Safe Working Procedure for Lithium Aluminium Hydride

Lithium Aluminium Hydride (LiAlH₄, LAH, lithal) is a widely used reducing agent. It is usually supplied in the form of a fine grey powder. Lithium aluminium hydride reacts vigourously with water, acids and alcohols and can easily catch fire.

Before using LiAlH₄, alternatives, such as sodium borohydride and lithium borohydride, should be considered.

Precautions

Lithium aluminium hydride should never be allowed to come into contact with water except under carefully controlled conditions, otherwise there will be a fire. Reaction mixtures containing LiAlH₄ may be quenched by slow dropwise addition of water, preferably under a stream of nitrogen gas.

Reactions involving LiAlH₄ should be carried out under an inert atmosphere. As these reactions often generate hydrogen gas, a flow of inert gas is preferred to a static atmosphere. Addition of LiAlH₄ to organic solvents, such as THF, or vice versa, can be surprisingly exothermic. LiAlH₄ should be added portionwise to the solvent, under an inert gas, with appropriate cooling.

Small quantities of lithium aluminium hydride should be destroyed by quenching with cold iso-propanol. Do not add any LiAlH₄ to tissue paper.

The following personal protective equipment (PPE) is to be used:

Safety Glasses, Labcoat, Latex gloves, Long pants, Covered shoes
If LiAlH₄ dust is a problem, a surgical mask should be worn.

Prepared by,

[Signature]

Approved by,

[Signature]