








Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
  	THIS MATERIAL IS TOXIC BY INHALATION. Highly toxic; do not ingest or inhale. Avoid all contact with this material. Flammable material; avoid heat and sources of ignition. Irritating to skin, eyes, and the respiratory system. Lachrymator. MUTAGEN. MINIMIZE EXPOSURE. Sensitizer. Store under nitrogen. Refrigerate.	   

Section I. Chemical Product and Company Identification

Chemical Name	Butyl Isocyanate		
Catalog Number	I0118	Supplier	TCI America 9211 N. Harborage St. Portland OR 1-800-423-8616
Synonym	Butane, 1-Isocyanato- (9CI)	<div style="border: 2px solid black; padding: 5px;"> In case of Emergency Call Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International) </div>	
Chemical Formula	C ₅ H ₉ NO		
CAS Number	111-36-4		

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Butyl Isocyanate	111-36-4	Min. 98.0%(GC)	This compound is classified as a mutagen. There is no acceptable exposure limit for a mutagen.	Rat LD ₅₀ (oral) 600 mg/kg Rabbit LD ₅₀ (dermal) 6 g/kg Rat LD ₅₀ (inhalation) 3 gm/m ³

Section III. Hazards Identification

Acute Health Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Skin contact may result in sensitization. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY : Not available. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

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 for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
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	INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. 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	425°C (797°F)
Flash Points	19°C (66.2°F)	Flammable Limits	LOWER: 1.3% UPPER: 10%
Combustion Products	These products are toxic carbon oxides (CO, CO ₂), nitrogen oxides (NO, NO ₂), halogenated compounds. WARNING: Highly toxic HCl gas is produced during combustion.		
Fire Hazards	Not available.		
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	Flammable liquid. Do NOT use water to extinguish fire. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use DRY chemical powder. Consult with local fire authorities before attempting large scale fire-fighting operations.		


Section VI. Accidental Release Measures

Spill Cleanup Instructions	Highly Toxic Material. Flammable Material. Irritating Material. Lachrymatory. Mutagenic Material. Sensitizer. 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 to reduce vapors. 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	HIGHLY TOXIC. FLAMMABLE. IRRITANT. LACHRYMATORY. MUTAGEN. SENSITIZER. STORE UNDER NITROGEN. REFRIGERATE. Keep locked up.. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, acids, alkalis (bases), moisture.
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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	Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. 
Exposure Limits	This compound is classified as a mutagen. There is no acceptable exposure limit for a mutagen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Light Yellow Clear.)	Solubility	Slightly soluble in water.
Specific Gravity	0.89 (water=1)		
Molecular Weight	99.13	Partition Coefficient	Log P _{ow} 2.26
Boiling Point	115°C (239°F)	Vapor Pressure	1.4 kPa (@ 20°C)
Melting Point	<-70°C (-94°F)	Vapor Density	3 (Air = 1)
Refractive Index	1.404 to 1.408	Volatility	Not available.
Critical Temperature	Not available.	Odor	Not available.
Viscosity	Not available.	Taste	Not available.

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light.
Incompatibilities	Reactive with strong oxidizing agents, acids, strong alkalis (bases), moisture, strong alcohols, amines.

Section XI. Toxicological Information

RTECS Number	NQ8250000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 600 mg/kg Rabbit LD ₅₀ (dermal) 6 g/kg Rat LD ₅₀ (inhalation) 3 gm/m ³
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY : Not available. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Acute Toxic Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Skin contact may result in sensitization. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.



Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	n-Butyl isocyanate's production and use as an intermediate in the production of carbamate and urea insecticides and fungicides as well as in the production of antidiabetic drugs may result in its release to the environment through various waste streams. It is also produced in the environment as a hydrolysis product of Benlate. If released to the atmosphere, n-butyl isocyanate will degrade by reaction with photochemically produced hydroxyl radicals with an estimated half-life of 100 hours. n-Butyl isocyanate is rapidly transformed in aquatic and terrestrial environments via hydrolysis. Some volatilization of this compound from dry soils and other surfaces may also occur because of its moderate vapor pressure. Bioconcentration and biodegradation of n-butyl isocyanate are not important fate processes because of this compound is hydrolyzed. Exposure to n-butyl isocyanate may occur occupationally during its production or use or to the general population through ingestion of smoked foods.

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	Forbidden to ship by Air. CLASS 6.1: Toxic material. CLASS 3: Flammable liquid.
PIN Number	UN2485
Proper Shipping Name	n-Butyl isocyanate
Packing Group (PG)	I DOT 1 (Zone A)
DOT Pictograms	 

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is ON the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). On DSL.
EINECS Number (EEC)	203-862-8
EEC Risk Statements	R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture. R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R26- Very toxic by inhalation. R36/37/38- Irritating to eyes, respiratory system and skin. R42/43- May cause sensitization by inhalation and skin contact. R46- May cause heritable genetic damage. R47- May cause birth defects.
Japanese Regulatory Data	ENCS No. (Z)1690

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Emergency phone number (800) 424-9300

Section XVI. Other Information**Version 1.0****Validated on 3/7/2007.****Printed 3/7/2007.****Notice to Reader**

TCI 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.

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