Material Safety Data Sheet
Potassium tri-sec-butylborohydride 1M solution in THF

ACC# 41487

Section 1 - Chemical Product and Company Identification

MSDS Name: Potassium tri-sec-butylborohydride 1M solution in THF
Catalog Numbers: AC203940000, AC205470000, AC205471000
Synonyms:
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	78	203-726-8
54575-49-4	Potassium tri-sec-butylborohydride	~22	259-241-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear slightly yellow liquid. Flash Point: -17 deg C.
Danger! Extremely flammable liquid. Corrosive. Water-reactive. Causes eye and skin burns. Causes digestive and respiratory tract burns. Dangerous when wet. Uninhibited material, or material from which the inhibitor has been removed or reacted, may form explosive peroxides. May cause central nervous system depression. May cause liver and kidney damage. Moisture sensitive.
Target Organs: Kidneys, central nervous system, liver.

Potential Health Effects

Eye: Causes eye burns. Vapors may cause eye irritation.
Skin: Causes skin burns. May be absorbed through the skin in harmful amounts.
Ingestion: Causes gastrointestinal tract burns. May cause headache. May cause unconsciousness. May be harmful if swallowed. May cause central nervous system depression.
Inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes chemical burns to the respiratory tract. May cause abdominal pain, nausea, vomiting, and inflammation of the gums and mouth.
Chronic: Prolonged or repeated eye contact may cause conjunctivitis. Prolonged or repeated skin contact may cause defatting and dermatitis. May cause liver and kidney damage.

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.
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Discard contaminated clothing in a manner which limits further exposure.
Ingestion: 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. 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 not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Notes to Physician: Treat symptomatically and supportively.
Antidote: None reported

Section 5 - Fire Fighting Measures

General Information: Vapors can travel to a source of ignition and flash back. Water Reactive. Material will react with water and may release a flammable and/or toxic gas. Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. Extremely flammable liquid and vapor. Forms peroxides of unknown stability. Containers may explode in the heat of a fire.
Extinguishing Media: Do NOT use water directly on fire. Use water spray to cool fire-exposed containers. Use foam, dry chemical, or carbon dioxide. Water may be ineffective. Use dry chemical, carbon dioxide, or alcohol-resistant foam.
Flash Point: -17 deg C (1.40 deg F)
Autoignition Temperature: Not available.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: 2 - health, 3 - flammability, 1 - instability

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. Remove all sources of ignition. Use a spark-proof tool.

Section 7 - Handling and Storage

Handling: Contents may develop pressure upon prolonged storage. 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. Container should be opened by a technically qualified person. Use only in a chemical fume hood. 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 cool place in the original container and protect from sunlight. Store in a cool, dry place. Store in a tightly closed container. Keep under a nitrogen blanket. Keep away from water. Flammables-area. Refrigerator/flammables.

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 exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
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 r oute	200 ppm TWA; 590 mg/m3 TWA 2000 ppm IDLH	200 ppm TWA; 590 mg/m3 TWA
Potassium tri-sec-butylborohydride	none listed	none listed	none listed

OSHA Vacated PELs: Tetrahydrofuran: 200 ppm TWA; 590 mg/m3 TWA Potassium tri-sec-butylborohydride: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear safety glasses and chemical goggles if splashing is possible.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to minimize contact with skin.
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 slightly yellow
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: Not available.
Decomposition Temperature: Not available.
Solubility: reacts with water
Specific Gravity/Density:.9130g/cm3
Molecular Formula:C12H28BK
Molecular Weight:222.26

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. Normally stable; however, on long term storage, materials containing similar functional groups form peroxides of unknown stability.
Conditions to Avoid: Normally stable; however, on long term storage, materials containing similar functional groups form peroxides of unknown stability., incompatible materials, light, ignition sources, exposure to air, contact with water, exposure to moist air or water.
Incompatibilities with Other Materials: It is explosive with potassium hydroxide, sodium hydroxide, and sodium tetrahydroaluminate since caustic alkalies deplete the inhibitor. Reacts with potassium dioxide 2-aminophenol to form an explosive product. Reacts violently with metal halides. Forms explosive hydrogen gas with borane or lithium tetrahydroaluminate and reacts vigorously with bromine and calcium hydride+heat. Incompatible with sulfinyl chloride and oxidizing materials. Hazardous polymerization may occur in the presence of cationic initiators such as strong proton acids or selected Lewis acids.
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide, oxides of boron, borane.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 109-99-9: LU5950000
CAS# 54575-49-4 unlisted.
LD50/LC50:
CAS# 109-99-9:
Inhalation, rat: LC50 = 21000 ppm/3H;
Oral, rat: LD50 = 1650 mg/kg;
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CAS# 54575-49-4:
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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# 54575-49-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

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

Section 12 - Ecological Information

Ecotoxicity: No data available. Blue-green algae, growth inhibition microcystis=225 mg/L (PH=7); Protozoa, cell multiplication inhibition test=858 mg/L.Cas# 109-00-0:LC50(96Hr.) Fathead Minnow = 2160 mg/L
Environmental: In air, substance photodegrades.
Physical: According to a model of gas/particle partitioning of semivolatile organic compounds in the atmosphere, tetrahydrofuran, which has a vapor pressure of 162 mm Hg at 25 deg C, determined from experimentally-derived coefficients, will exist solely as a vapor in the ambient atmosphere. Vapor-phase tetrahydrofuran is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals and nitrate radicals; the half-lives for these reactions in air are estimated to be about 1 day and 3 days, respectively.
Other: None

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
Shipping Name:	WATER-REACTIVE LIQUID, N.O.S.	No information available.
Hazard Class:	4.3	
UN Number:	UN3148	
Packing Group:	II	

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 109-99-9 is listed on the TSCA inventory.
CAS# 54575-49-4 is listed on the TSCA inventory.
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 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# 109-99-9 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 54575-49-4 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 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 7/8 Keep container tightly closed and dry.

WGK (Water Danger/Protection)

CAS# 109-99-9: 1
CAS# 54575-49-4: No information available.

Canada - DSL/NDSL

CAS# 109-99-9 is listed on Canada's DSL List.
CAS# 54575-49-4 is listed on Canada's NDSL List.

Canada - WHMIS

This product has a WHMIS classification of B2, E.

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: 6/02/1999
Revision #4 Date: 10/03/2005