

# Critical Temperatures for Household Appliances

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There are a number of appliances around the house that have user or trade adjustable temperatures and it is not always simple to get them right.

**Hot Water Heaters** Most Hot Water heaters for domestic hot water are factory set to 66deg C. ( 150F ). This is actually hot enough to scald someone so legislation in Ontario now requires mixing valves that will mix cold water with the hot water so that the temperature at the faucet can never hurt a child -- no more than 49deg C. (120 F). Why a mixing valve and not just turn down the hot water tank? One reason is that with hotter water that is diluted to cool it down, you get more hot water before running out. However the most important reason is if the hot water tank is not hot enough, bacteria can grow in this nice warm sitting body of water. Gas water heaters must be set no lower than 50C (120F) and Electrical hot water tanks no lower than 60C (140F). Why the difference? The gas unit actually puts out more heat for a short period of time which kills bacteria. The electrical units top up the heat gradually, to save energy, and the bottom of the tank can remain too cool to kill the bacteria. So we want to keep the tank hotter for killing bacteria, and use mixing valves to protect delicate skin.

**Here is a link to some great information from Watts, one company that makes mixing valves.**

**Forced Air Furnaces** Furnaces have changed a lot in the last few years. Most all of them have a top temperature safety cut-off of 95C or about 200F. Above this and you could potentially start a fire. Of course you set your own household thermostat setting to what you want, but behind the scenes what happens in the fire box is: for older furnaces, the fan kicks in when the temperature rises to 66C (150F) and turns off when the temperature cools down to 120F (49C) -- and for newer ones the fan comes on when the exchanger reaches 49C (120F) and off at 32C (90F). The reason for this is to warm things up before the air starts moving, and to keep the fan going after the heat is turned off to help draw all the energy you paid for into the house and not up the chimney. As far as the room thermostat goes, there are swing settings which allow the temperature of the room get several degrees below your setting before going on, and then several degrees over your setting before going off. This is done to prevent the furnace from cycling on and off constantly trying to sit on the same temperature. This swing can be adjusted if the difference between on and off is uncomfortable, or extended if the unit is cycling far too quickly. Just as a note, modern electronic wall mounted thermostates for baseboard electrical heaters usually go on or off every 3 seconds -- having the effect of keeping the temperature extremely even -- never really getting too hot unless the room is really cold. When newly installed people often think they are not working because the baseboard unit is only really hot on the first start-up in the morning.

**Refrigeration** The general rule for a refrigerator is to keep it from 2C-5C (36F - 41F) just a bit above freezing, and freezers below -18C (0 F), well frozen.

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