Material Safety Data Sheet
Tri-n-butylaluminium, 0.7m solution in heptane

ACC# 09924

Section 1 - Chemical Product and Company Identification

MSDS Name: Tri-n-butylaluminium, 0.7m solution in heptane
Catalog Numbers: AC377800000, AC377801000, AC377808000
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
142-82-5	Heptane (n-)	80	205-563-8
1116-70-7	Tributyl aluminum	20	214-240-0

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless clear liquid.
Danger! Reacts violently with water liberating highly flammable gases. Causes burns by all exposure routes. Water-reactive.
Flammable liquid and vapor. Breathing vapors may cause drowsiness and dizziness. Aspiration hazard if swallowed. Can enter lungs and cause damage. Dangerous for the environment.
Target Organs: Central nervous system, lungs, eyes, skin.

Potential Health Effects
Eye: Causes eye burns.
Skin: Causes skin burns.
Ingestion: Causes gastrointestinal tract burns. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal. May cause lung damage.
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.
Chronic: Prolonged or repeated skin contact may cause 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.
Ingestion: Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.
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.
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. Flammable liquid and vapor. Contact with water liberates highly flammable gases. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.
Extinguishing Media: Do NOT use halogenated agents. Use dry sand, dry chemical, soda ash or lime. DO NOT USE WATER OR FOAM.
Flash Point: Not available.
Autoignition Temperature: Not available.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 3; Flammability: 3; Instability: 2; 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.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. 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. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Keep away from heat, sparks and flame.
Storage: Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. 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 exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Heptane (n-)	400 ppm TWA; 500 ppm STEL	85 ppm TWA; 350 mg/m3 TWA 750 ppm IDLH	500 ppm TWA; 2000 mg/m3 TWA
Tributyl aluminum	none listed	none listed	none listed

OSHA Vacated PELs: Heptane (n-): 400 ppm TWA; 1600 mg/m3 TWA Tributyl aluminum: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear chemical splash goggles and face shield.
Skin: Wear appropriate 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: Clear liquid
Appearance: colorless
Odor: Not available.
pH: CA 7
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:> 100 deg C
Solubility: vigorous reaction
Specific Gravity/Density:0.711
Molecular Formula:C12H27Al
Molecular Weight:198.33

Section 10 - Stability and Reactivity

Chemical Stability: Air sensitive. Reacts violently with water.
Conditions to Avoid: Ignition sources, excess heat, temperatures above 90°C, confined spaces.
Incompatibilities with Other Materials: Strong oxidizing agents, alcohols, acids, water, oxygen, organic halides.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, aluminum oxide.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 142-82-5: MI7700000
CAS# 1116-70-7 unlisted.
LD50/LC50:
CAS# 142-82-5:
Inhalation, rat: LC50 = 103 gm/m3/4H;
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CAS# 1116-70-7:
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Carcinogenicity:
CAS# 142-82-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 1116-70-7: 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

Ecotoxicity: Fish: Goldfish: LC50 = 4.0 mg/L; 24 Hr.; UnspecifiedFish: Mosquito Fish: LC50 = 4900 mg/L; 24 Hr.; UnspecifiedFish: LC50 = 4900 mg/L; 24 Hr.; Unspecified No data available.
Environmental: Photolysis or hydrolysis of n-heptane are not expected to be important in soils. The biodegradation of n-heptane may occur in soils; however, volatilization and adsorption are expected to be far more important fate processes.
Physical: Based on a vapor pressure of 45.8 mm Hg at 25 deg C, n-heptane is expected to exist entirely in the vapor phase in ambient air. Direct photolysis of n-heptane in the atmosphere is not expected to be important.
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- (Tri-n-butylaluminum, Heptane)	ORGANOMETALLIC SUBSTANCE, LIQUID, WATER- (Tri-n-butylaluminum, Heptane)
Hazard Class:	4.3	4.3
UN Number:	UN3399	UN3399
Packing Group:	I	I

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 142-82-5 is listed on the TSCA inventory.
CAS# 1116-70-7 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
CAS# 142-82-5: Testing required by manufacturers, processors
Section 12b
CAS# 142-82-5: 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
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 # 142-82-5: immediate, delayed, fire.
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# 142-82-5 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.
CAS# 1116-70-7 can be found on the following state right to know lists: New Jersey, 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:
XN F N
Risk Phrases:
R 11 Highly flammable.
R 14/15 Reacts violently with water liberating extremely flammable gases.
R 34 Causes burns.
R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 65 Harmful: may cause lung damage if swallowed.
R 67 Vapours may cause drowsiness and dizziness.

Safety Phrases:
S 16 Keep away from sources of ignition - No smoking.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 29 Do not empty into drains.
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 57 Use appropriate containment to avoid environmental contaminatio n.
S 6A Keep under nitrogen.
S 43E In case of fire, use dry sand (never use water).

WGK (Water Danger/Protection)
CAS# 142-82-5: 1
CAS# 1116-70-7: No information available.
Canada - DSL/NDSL
CAS# 142-82-5 is listed on Canada's DSL List.
CAS# 1116-70-7 is listed on Canada's NDSL List.
Canada - WHMIS
This product has a WHMIS classification of B2, 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# 142-82-5 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 10/08/2004
Revision #1 Date: 6/27/2005