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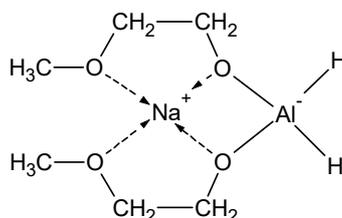
EN ISO 9001 : 2015  
EN ISO 14001 : 2015

# Synhydrid®

## Technical Data Sheet

### Composition and Identification

<b>Composition:</b>	70 % wt. solution of sodium dihydridobis(2-methoxyethoxy)aluminate in toluene
<b>Chemical Name:</b>	sodium dihydridobis(2-methoxyethanolato)aluminate(1-)
<b>Synonyms:</b>	sodium dihydridobis(2-methoxyethoxy)aluminate; sodium bis(2-methoxyethoxy)aluminium hydride; SDMA
<b>Formula:</b>	$\text{NaAlH}_2(\text{OCH}_2\text{CH}_2\text{OCH}_3)_2$



<b>CAS No.:</b>	22722-98-1
<b>EINECS No.:</b>	245-178-2
<b>Molecular Weight:</b>	202,16 g/mol

### Physical Properties

<b>Appearance:</b>	limpid liquid
<b>Content of Active Ingredient:</b>	min. 70 % wt. (by gas-volumetry)
<b>Content of Active Hydrogen:</b>	min. 0,698 % wt.
<b>Density:</b>	1,03 g/cm <sup>3</sup> (at 20°C)
<b>Viscosity:</b>	65 mPa.s (at 20°C)
<b>Boiling Point:</b>	approx. 110°C
<b>Flash Point:</b>	approx. 4°C (Abel-Pensky)
<b>Thermal Stability:</b>	up to 200°C
<b>Solubility:</b>	highly soluble in ethers and aromatic hydrocarbons

### Packaging, Storage and Transport Information

<b>Packaging:</b>	steel drums 15 kg, 25 kg, 50 kg, 200 kg returnable pressure containers (portable tanks) 1000 kg glass bottles 200 g
<b>Shelf Life:</b>	guaranteed shelf life is 24 months since production in original packaging
<b>Storage:</b>	Synhydrid should be stored in the original, perfectly sealed packaging in a dry, covered warehouse at temperature below +45°C
<b>UN Number:</b>	3399
<b>ADR Class:</b>	4.3 (3)
<b>Packaging Group:</b>	I

## Applications

Synhydrid is a very effective organometallic hydridic reducing agent. It plays important role in organic chemistry and is mainly used as a versatile reducing agent for functional groups in organic molecules. Especially it is very effective for reduction of compounds containing carbonyl and carboxyl groups such as aldehydes, ketones, carboxylic acids and their esters, acid anhydrides, acyl halides, lactones, amides, imides, lactams and also for reduction of oximes, aromatic nitriles, chlorinated hydrocarbons, nitro compounds etc. Its reducing properties are very frequently used in pharmaceutical industry for synthesis of drugs, in flavor and fragrance industry and in production of pesticides. In numerous reduction reactions Synhydrid can successfully replace traditional complex hydrides such as  $\text{LiAlH}_4$ ,  $\text{NaAlH}_4$ ,  $\text{NaBH}_4$  or their derivatives. It is often preferable to use Synhydrid because of its unusually high solubility in various solvents and because of higher convenience and safety during handling. Synhydrid is non-pyrophoric and soluble in aromatic hydrocarbons in comparison with  $\text{LiAlH}_4$ . In addition, many examples of higher efficiency, better yields, higher selectivity and also higher stereoselectivity of Synhydrid are described in technical literature.

Apart from using as reducing agent Synhydrid can be also used as methylation agent, as effective reagent for purification and dehydration of aprotic organic solvents and in combination with another metal compound in catalytic systems, especially for hydrogenation process of unsaturated hydrocarbons, ketones and for hydrosilylation.

The table below compares yields of several organic reductions carried out with Synhydrid and  $\text{LiAlH}_4$ :

Reduced compound	Product	Yield [%]	
		$\text{LiAlH}_4$	Synhydrid
benzaldehyde	Benzyl alcohol	85	96
heptanal	1-heptanol	86	97
2-butanone	2-butanol	80	95
cyclohexanone	cyclohexanol	-	95
cyclohexanone oxime	cyclohexylamine	75	89
benzoic acid	benzyl alcohol	81	97
benzoylchloride	benzyl alcohol	72	87
dimethyl adipate	1,6-hexanediol	83	92
dimethyl terephthalate	1,4-bis(hydroxymethyl)benzene	58	87
phthalic anhydride	1,2-bis(hydroxymethyl)benzene	87	88
benzotrile	benzylamine	83	81

## Other Information

### Occupational Safety:

Synhydrid is a highly flammable and corrosive substance. In contact with water it produces extremely flammable gases. It ignites in contact with dry cellulose, cotton or wood wool and cleaning wool. Protective clothing, including solvent-resistant gloves and safety goggles or face shield should always be used when handling with Synhydrid. In the case of fire it is necessary to use dry chemical extinguishers (snow, powder) or inert gas (nitrogen). Water or foam extinguishers must not be used. Spilled Synhydrid must be covered with sufficient amount of dry inert materials (sand or dolomite). The spill should be transferred to a dry metal container and disposed of in accordance with local regulations. For other specific information see the Material Safety Data Sheet.

### Disposal of Unused Residues:

The unused residues of Synhydrid can be carefully deactivated with alcohols, ideally in the nitrogen atmosphere, or can be burned in approved chemical waste incinerators. For other information consult the Material Safety Data Sheet.

The information in this technical data sheet is not fully comprehensive. In case of doubt or confusion, please contact company Lučební závody a.s. Kolín, e-mail: [lzk@lucetni.cz](mailto:lzk@lucetni.cz).