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Fabrication and handling aspects of highly reactive powders

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Abstract

Lithium hydride is commonly encountered as a reducing agent in the synthesis of organic

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compounds, where it is typically handled in quantities of 5 g or so, but, at AWE, lithium hydride powders can be manufactured, handled, and fabricated into complex shapes on the kilogram scale. As the material is highly reactive with water, and therefore with ambient moisture, personnel safety and the integrity of the final product are of paramount importance, and special handling facilities are required.

The manufacture of lithium hydride is described, and also the generation of the specific particle size fractions required for the fabrication of intricate shapes. The specialised handling requirements, together with the underlying chemistry, are covered in detail, the chemistry being the driver behind the need to exclude moisture and other contaminants from the production line.

Safety considerations are reviewed, and the presentation to PSA 2005 concluded with a video clip showing the violent reaction with water, and the extremely exothermic combustion of powdered lithium hydride.

Keywords: Fabrication; Handling; Reactive; Lithium hydride; Powder

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