

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	<p>Flammable material; avoid heat and sources of ignition. Toxic compound, do not ingest or inhale. Avoid all contact with this material. Irritating to skin, eyes, and the respiratory system. This compound is a skin sensitizer. CARCINOGEN. MINIMIZE EXPOSURE. Environmental hazard. This material is very toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment.</p>	

Section I. Chemical Product and Company Identification

Chemical Name	Naphthalene		
Catalog Number	N0885	Supplier	TCI America 9211 N. Harborsgate St. Portland OR 1-800-423-8616
Synonym	Not available.		
Chemical Formula	C ₁₀ H ₈		
CAS Number	91-20-3	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
Naphthalene	91-20-3	Min. 98.0 (GC)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (oral) 490 mg/kg Rabbit LD ₅₀ (dermal) >20 gm/kg Rat LD ₅₀ (inhalation) >340 mg/m ³ /1H

Section III. Hazards Identification

Acute Health Effects	<p>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.</p> <p>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.</p> <p>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. Rat TCl_o Inhalation 60ppm/6H for 105 weeks intermittent Toxic Effects: Tumorigenic - Carcinogenic by RTECS criteria Sense Organs and Special Senses - Tumors Mouse TCl_o Inhalation 1854 mg/kg for 103 weeks intermittent Toxic Effects: Tumorigenic - Neoplastic by RTECS criteria Sense Organs and Special Senses - Other changes Lung, Thorax, or Respiration - Tumors Mouse TDLo Intraperitoneal 300 mg/kg Toxic Effects: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Lung, Thorax, or Respiration - Tumors Tumorigenic - Increased incidence of tumors in susceptible strains DEVELOPMENTAL TOXICITY: Reproductive effects. Rat TDLo Intraperitoneal 5925 mg/kg, female 1-15 days of pregnancy Toxic Effects: Specific Developmental Abnormalities - Musculoskeletal system Specific Developmental Abnormalities - Cardiovascular system Rat TDLo Oral 4500 mg/kg, female 6-15 days of pregnancy Toxic Effects: Effects on Embryo or Fetus - Fetotoxicity Specific Developmental Abnormalities - Other developmental abnormalities Mouse TDLo Oral 2400 mg/kg, female 7-14 days of pregnancy Toxic Effects: Effects on Newborn - Live birth index Effects on Newborn - Viability index Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p>

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	540 °C (1004 °F)
Flash Points	79 °C (174.2 °F)	Flammable Limits	LOWER: 0.9% UPPER: 5.9%
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	Flammable solid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. Consult with local fire authorities before attempting large scale fire-fighting operations.		


Section VI. Accidental Release Measures

Spill Cleanup Instructions	Flammable material. Toxic material. Irritating material. This material is a skin sensitizer. Carcinogenic material. Environmentally hazardous material. Stop leak if without risk. DO NOT get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. 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.
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Section VII. Handling and Storage

Handling and Storage Information	FLAMMABLE. TOXIC. IRRITANT. SENSITIZER. CARCINOGEN. ENVIRONMENTAL HAZARD. Keep locked up. Keep away from heat. Mechanical exhaust required. 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, acids, alkalis (bases).
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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	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Solid. (White ~ almost white, crystal ~ powder.)	Solubility	Very soluble in ether, hydronaphthalenes, in fixed and volatile oils.
Specific Gravity	1.162 (water=1)		One gram dissolves in 13 mL methanol or ethanol, in 3.5 mL benzene or toluene, in 8 mL olive oil or turpentine, in 2 mL chloroform or carbon tetrachloride, in 1.2 mL carbon disulfide.
Molecular Weight	128.17	Partition Coefficient	LOG P _{ow} : 3.3
Boiling Point	218 °C (424.4 °F)	Vapor Pressure	0.04 kPa (@ 25 °C)
Melting Point	81 °C (177.8 °F)	Vapor Density	4.42 (Air = 1)
Refractive Index	1.58212 (@ 100 °C)	Volatility	Not available.
Critical Temperature	Not available.	Odor	Aromatic, moth balls.
Viscosity	Not available.	Taste	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	Avoid excessive heat and light.
Incompatibilities	Reactive with oxidizing agents, acids, alkalis (bases).

