

Metal Hydrides

- Includes: LiH, NaH, KH, CaH₂
- Dangers
 - Reacts violently with water and low molecular weight alcohols
 - Exothermic
 - Releases H₂ gas
- Handling
 - MUST wear PPE (safety goggles, gloves, lab coat, pants, closed-toe shoes)
 - Most can be handled very carefully in air for brief periods (KH must be used under inert gas)
 - Must flush all containers with inert gas before storage in a dry place (desiccator)
 - All reactions should be under inert atmosphere
 - Add to reactions at 0 °C
 - THF is the best reaction solvent as it is not extremely volatile, resists deprotonation, and solvates many organosodium compounds
 - Best to use those dispersed in mineral oil as they are safer and less likely to ignite
 - The mineral oil of sodium hydride dispersions can be rinsed off using a hydrocarbon solvent such as hexane. This is easily accomplished in a glove box or can be done in a hood under carefully controlled conditions. Weigh out desired amount of dispersion and seal in a flask under nitrogen. Add dry hexane via syringe, swirl, and solid sodium hydride will settle. Slowly syringe off hexane and then carefully discard into a separate flask containing isopropanol. Repeat rinse procedure. Note: AVOID low boiling rinses such as ether and pentane that tend to condense water upon evaporation
- Quenching
 - For small amounts of unused hydrides, transfer to an open, clamped flask, dilute with an unreactive solvent, and cool to 0 °C. Slowly add isopropanol until no more bubbling is observed. Then, repeat with methanol followed by water.
 - For reactions, follow the literature procedure, which will generally include cooling to 0 °C and quenching with an alcohol or water by slow addition.
- Fire
 - If inside the hood, close the sash, notify safety officers or Keary, and pull alarm and evacuate if necessary
 - For small fires outside the hood that can be contained, use the class D fire extinguisher (yellow one) or sand to put out the fire. Be sure to notify people in the lab for help, BUT do not leave the fire unattended.
 - For large fires outside the hood, pull the fire alarm and evacuate.

