

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	Toxic compound, do not ingest or inhale. Avoid all contact with this material. Irritating to skin, eyes, and the respiratory system. Air and light sensitive material.	

Section I. Chemical Product and Company Identification

Chemical Name	1-Naphthol [for Biochemical Research]		
Catalog Number	N0864	Supplier	TCI America 9211 N. Harborsgate St. Portland OR 1-800-423-8616
Synonym	1-Naphthalenol (CA INDEX NAME)		
Chemical Formula	C ₁₀ H ₈ O		
CAS Number	90-15-3	In case of Emergency Call	Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
1-Naphthol <small>(for Biochemical Research)</small>	90-15-3	Min. 98.0 (GC)	Not available.	Rat LD ₅₀ (oral) 1870 mg/kg Rabbit LD ₅₀ (dermal) 880 mg/kg Rat LD ₅₀ (inhalation) >97 mg/m ³ /4H

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. 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 : Reproduct effects. Mouse TDLo Subcutaneous 90 mg/kg, female 6-14 days of pregnancy TOXIC EFFECTS : Effects on Fertility - Litter size Effects on Embryo or Fetus - Fetotoxicity 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	May be combustible at high temperature.	Auto-Ignition	542 °C (1007.6 °F)
Flash Points	125 °C (257 °F)	Flammable Limits	LOWER: 0.8% UPPER: 5%
Combustion Products	These products are toxic carbon oxides (CO, CO ₂).		
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			

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[for Biochemical Research]

SMALL FIRE: Use DRY chemical powder.
 LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.
 Consult with local fire authorities before attempting large scale fire-fighting operations.

Section VI. Accidental Release Measures

Spill Cleanup Instructions Toxic material. Irritating material. Stop leak if without risk. 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. Eliminate all sources of ignition. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and Storage

Handling and Storage Information TOXIC. IRRITANT. Keep locked up. Keep away from heat. Mechanical exhaust required. When not in use, tightly seal the container and store in a dry, cool place. Avoid excessive heat and light. DO NOT ingest. Do not breathe dust. 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, alkalis (bases).

Section VIII. Exposure Controls/Personal Protection

Engineering Controls Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection Splash goggles. Lab coat. Dust 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 Not available.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Solid. (White ~ reddish-grey, crystal ~ powder.)	Solubility	Slightly soluble in water. Freely soluble in alcohol, benzene, chloroform, ether, alkali hydroxide solutions.
Specific Gravity	1.28 (water=1)		
Molecular Weight	144.17	Partition Coefficient	LOG P _{ow} : 2.85
Boiling Point	147°C (296.6°F) @ 15 mmHg	Vapor Pressure	0.13 kPa (@ 94°C)
Melting Point	97°C (206.6°F)	Vapor Density	Not available.
Refractive Index	Not available.	Volatility	Not available.
Critical Temperature	Not available.	Odor	Phenolic.
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. Air and light sensitive.

Incompatibilities Reactive with oxidizing agents, alkalis (bases).

Section XI. Toxicological Information

RTECS Number	QL2800000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 1870 mg/kg Rabbit LD ₅₀ (dermal) 880 mg/kg Rat LD ₅₀ (inhalation) >97 mg/m ³ /4H
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY : Reproduct effects. Mouse TDLo Subcutaneous 90 mg/kg, female 6-14 days of pregnancy TOXIC EFFECTS : Effects on Fertility - Litter size Effects on Embryo or Fetus - Fetotoxicity Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

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Acute Toxic Effects

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Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity

Not available.

Environmental Fate

1-Naphthol's production and use in the production of agrochemicals, such as carbaryl, drugs, rubber oxidants and dye intermediates, may result in its release to the environment through various waste streams. 1-Naphthol is formed in the environment by the hydrolysis and biodegradation of the pesticide carbaryl. It can also be formed in the environment through the aqueous photooxidation of naphthalene. If released to air, a vapor pressure of 2.74×10^{-4} mm Hg at 25 deg C indicates 1-naphthol will exist solely as a vapor in the atmosphere. However, 1-naphthol has been detected in particulate emissions from fireplace combustion of common US woods. Vapor-phase 1-naphthol 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 0.7 hr. 1-Naphthol absorbs at wavelengths >290 nm and therefore may be susceptible to direct photolysis by sunlight. Vapor-phase 1-naphthol is expected to react with night-time atmospheric nitrate radicals. Particulate-phase 1-naphthol will be removed from the atmosphere by wet or dry deposition. If released to soil, 1-naphthol is expected to have low mobility based upon a Koc value of 522 (average). Volatilization from moist soil surfaces is not expected to be an important fate process based upon an estimated Henry's Law constant of 6.0×10^{-8} atm-cu m/mole. If released into water, 1-naphthol is expected to adsorb to suspended solids and sediment based upon the Koc values. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's estimated Henry's Law constant. 1-Naphthol was biodegradable in a variety of screening tests and in natural aquatic systems. Photodegradation in aquatic systems exposed to sunlight can also occur. 1-Naphthol was stable in the dark in sterile seawater; in artificial sunlight, 1-naphthol was completely degraded after 2 hr. 1-Naphthol was shown to be photodegraded under conditions approximating those in the environment (pH, dissolved oxygen, temperature, UV irradiation); under ambient temperatures, initial 1-naphthol concn (35 mg/L) degraded to 13.2 mg/L after 14 hr of irradiation and to 0.42 mg/L after 4 days. An estimated BCF of 31 suggests the potential for bioconcentration in aquatic organisms is moderate. Aqueous hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Agricultural workers who are around crops treated with the insecticide, carbaryl, may constitute a large group of potentially-exposed workers because they may come into contact with sprayed soil and plants containing carbaryl's degradation product, 1-naphthol. 1-Naphthol frequently occurs in the urine of workers exposed to naphthalene and carbaryl. It also frequently occurs in the urine of the general population (86% in a survey of 983 US adults). In a Japanese study, 1-naphthol levels were three times higher in the urine of smokers compared to non-smokers. The general population can be exposed to 1-naphthol through inhalation of smoke particulate matter emitted from the combustion of fireplace wood.

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.

Section XIV. Transport Information

DOT Classification

DOT CLASS 6.1: Toxic material

PIN Number

UN2811

Proper Shipping Name

Toxic solid, organic, n.o.s.

Packing Group (PG)

III

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 D-1B: Material causing immediate and serious toxic effects (TOXIC).
On DSL.

EINECS Number (EEC)

201-969-4

EEC Risk Statements

R23/24/25- Toxic by inhalation, in contact with skin and if swallowed.
R36/37/38- Irritating to eyes, respiratory system and skin.

Japanese Regulatory Data

ENCS No. 4-354; 5-5001

Section XVI. Other Information

Version 1.0

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Notice to Reader

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TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, household, 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.