Section XI. Toxicological Information

RTECS Number	QJ0525000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 490 mg/kg Rabbit LD ₅₀ (dermal) >20 gm/kg Rat LD ₅₀ (inhalation) >340 mg/m ³ /1H
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. Rat TCl _o Inhalation 60ppm/6H for 105 weeks intermittent Toxic Effects: Tumorigenic - Carcinogenic by RTECS criteria Sense Organs and Special Senses - Tumors Mouse TCl _o Inhalation 1854 mg/kg for 103 weeks intermittent Toxic Effects: Tumorigenic - Neoplastic by RTECS criteria Sense Organs and Special Senses - Other changes Lung, Thorax, or Respiration - Tumors Mouse TDLo Intrapertoneal 300 mg/kg Toxic Effects: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Lung, Thorax, or Respiration - Tumors Tumorigenic - Increased incidence of tumors in susceptible strains DEVELOPMENTAL TOXICITY : Reproductive effects. Rat TDLo Intrapertoneal 5925 mg/kg, female 1-15 days of pregnancy Toxic Effects: Specific Developmental Abnormalities - Musculoskeletal system Specific Developmental Abnormalities - Cardiovascular system Rat TDLo Oral 4500 mg/kg, female 6-15 days of pregnancy Toxic Effects: Effects on Embryo or Fetus - Fetotoxicity Specific Developmental Abnormalities - Other developmental abnormalities Mouse TDLo Oral 2400 mg/kg, female 7-14 days of pregnancy Toxic Effects: Effects on Newborn - Live birth index Effects on Newborn - Viability index 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	Naphthalene's production and use in the manufacture of phthalic anhydride, which is used as an intermediate in the production of phthalate plasticizers, resins, dyes, pharmaceuticals, insect repellents, and other materials may result in its release to the environment through various waste streams. Naphthalene is a component of crude oil and also occurs naturally in the essential oils of the roots of Radix and Herba ononidis. The largest releases of naphthalene result from the combustion of wood and fossil fuels or the production of coal tar. If released to air, a vapor pressure of 0.085 mm Hg at 25 deg C indicates naphthalene will exist primarily as a vapor in the ambient atmosphere. Vapor-phase naphthalene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals and nitrate radicals; the half-life for these reactions in air are estimated to be 18 and 60 hours, respectively. Naphthalene also absorbs light in the environmental UV spectrum and is subject to direct photolysis. Although naphthalene may react with ozone in the atmosphere, its rate of degradation is too slow to be of environmental significance. If released to soil, naphthalene is expected to have moderate to low mobility based on Koc values of 440-1300, measured in soil and sediment. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 4.4X10 ⁻⁴ atm-cu m/mole. Biodegradation is expected to be an important fate process based upon soil degradation half-lives of 2-18 days. If released into water, naphthalene is expected to adsorb to suspended solids and sediment based upon the Koc data. Naphthalene has been shown to biodegrade in water with half-lives ranging from about 0.8 to 43 days. Photolysis in sunlit surface waters may be an important fate process based upon an aqueous photolysis half-life of 71 hours. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 3 hours and 5 days, respectively. BCF values of 23-168 in fish suggest bioconcentration in aquatic organisms is low to high. Occupational exposure to naphthalene may occur through inhalation and dermal contact with this compound at workplaces where naphthalene is produced or used. The most likely pathway by which the general public is exposed to naphthalene is by inhalation due to the release of this substance from combustion fuels, moth repellents, and cigarette smoke. Monitoring data also indicate that the general population may be exposed to naphthalene via ingestion of food and drinking water, although these pathways are considered minor when compared to inhalation.


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Emergency phone number (800) 424-9300

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	DOT CLASS 4.1: Flammable solid
PIN Number	UN1334
Proper Shipping Name	Naphthalene, refined
Packing Group (PG)	III RQ = 100 (45.4)
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-4: Flammable solid. CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC). On DSL.
EINECS Number (EEC)	202-049-5
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. R36/37/38- Irritating to eyes, respiratory system and skin. R43- May cause sensitization by skin contact. R45- May cause cancer. R50- Very toxic to aquatic organisms. R53- May cause long-term adverse effects in the aquatic environment.
Japanese Regulatory Data	ENCS No. 4-311

Section XVI. Other Information

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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.