

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
    	<p><b>Pyrophoric. May spontaneously ignite on contact with air.</b>  <b>Flammable material; avoid heat and sources of ignition.</b>  <b>Water-reactive. May ignite or generate flammable gas in the presence of moisture.</b>  <b>Corrosive to eyes and skin on contact.</b>  <b>CARCINOGEN. MINIMIZE EXPOSURE.</b>  <b>POSSIBLE MUTAGEN. MINIMIZE EXPOSURE.</b>  <b>Neurological hazard.</b>  <b>Harmful compound, minimize exposure.</b>  <b>Environmental hazard.</b>  <b>This material is toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment.</b>  <b>Air sensitive material.</b>  <b>Handle and store under nitrogen.</b></p>	

## Section I. Chemical Product and Company Identification

Chemical Name	<b>Triisobutylaluminum</b> (15% in n-Hexane)		
Catalog Number	T0784	Supplier	TCI America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	Aluminum, tris(2-Methylpropyl)- (9 Cl)		
Chemical Formula	(C <sub>4</sub> H <sub>9</sub> ) <sub>3</sub> Al		
CAS Number	100-99-2 110-54-3 (n-Hexane)	In case of Emergency Call	<b>Chemtrec®</b> <b>(800) 424-9300 (U.S.)</b> <b>(703) 527-3887 (International)</b>

## Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Triisobutylaluminum (15% in n-Hexane)	100-99-2 110-54-3 (n-Hexane)	15.0 85.0 (n-Hexane)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen.	Rat LC <sub>50</sub> (inhalation) 4800ppm/4H Rat LD <sub>50</sub> (oral) 25gm/kg Mammal- Uspec. Species LD <sub>50</sub> (inhalation) 126gm/m <sup>3</sup>

## Section III. Hazards Identification

Acute Health Effects	<p>Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested.</p> <p>Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p><b>CARCINOGENIC EFFECTS</b> : Not available.  <b>MUTAGENIC EFFECTS</b> : Not available.  <b>TERATOGENIC EFFECTS</b> : TUMORIGENIC EFFECTS:  <b>n-Hexane:</b>  Rat TClO (Inhalation) 1000ppm/4 Hours, 59 Weeks, intermittent.  Toxic Effects:  Tumorigenic - Carcinogenic by RTECS criteria.  Tumorigenic Effects- Testicular tumors.  Mouse TClO (Inhalation) 9018ppm/6 Hours, 2 Years, intermittent.  Toxic Effects:  Tumorigenic- Neoplastic by RTECS criteria.  Liver-Tumors.  <b>DEVELOPMENTAL TOXICITY</b> : REPRODUCTIVE EFFECTS:  <b>n-Hexane:</b>  Rat TClO (Inhalation) 5000ppm/20 Hours, female, 6-19 Days of pregnancy.  Toxic Effects:  Effects on Embryo or Fetus- Fetotoxicity.  Rat TClO (Inhalation) 1000ppm/6 Hours, female, 8-16 Days of pregnancy.  Toxic Effects:  Effects on Newborn- Growth statistics.  Mouse TDLo (oral) 238gm/kg, female, 6-15 Days of pregnancy.  Toxic Effects:  Effects on Embryo or Fetus- Fetotoxicity.  Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.</p>

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Emergency phone number (800) 424-9300

**Section IV. First Aid Measures**

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

**Section V. Fire and Explosion Data**

Flammability	Flammable.	Auto-Ignition	234°C (453.2°F) (n-Hexane)
Flash Points	-23°C (-9.4°F) (n-Hexane)	Flammable Limits	LOWER: 1.2% UPPER: 7.7% (n-Hexane)
Combustion Products	These products are toxic carbon oxides (CO, CO <sub>2</sub> ), metallic oxides.		
Fire Hazards	Spontaneously flammable in air.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.		
Fire Fighting Media and Instructions	Reacts with water to liberate flammable gases. Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Consult with local fire authorities before attempting large scale fire-fighting operations.		

**Section VI. Accidental Release Measures**

Spill Cleanup Instructions	Pyrophoric material. Flammable material. Water-reactive material. Corrosive material. Carcinogenic material. Possible mutagenic material. Neurologically hazardous material. Harmful material. Environmentally hazardous material. Air sensitive material. Handle and store under nitrogen. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.
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**Section VII. Handling and Storage**

Handling and Storage Information	PYROPHORIC. FLAMMABLE. WATER-REACTIVE. CORROSIVE. CARCINOGEN. POSSIBLE MUTAGEN. NEUROLOGICAL HAZARD. HARMFUL. ENVIRONMENTAL HAZARD. AIR SENSITIVE. HANDLE AND STORE UNDER NITROGEN. Keep under inert atmosphere. Keep container dry. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. Wear suitable protective clothing. If you feel unwell, seek medical attention and show the label when possible. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, acids, alkalis (bases).
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**Section VIII. Exposure Controls/Personal Protection**

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Face shield. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
	
Exposure Limits	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen.

**Section IX. Physical and Chemical Properties**

Physical state @ 20°C	Liquid. (Colorless.)	Solubility	n-Hexane: Soluble in acetone. Miscible with alcohol, chloroform, ether. Insoluble in water.
Specific Gravity	0.695 (water=1)	Partition Coefficient	Not available.
Molecular Weight	198.32	Vapor Pressure	0.1 kPa (@ 47°C)
Boiling Point	68 to 69°C (154.4 to 156.2°F)	Vapor Density	2.97 (Air = 1) (n-Hexane)
Melting Point	6°C (42.8°F) -95°C (-139°F) (n-Hexane)	Volatility	Not available.
Refractive Index	Not available.	Odor	Gasoline-like.
Critical Temperature	Not available.	Taste	Not available.
Viscosity	Not available.		

