# Material Safety Data Sheet
## Sodium borohydride, 0.5 M solution in diglyme

ACC# 95395

## Section 1 - Chemical Product and Company Identification

**MSDS Name:** Sodium borohydride, 0.5 M solution in diglyme
**Catalog Numbers:** AC191130000, AC191131000, AC191138000
**Synonyms:** Sodium tetrahydroborate in 2-methoxyethyl ether; SBH in diethylene glycol dimethyl ether.
**Company Identification:**

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

**For information in North America, call:** 800-ACROS-01
**For emergencies in the US, call CHEMTREC:** 800-424-9300

## Section 2 - Composition, Information on Ingredients

| CAS# | Chemical Name | Percent | EINECS/ELINCS |
|---|---|---|---|
| 111-96-6 | Diethylene glycol dimethyl ether | 98.11 | 203-924-4 |
| 16940-66-2 | Sodium borohydride | 1.89 | 241-004-4 |

## Section 3 - Hazards Identification

### EMERGENCY OVERVIEW

Appearance: clear, colorless liquid.
**Danger!** Water-reactive. Causes eye and skin burns. **Flammable liquid and vapor.** Causes severe respiratory tract irritation with possible burns. Contact with water and heat may cause a fire/explosion hazard. Liberates oxygen. May be harmful if swallowed, inhaled, or absorbed through the skin. May cause severe digestive tract irritation with possible burns. This material has been reported to be susceptible to autoxidation and therefore should be classified as peroxidizable. May form explosive peroxides. Moisture sensitive.
**Target Organs:** Eyes, reproductive system, skin, mucous membranes.

**Potential Health Effects**
**Eye:** May cause irreversible eye injury. Contact with eyes may cause severe irritation, and possible eye burns.
**Skin:** Contact with skin causes irritation and possible burns, especially if the skin is wet or moist. May be harmful if absorbed through the skin.
**Ingestion:** May cause severe gastrointestinal tract irritation with nausea, vomiting and possible burns. May be harmful if swallowed.
**Inhalation:** Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. May be harmful if inhaled. Causes severe respiratory tract irritation with possible burns. Vapors may cause lung injury.
**Chronic:** May cause reproductive and fetal effects.

## Section 4 - First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid imme diately. Do NOT allow victim to rub eyes or keep eyes closed.
**Skin:** Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
**Ingestion:** Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
**Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Reacts violently with water giving off flammable gas which may explode. Can burn in a fire, releasing toxic vapors. Combustible liquid. May re-ignite after fire is extinguished. May be ignited by heat, sparks, and flame.
**Extinguishing Media:** Do NOT get water inside containers. Cool containers with flooding quantities of water until well after fire is out. DO NOT USE WATER OR FOAM. For small fires, use dry chemical, soda ash, lime or sand. For large fires, use dry sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.
**Flash Point:** 57-69 deg C
**Autoignition Temperature:** Not available.
**Explosion Limits, Lower:**Not available.
**Upper:** Not available.
**NFPA Rating:** (estimated) Health: ; Flammability: 2; Instability:

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.
**Spills/Leaks:** Do not flush into a sewer. Use water spray to disperse the gas/vapor. Remove all sources of ignition. Do not get water on spilled substances or inside containers. Cover with dry earth, dry sand, or other non-combustible material followed with plastic sheet to minimize spreading and contact with water.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Use only in a well-ventilated area. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Do not ingest or inhale. Use and store under nitrogen. Do not allow contact with water. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
**Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep under a nitrogen blanket. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Water free area. Keep away from acids. Containers should be dated when opened and tested periodically for the presence of peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals. All peroxidizable substances should be stored away from heat and light and be protected from ignition sources.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.
**Exposure Limits**

| Chemical Name | ACGIH | NIOSH | OSHA - Final PELs |
|---|---|---|---|
| Diethylene glycol dimethyl ether | none listed | none listed | none listed |
| Sodium borohydride | none listed | none listed | none listed |

**OSHA Vacated PELs:** Diethylene glycol dimethyl ether: No OSHA Vacated PELs are listed for this chemical. Sodium borohydride: No OSHA Vacated PELs are listed for this chemical.
**Personal Protective Equipment**
**Eyes:** Wear chemical splash goggles and face shield.
**Skin:** Wear appropriate protective gloves and clothing to prevent skin exposure.
**Clothing:** Wear appropriate protective clothing to prevent skin exposure.
**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid
**Appearance:** clear, colorless
**Odor:** Not available.
**pH:** Not available.
**Vapor Pressure:** Not available.
**Vapor Density:** Not available.
**Evaporation Rate:**Not available.
**Viscosity:** Not available.
**Boiling Point:** Not available.
**Freezing/Melting Point:**400 deg C
**Decomposition Temperature:**Not available.
**Solubility:** Reacts.
**Specific Gravity/Density:**.9450g/cm3
**Molecular Formula:**H4BNa
**Molecular Weight:**37.82

