

Old Hot-Plate Burns Reaction

Situation

An old hot plate was being used to heat a water bath and was left unattended. Even though the temperature controller was set at the desired setting, the hot plate overheated and evaporated all the water.

A reaction under inert conditions had been set up in the using of 6 mL of DMSO in a 100 mL Schlenk round bottom flask (RBF). Once the water bath evaporated because of the excessive heat, it started heating the RBF as well.

The reaction was carried out during daytime, and a couple of hours into the reaction, a lab researcher noticed a small blue flame above the flask. They called the person-in-charge of the reaction immediately, and they removed the heat unplugged the hot-plate immediately.

A closed bottle of diethyl ether was present in the hood during the incident but did not ignite.

Suggestions

Discard old hot plates, and replace them with the ones with reliable temperature control.

Use silicone oil for heat bath even if heating at low temperatures. Monitor your reactions. Do not leave your reactions until the temperature has stabilized. REMINDER- NEVER use a water bath to heat a container with any amount of pyrophoric reagent.

Make sure to clear the solvent bottles from your hood or working area whenever working with heat.