Material Safety Data Sheet

Diisobutylaluminum hydride(DIBAL-H), 1.0M solution in hexane

ACC# 97212

Section 1 - Chemical Product and Company Identification

MSDS Name: Diisobutylaluminum hydride(DIBAL-H), 1.0M solution in hexane
Catalog Numbers: AC183790000, AC183794000
Synonyms: DIBAL-H
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
110-54-3	Hexane	~85.5	203-777-6
1191-15-7	Diisobutylaluminum hydride	~14.5	214-729-9

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless liquid.
Danger! Reacts violently with water liberating highly flammable gases. Causes burns by all exposure routes. Extremely flammable liquid and vapor. Vapor may cause flash fire. May cause central nervous system effects.
Target Organs: Central nervous system, peripheral nervous system.

Potential Health Effects

Eye: Causes eye burns. May cause blurred vision, tearing, and conjunctivitis.
Skin: Causes skin burns. Prolonged and/or repeated contact may cause defatting of the skin and dermatitis.
Ingestion: May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal. May cause central nervous system effects.
Inhalation: Causes chemical burns to the respiratory tract. Aspiration may lead to pulmonary edema. Vapors may cause dizziness or suffocation. May cause central, peripheral, and autonomic nervous system effects. May cause hypotension, depressed cardiac output, and bradycardia.
Chronic: Prolonged or repeated skin contact may cause defatting and dermatitis.

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.
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 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: Evacuate area and fight fire from a safe distance. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. 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. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Flammable liquid and vapor. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Will be easily ignited by heat, sparks or flame. Containers may explode if exposed to fire.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Water may be ineffective. Water may spread fire. If water is the only media available, use in flooding amounts. For large fires, use water spray, fog or alcohol-resistant foam. Do NOT use straight streams of water. Contact professional fire-fighters immediately. Cool containers with flooding quantities of water until well after fire is out.
Flash Point: > -22C
Autoignition Temperature: > 225 deg C (> 437.00 deg F)
Explosion Limits, Lower:1.1 (approx)
Upper: 7.5 (approx)

NFPA Rating: (estimated) Health: 3; Flammability: 3; Instability: 1

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. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Scoop up with a nonsparking tool, then place into a suitable container for disposal. Remove all sources of ignition. Isolate area and deny entry. Provide ventilation. Do not expose spill to water. Do not use combustible materials such as paper towels to clean up spill.

Section 7 - Handling and Storage

Handling: Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. 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. Avoid contact with eyes, skin, and 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. Avoid ingestion and inhalation. 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 heat, sparks, and flame. Keep away from heat and flame. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from water. Refrigerator/flammables. Keep containers tightly closed.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Hexane	50 ppm TWA; Skin - potential significant contribution to overall exposure by the cutaneous r oute	50 ppm TWA; 180 mg/m3 TWA 1100 ppm IDLH	500 ppm TWA; 1800 mg/m3 TWA
Diisobutylaluminum hydride	none listed	none listed	none listed

OSHA Vacated PELs: Hexane: 50 ppm TWA; 180 mg/m3 TWA Diisobutylaluminum hydride: 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 minimize contact with skin.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: colorless
Odor: gasoline-like
pH: Not available.
Vapor Pressure: .150 mm Hg @ 25C
Vapor Density: approx. 3.0
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: > 110 deg C
Freezing/Melting Point: Not available.
Decomposition Temperature: Not available.
Solubility: Insoluble.
Specific Gravity/Density:.8000g/cm3
Molecular Formula: Mixture
Molecular Weight: Not available.

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. Combines vigorously or explosively with water.
Conditions to Avoid: Incompatible materials, ignition sources, dust generation, exposure to air, excess heat, strong oxidants, exposure to moist air or water, mechanical shock.
Incompatibilities with Other Materials: Strong oxidizing agents, acids.
Hazardous Decomposition Products: Hydrogen chloride, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, aluminum oxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 110-54-3: MN9275000
CAS# 1191-15-7: BD0710000
LD50/LC50:
CAS# 110-54-3:
Draize test, rabbit, eye: 10 mg Mild;
Inhalation, mouse: LC50 = 150000 mg/m3/2H;
Inhalation, rat: LC50 = 48000 ppm/4H;
Inhalation, rat: LC50 = 627000 mg/m3/3M;
Oral, rat: LD50 = 25 gm/kg;
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CAS# 1191-15-7:
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Carcinogenicity:
CAS# 110-54-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 1191-15-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

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

Section 12 - Ecological Information

Ecotoxicity: No data available. Cas# 110-54-3:LC50(96Hr.) Rainbow Trout = 4.14 mg/L; Flow-through BioassayLC50(96Hr.)Fathead Minnow=5.10 mg/LLC50(96Hr.)Bluegill = 4.12 mg/LLC50 (48Hr.) Water Flea = 3.87 mg/L
Environmental: Terrestrial: Will be lost by evaporation from near surface soil and microbial degradation. Aquatic: Will be lost by both volatilization to the atmosphere and biodegradation. Atmospheric: Will exist predominatly in the vapor phase. It degrades moderately rapidly by reaction with photochemically produced hydroxyl radicals; half-life ranges from 3 hrs to somewhat over a day. Expected to both biodegrade and bioconcentrate.
Physical: Photolysis or hydrolysis of n-hexane in aquatic systems are not expected to be important. The log biodegradation of n-hexane may occur in aquatic environments; however, volatilization and adsorption are expected to be far more important fate processes.
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:	ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE	METAL ALKYL HYDRIDES NOS (DIISOBUTYLALUMINUM HYDRIDE)
Hazard Class:	4.3	4.2(4.3)
UN Number:	UN3399	UN3050
Packing Group:	I	I

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 110-54-3 is listed on the TSCA inventory.
CAS# 1191-15-7 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
CAS# 110-54-3: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 110-54-3: immediate, delayed, fire.
Section 313
This material contains Hexane (CAS# 110-54-3, ~85.5%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
CAS# 110-54-3 is listed as a hazardous air pollutant (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# 110-54-3 can be found on the following state right to know lists: New Jersey, Pennsylvania, Minnesota, Massachusetts.
CAS# 1191-15-7 can be found on the following state right to know lists: Pennsylvania, Massachusetts.

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 14/15 Reacts violently with water liberating extremely flammable gases.
R 35 Causes severe burns.

Safety Phrases:
S 16 Keep away from sources of ignition - No smoking.
S 23 Do not inhale gas/fumes/vapour/spray.
S 30 Never add water to this product.
S 36 Wear suitable protective clothing.
S 43A In case of fire, use dry chemical (never use water).

WGK (Water Danger/Protection)
CAS# 110-54-3: 1
CAS# 1191-15-7: 2
Canada - DSL/NDSL
CAS# 110-54-3 is listed on Canada's DSL List.
CAS# 1191-15-7 is listed on Canada's DSL 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# 110-54-3 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 6/03/1999
Revision #4 Date: 10/05/2004