

# Material Safety Data Sheet

## Sodium triethylborohydride, 1M solution in tetrahydrofuran

ACC# 96125

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Sodium triethylborohydride, 1M solution in tetrahydrofuran

**Catalog Numbers:** AC200030000, AC200031000

**Synonyms:** None Known.

**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
109-99-9	Tetrahydrofuran	>85	203-726-8
17979-81-6	Sodium triethylborohydride	<15	241-903-1

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: colorless liquid. Flash Point: -17 deg C.

**Danger!** Highly flammable. Water-reactive. Corrosive. Causes eye and skin burns. Reacts violently and/or explosively with water, steam or moisture. May ignite or explode on contact with moist air. Uninhibited material, or material from which the inhibitor has been removed or reacted, may form explosive peroxides. Dangerous when wet. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns. May cause central nervous system depression. May cause cardiac disturbances. Moisture sensitive.

**Target Organs:** Central nervous system, cardiovascular system.

#### Potential Health Effects

**Eye:** Causes eye burns. When substance becomes wet or comes in contact with moisture of the mucous membranes, it will cause irritation. May cause chemical conjunctivitis and corneal damage.

**Skin:** Causes skin burns. May cause cyanosis of the extremities. May cause skin rash (in milder cases), and cold and clammy skin with cyanosis or pale color.

**Ingestion:** May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. May cause perforation of the digestive tract. May cause cardiac disturbances. Ingestion of large amounts may cause CNS depression. May cause systemic effects.

**Inhalation:** Causes chemical burns to the respiratory tract. May cause abdominal pain, nausea, vomiting, and inflammation of the gums and mouth. Aspiration may lead to pulmonary edema. Vapors may cause dizziness or suffocation. May cause cardiac abnormalities. May cause systemic effects. Inhalation at high concentrations may cause CNS depression and asphyxiation. May cause burning sensation in the chest.

**Chronic:** Effects may be delayed.

### Section 4 - First Aid Measures

**Eyes:** Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).

**Skin:** Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes. If water-reactive products are embedded in the skin, no water should be applied. The embedded products should be covered with a light oil.

**Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. 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. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Material can spontaneously ignite (pyrophoric) when exposed to air at normal or slightly elevated temperatures. Can burn in a fire, releasing toxic vapors. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Will burn if involved in a fire. Water reactive. Material will react with water and may release a flammable and/or toxic gas. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Flammable liquid and vapor. Vapors may be heavier than air. They can spread along the ground and collect in low or

confined areas. May ignite or explode on contact with steam or moist air. May re-ignite after fire is extinguished.

**Extinguishing Media:** Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT get water inside containers. Contact professional fire-fighters immediately. 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:** -17 deg C ( 1.40 deg F)

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:**Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 3; Flammability: 4; Instability: 1; Special Hazard: -W-

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. Do not expose spill to water. A vapor suppressing foam may be used to reduce vapors.

## Section 7 - Handling and Storage

**Handling:** Remove contaminated clothing and wash before reuse. Do not allow water to get into the container because of violent reaction. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Do not breathe dust, vapor, mist, or gas. 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. Do not allow contact with water. Use only in a chemical fume hood. Discard contaminated shoes. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Keep from contact with moist air and steam.

**Storage:** Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Keep under a nitrogen blanket. Keep away from water. Flammables-area.

## 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
Tetrahydrofuran	50 ppm TWA; 100 ppm STEL; Skin - potential significant contribution to overall exposure by the cutaneous route	200 ppm TWA; 590 mg/m <sup>3</sup> TWA 2000 ppm IDLH	200 ppm TWA; 590 mg/m <sup>3</sup> TWA
Sodium triethylborohydride	none listed	none listed	none listed

**OSHA Vacated PELs:** Tetrahydrofuran: 200 ppm TWA; 590 mg/m<sup>3</sup> TWA Sodium triethylborohydride: No OSHA Vacated PELs are listed for this chemical.

### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves 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:** colorless

**Odor:** Not available.

**pH:** Not available.

**Vapor Pressure:** Not available.

**Vapor Density:** 4.2

**Evaporation Rate:**Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:**Not available.

**Decomposition Temperature:**Not available.

**Solubility:** reacts with water

**Specific Gravity/Density:** .8900g/cm<sup>3</sup>

**Molecular Formula:**NaB(C<sub>2</sub>H<sub>5</sub>)<sub>3</sub>H

**Molecular Weight:**121.99

## Section 10 - Stability and Reactivity

**Chemical Stability:** Prolonged exposure to air and sunlight may form unstable peroxides. Explosive peroxides may form on concentration.

Peroxides can be detonated by friction, impact, or heating. Peroxide formation may occur in containers that have been opened and remain in storage. Combines vigorously or explosively with water.

**Conditions to Avoid:** Incompatible materials, ignition sources, exposure to air, contact with water, excess heat, strong oxidants, exposure to moist air or water.

**Incompatibilities with Other Materials:** Water, acids, alcohols, air, oxidizing agents.

**Hazardous Decomposition Products:** Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, oxides of boron, borane, hydrogen gas.

**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 109-99-9: LU5950000

**CAS#** 17979-81-6 unlisted.

**LD50/LC50:**

**CAS#** 109-99-9:

Inhalation, rat: LC50 = 21000 ppm/3H;

Oral, rat: LD50 = 1650 mg/kg;

**CAS#** 17979-81-6:

**Carcinogenicity:**

**CAS#** 109-99-9:

- **ACGIH:** A3 - Confirmed animal carcinogen with unknown relevance to humans
- **California:** Not listed.
- **NTP:** Not listed.
- **IARC:** Not listed.

**CAS#** 17979-81-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** No information found

**Mutagenicity:** No information found

**Neurotoxicity:** No information found

**Other Studies:**

## Section 12 - Ecological Information

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:**

**CAS#** 109-99-9: waste number U213 (Ignitable waste).

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE	WATER-REACTIVE LIQUID NOS (SODIUM TRIETHYLBOROHYDRIDE)
<b>Hazard Class:</b>	4.3	4.3
<b>UN Number:</b>	UN3399	UN3148
<b>Packing Group:</b>	I	II

## Section 15 - Regulatory Information

### US FEDERAL

**TSCA**

**CAS#** 109-99-9 is listed on the TSCA inventory.

**CAS#** 17979-81-6 is not listed on the TSCA inventory. It is for research and development use only.

**Health & Safety Reporting List**

None of the chemicals are on the Health & Safety Reporting List.

**Chemical Test Rules**

**CAS#** 109-99-9: Testing required by manufacturers, processors; Test for Health Effects

**Section 12b**

**CAS#** 109-99-9: Section 4

**TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

**CERCLA Hazardous Substances and corresponding RQs**

CAS# 109-99-9: 1000 lb final RQ; 454 kg final RQ

**SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

**SARA Codes**

CAS # 109-99-9: immediate, fire, reactive.

**Section 313** No chemicals are reportable under Section 313.**Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

**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# 109-99-9 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 17979-81-6 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

**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:**

F C

**Risk Phrases:**

R 11 Highly flammable.

R 15 Contact with water liberates extremely flammable gases.

R 19 May form explosive peroxides.

R 34 Causes burns.

**Safety Phrases:**

S 16 Keep away from sources of ignition - No smoking.

S 25 Avoid contact with eyes.

S 33 Take precautionary measures against static discharges.

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 7/8 Keep container tightly closed and dry.

S 9 Keep container in a well-ventilated place.

**WGK (Water Danger/Protection)**

CAS# 109-99-9: 1

CAS# 17979-81-6: No information available.

**Canada - DSL/NDSL**

CAS# 109-99-9 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of B6, D2B.

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# 109-99-9 is listed on the Canadian Ingredient Disclosure List.

**Section 16 - Additional Information**

**MSDS Creation Date:** 9/02/1997

**Revision #8 Date:** 3/22/2006

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