through the skin and into muscle and possibly bone, which often requires amputation of the extremities.*

“According to data from the National Safe Kids Campaign, 4000–5000 children are scalded each year, most often in school, with enormous costs to all of society.

“The average bathtub scald burn covers 12% of the body surface with a full thickness third degree burn. Statistics from the National Safe Kids Campaign indicate that the scald burn sources were 95% residential settings (54% in apartment houses and 46% in single family homes).

“With children, the treating surgeon must periodically “release” the skin as it becomes tight from growth, since grafted skin does not stretch in a normal manner. Without these serious, continuing surgeries until the victim becomes an adult, the muscles would pull the bones into grotesque configurations. And then there is the emotional trauma of ugly scar tissue.”