ALBEMARLE® CORPORATION

Developmental Product

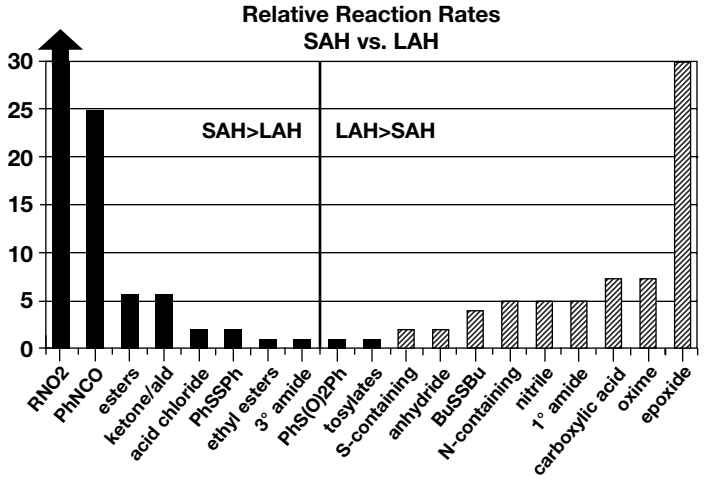
Sodium Aluminum Hydride (SAH) Solid

Description

Sodium aluminum hydride (SAH) is a multipurpose reducing agent used primarily for reductions of organic and non-organic functional groups such as aldehydes, ketones, esters, amides and nitriles. It can also be used as a synthon for milder aluminum hydride reducing agents. SAH has good solubility in ethereal solvents, such as tetrahydrafuron (THF) and 1,2-dimethoxyethane (DME).

Applications

SAH has been shown to reduce almost every functional group as readily as lithium aluminum hydride[1], and reaction rate differences are complementary.



In many cases a moderate increase in reaction temperature can be used to achieve similar results, and this can significantly reduce cooling costs in commercial-scale reactions.

[1] *Cha & Brown, J. Org. Chem. 1993,* ***58****, 4727*

Physical Properties

Appearance @ 25 °C	white powder
Formula	$NaAlH_4$
Formula weight	54.00
Product composition, wt %	
SAH	> 93
$NaAlEt_2H_2$	< 0.2
Na_3AlH_6	2.0 - 5.0
Al (free)	< 1.0
Theoretical hydrogen	7.47 (1.67 L of hydrogen @ STP)
Stability in contact with air	non-pyrophoric
Stability in contact with water	reacts violently
Thermal stability	decomposes endothermically @ 186 °C. No exotherms observed below 250 °C
Solubility @ 25 °C, wt % in THF	13 - 14
ΔH of dissolution in THF	3.0 kcal/gmole SAH 86 btu/lb (85% SAH)
Average bulk density, g/ml	0.79
Compressibility, %	10.7

Shipping Information

Container Information

Up to 1.0 kg in plastic-coated jars. From 5.0 - 10.0 kgs, double-bagged in PE bags inside clamping ring 5.0 gal cans. For larger quantities, SAH solid can also be shipped in cone drums of various sizes up to 53.0 gal.

Shipping Classification

Proper shipping name:	Complex Metal Hydride (Sodium Aluminum Hydride)
Hazard class:	4.3 (dangerous when wet)
ID number:	UN2835
Placard (s):	dangerous when wet w/#4 and flammable w/o #
Label (s):	dangerous when wet w/#4 and flammable liquid w/o #

Safety and Handling Information

The water-reactive nature of SAH presents potential hazards not common to most solid chemicals.

Chemical Registration Numbers

CAS:	13770-96-2
EINECS:	237-400-1
ENCS number:	not listed
ECL serial number:	KE-31625

ALBEMARLE® CORPORATION

AMERICAS 451 Florida Street • Baton Rouge, Louisiana 70801-1765 • Tel: 225-388-7402 or 800-535-3030 • Fax: 225-388-7848 **EUROPE** Parc Scientifique Einstein • Rue du Bosquet 9 • B-1348 Louvain-la-Neuve Sud, Belgium • Tel: 32-10-48-1711 • Fax: 32-10-48-1717 **ASIA PACIFIC** 111 Somerset Road #13-03 • Singapore 238164 • Tel: 65-6732-6286 • Fax: 65-6737-4155 **ASIA PACIFIC** 16th Floor, Fukoku Seimei Building • 2-2-2, Uchisaiwai-cho • Chiyoda-ku, Tokyo 100-0011, Japan • Tel: 81-3-5251-0796 • Fax: 81-3-3500-5623 **ASIA PACIFIC** China World Tower, Room 1317 • No. 1 Jian Guo Men Wai Avenue • Beijing 100004 China • Tel: 86-10-6505-4153 or 86-10-6505-4154 • Fax: 86-10-6505-4150