## Section 10 - Stability and Reactivity

**Chemical Stability:** Under normal storage conditions, peroxidizable compounds can form and accumulate peroxides which may explode when subjected to heat or shock. This material is most hazardous when peroxide levels are concentrated by distillation or evaporation.
**Conditions to Avoid:** High temperatures, contact with water.
**Incompatibilities with Other Materials:** Acids (mineral, non-oxidizing, e.g. hydrochloric acid, hydrofluoric acid, muriatic acid, phosphoric acid), acids (mineral, oxidizing, e.g. chromic acid, hypochlorous acid, nitric acid, sulfuric acid), acids (organic, e.g. acetic acid, benzoic acid, formic acid, methanoic acid, oxalic acid), alcohols and glycols (e.g. butyl alcohol, ethanol, methanol, ethylene glycol), aldehydes (e.g. acetaldehyde, acrolein, chloral hydrate, formaldehyde), amides (e.g. butyramide, diethyltoluamide, dimethyl formamide), amines (aliphatic and aromatic, e.g. dimethyl amine, propylamine, pyridine, triethylamine), azo, diazo, and hydrazines (e.g. dimethyl hydrazine, hydrazine, methyl hydrazine), carbamates (e.g. carbanolate, carbofuran), caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), cyanides (e.g. potassium cyanide, sodium cyanide), dithiocarbamates (e.g. ferbam, maneb, metham, thiram), esters (e.g. butyl acetate, ethyl acetate, propyl formate), ethers.
**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, oxides of boron, borane, sodium oxide.
**Hazardous Polymerization:** Will not occur.

## Section 11 - Toxicological Information

**RTECS#:**
**CAS#** 111-96-6: KN3339000
**CAS#** 16940-66-2: ED3325000
**LD50/LC50:**
CAS# 111-96-6:
Oral, mouse: LD50 = 6 gm/kg;
Oral, rat: LD50 = 5400 mg/kg;
.

CAS# 16940-66-2:
Inhalation, rat: LC50 = 36 mg/m3;
Oral, mouse: LD50 = 50 mg/kg;
Oral, rabbit: LD50 = 50 mg/kg;
Oral, rat: LD50 = 162 mg/kg;
Skin, rabbit: LD50 = 230 mg/kg;
.

**Carcinogenicity:**
CAS# 111-96-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 16940-66-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No data available.
**Teratogenicity:** Possible teratogen.
**Reproductive Effects:** No data available.
**Mutagenicity:** No data available.
**Neurotoxicity:** No data available.
**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** No data available. Zebrabarbel (brachydanio rerio) LCo:133 mg/l (96h) Acute bacteriatoxicity: Active-sludge bacteria EC50:1961 mg/l Method: ISO 8192-1986 (E)/B (ETAD 103/OECD 209)
**Environmental:** No information available.
**Physical:** No information available.
**Other:** No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
**RCRA P-Series:** None listed.
**RCRA U-Series:** None listed.

## Section 14 - Transport Information

| | US DOT | Canada TDG |
|---|---|---|
| **Shipping Name:** | SODIUM BOROHYDRIDE | No information available. |
| **Hazard Class:** | 4.3 | |
| **UN Number:** | UN1426 | |
| **Packing Group:** | I | |

## Section 15 - Regulatory Information

### US FEDERAL

**TSCA**
CAS# 111-96-6 is listed on the TSCA inventory.
CAS# 16940-66-2 is listed on the TSCA inventory.
**Health & Safety Reporting List**
None of the chemicals are on the Health & Safety Reporting List.
**Chemical Test Rules**
None of the chemicals in this product are under a Chemical Test Rule.
**Section 12b**
None of the chemicals are listed under TSCA Section 12b.
**TSCA Significant New Use Rule**
None of the chemicals in this material have a SNUR under TSCA.
**CERCLA Hazardous Substances and corresponding RQs**
None of the chemicals in this material have an RQ.
**SARA Section 302 Extremely Hazardous Substances**
None of the chemicals in this product have a TPQ.
**SARA Codes**
CAS # 111-96-6: immediate, delayed, fire.
CAS # 16940-66-2: immediate, fire, reactive.
**Section 313**
This material contains Diethylene glycol dimethyl ether (listed as Glycol ethers), 98.11%, (CAS# 111-96-6) which is subject to the

reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

**Clean Air Act:**

CAS# 111-96-6 (listed as Glycol ethers) is listed as a hazardous air p ollutant (HAP).

This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

**Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**

CAS# 111-96-6 can be found on the following state right to know lists: California, Pennsylvania, (listed as Glycol ethers).
CAS# 16940-66-2 can be found on the following state right to know lists: New Jersey.

**California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## European/International Regulations

**European Labeling in Accordance with EC Directives**

**Hazard Symbols:**

T F

**Risk Phrases:**

R 15 Contact with water liberates extremely flammable gases.
R 19 May form explosive peroxides.
R 25 Toxic if swallowed.
R 34 Causes burns.
R 60 May impair fertility.
R 61 May cause harm to the unborn child.

**Safety Phrases:**

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face pr otection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions before use.
S 7/8 Keep container tightly closed and dry.
S 28A After contact with skin, wash immediately with plenty of water .

**WGK (Water Danger/Protection)**

CAS# 111-96-6: 1
CAS# 16940-66-2: 2

**Canada - DSL/NDSL**

CAS# 111-96-6 is listed on Canada's DSL List.
CAS# 16940-66-2 is listed on Canada's DSL List.

**Canada - WHMIS**

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

CAS# 111-96-6 is not listed on the Canadian Ingredient Disclosure List.

## Section 16 - Additional Information

**MSDS Creation Date:** 1/02/1998
**Revision #4 Date:** 10/03/2005