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Emergency phone number (800) 424-9300

**Section X. Stability and Reactivity Data**

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Air sensitive. Avoid excessive heat and light.
Incompatibilities	Reactive with oxidizing agents, acids, alkalis (bases), oxygen, halogens, amines, alcohols, combustible materials, chlorine, fluorine, magnesium perchlorate. The product REACTS violently with water to emit FLAMMABLE BUT NON TOXIC GASES.

**Section XI. Toxicological Information**

RTECS Number	BD2203500
Routes of Exposure	Eye Contact. Ingestion. Inhalation. Skin contact.
Toxicity Data	Rat LC <sub>50</sub> (inhalation) 4800ppm/4H Rat LD <sub>50</sub> (oral) 25gm/kg Mammal- Uspec. Species LD <sub>50</sub> (inhalation) 126gm/m <sup>3</sup>
Chronic Toxic Effects	<b>CARCINOGENIC EFFECTS</b> : Not available. <b>MUTAGENIC EFFECTS</b> : Not available. <b>TERATOGENIC EFFECTS</b> : TUMORIGENIC EFFECTS: <b>n-Hexane:</b> Rat TCLo (Inhalation) 1000ppm/4 Hours, 59 Weeks, intermittent. Toxic Effects: Tumorigenic - Carcinogenic by RTECS criteria. Tumorigenic Effects- Testicular tumors. Mouse TCLo (Inhalation) 9018ppm/6 Hours, 2 Years, intermittent. Toxic Effects: Tumorigenic- Neoplastic by RTECS criteria. Liver-Tumors. <b>DEVELOPMENTAL TOXICITY</b> : REPRODUCTIVE EFFECTS: <b>n-Hexane:</b> Rat TCLo (Inhalation) 5000ppm/20 Hours, female, 6-19 Days of pregnancy. Toxic Effects: Effects on Embryo or Fetus- Fetotoxicity. Rat TCLo (Inhalation) 1000ppm/6 Hours, female, 8-16 Days of pregnancy. Toxic Effects: Effects on Newborn- Growth statistics. Mouse TDLo (oral) 238gm/kg, female, 6-15 Days of pregnancy. Toxic Effects: Effects on Embryo or Fetus- Fetotoxicity. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.
Acute Toxic Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

**Section XII. Ecological Information**

Ecotoxicity	Environmental hazard. This material is toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment.
Environmental Fate	n-Hexane's production and use as a pure or commercial grade solvent, as a raw material in the synthesis of polyolefins, elastomers and pharmaceuticals, in the formulation of glues, stains, varnishes and other industrial chemicals may result in its release to the environment through various waste streams. n-Hexane is also a component of natural gas and crude oil. The vast majority of n-hexane is released to the environment through the manufacture, use, and disposal of many products associated with the petroleum industry and the combustion of gasoline. If released to air, a vapor pressure of 153 mm Hg at 25 deg C indicates n-hexane will exist solely as a vapor in the ambient atmosphere. Vapor-phase n-hexane will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 3 days. If released to soil, n-hexane is expected to have high mobility based upon an estimated Koc of 150. Volatilization from moist soil surfaces is expected to be an important fate process based upon an estimated Henry's Law constant of 1.83 atm-cu m/mole. n-Hexane may volatilize from dry soil surfaces based upon its vapor pressure. Screening studies suggest that n-hexane will undergo biodegradation in soil and water surfaces, but volatilization is expected to be the predominant fate process in the environment. If released into water, n-hexane is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. Volatilization from water surfaces is expected to be an important fate process based upon this compound's estimated Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 1 hour and 3 days, respectively. An estimated BCF of 200 suggests the potential for bioconcentration in aquatic organisms is high. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Occupational exposure to n-hexane may occur through inhalation and dermal contact with this compound at workplaces where n-hexane is produced or used. Monitoring data indicate that the general population may be exposed to n-hexane via inhalation of ambient air, particularly at urban areas with heavy vehicular traffic or gasoline filling stations. (HSDB)

**Section XIII. Disposal Considerations**

Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.
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**Section XIV. Transport Information**

DOT Classification	<b>Forbidden to ship by Air</b> DOT Class 4.2: Spontaneously combustible substance. DOT Class 4.3: Dangerous when wet material.
PIN Number	UN3394
Proper Shipping Name	Organometallic substance, liquid, pyrophoric, water-reactive
Packing Group (PG)	I
DOT Pictograms	 

**Section XV. Other Regulatory Information and Pictograms**

TSCA Chemical Inventory (EPA)	This compound is <b>ON</b> the EPA Toxic Substances Control Act (TSCA) inventory list. This product is subject to SARA section 313 reporting requirements. On EPA IRIS Database.
WHMIS Classification (Canada)	CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS E: Corrosive liquid.
EINECS Number (EEC)	202-906-3 203-777-6 (n-Hexane)
EEC Risk Statements	R11- Highly flammable. R14/15- Reacts violently with water, liberating highly flammable gases. R17- Spontaneously flammable in air. R20/21/22- Harmful by inhalation, in contact with skin and if swallowed. R34- Causes burns. R45- May cause cancer. R48/20- Harmful: Danger of serious damage to health by prolonged exposure through inhalation. R51- Toxic to aquatic organisms. R53- May cause long-term adverse effects in the aquatic environment. R62- Possible risk of impaired fertility.
Japanese Regulatory Data	Not available.

**Section XVI. Other Information**

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**Notice to Reader**

TCl laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.