Heating Blocks & Hot Plates

Mindfulness Minute: Incorporate safety into your workflow by considering the hazards associated with your equipment each time you use it.

A heating block is an electric heating device which provides controlled heat to the tubes within its tube holder. A heating block can also refer to a device used to hold round bottomed flasks, tubes, and vials securely to a hotplate stirrer which provides controlled heat and often a motor for stirring. The holders can be interchangeable to accommodate different sized tubes and are typically made of solid aluminum.

Follow this list of dos and don'ts for safe heating block and hot plate use:

Do set up and secure any attachments before heating. Ensure that the size of the attachments are appropriate for the size of flask being used.

Do alert other lab members that the heating block or hot plate may still be hot if you leave it unattended within an hour after use.

Do periodically test the "off" switch on a hot plate to verify that the unit cools down.

Do unplug hot plates when not in use.

Do treat all biological and chemical spills on a heating block or hot plate according to your lab's spill response plans. If the equipment is hot at the time of the spill, shut off the heat source if able, and clear the area immediately to avoid contact with aerosolized infectious material or hazardous chemical vapors.

Do inventory lab hot plate models and understand unique features.

Do replace hot plates over 20 years old: hot plates purchased prior to 1984 do not have temperature feedback controls. These models include the Corning PC-35 and PC-351 and the Thermolyne Model SP46925.

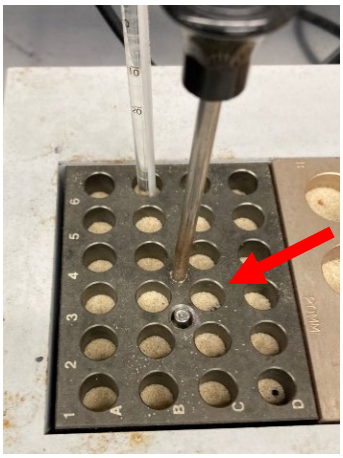
Don't leave heating blocks or hot plates on while unattended.

Don't overfill flasks, beakers, or tubes that will be used with a heating block or hot plate to reduce the risk of overflowing or boiling over.

Don't use mercury thermometers in heating blocks, as they can easily be broken off inside the heating block, leading to a release of mercury vapors, even when the heating block is off.

If a mercury thermometer breaks in your lab, call EHS at 865-974-5084 for cleanup. If heat is involved, shut off the heat source if able, do not touch the mercury, and evacuate the space.

If you have mercury thermometers in your lab, you can exchange them for alcohol-based thermometers by emailing ehs_labsafety@utk.edu.



A mercury thermometer has broken off inside this heating block, leaving the bulb of mercury exposed.