



rev: 3/6/2004

SIGMA-ALDRICH**Material Safety Data Sheet**Date Printed: 09/09/2004
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Version 1.60**Section 1 - Product and Company Information**Product Name: Naphthalene, 99%
Product Number: 147141
Brand: Aldrich ChemicalCompany: Sigma-Aldrich
Street Address: 3050 Spruce Street
City, State, Zip, Country: SAINT LOUIS, MO 63103 US
Technical Phone: 314 771 5765
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Emergency Phone: 414 273 3850 Ext. 5996

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313	EC no	Annex I Index Number
NAPHTHALENE	91-20-3	Yes	202-049-5	601-052-00-2

Formula: C10H8
Synonyms: Albocarbon, Camphor tar, Mighty 150, Mighty RD1, Moth balls, Moth flakes, Naftalen (Polish), Naphthalene (ACGIH:OSHA), Naphthalin, Naphthaline, Naphthene, NCI-C52904, RCRA waste number U165, Tar camphor, White tar**Section 3 - Hazards Identification****Emergency Overview**Flammable (USA) Highly Flammable (EU). Toxic (USA) Harmful (EU). Dangerous for the environment. Harmful if swallowed. Irritating to eyes, respiratory system and skin. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Target organ(s): Blood, Eyes.**HMIS Rating**

Health: 2* Flammability: 3 Reactivity: 0

NFPA Rating

Health: 2 Flammability: 3 Reactivity: 0

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures**Oral Exposure**

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

Inhalation Exposure

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

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Dermal Exposure

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

Eye Exposure

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

Flammable Hazards: Yes

Explosion Hazards

Container explosion can occur under fire conditions. In advanced or massive fires the area should be evacuated and the fire should be fought from a remote explosion-resistant location.

Flash Point: 176 °F 80 °C

Explosion Limits: Lower: 0.9 % Upper: 5.9 %

Autoignition Temp: 526 °C Flammability: Yes

Extinguishing Media**Suitable**

Carbon dioxide. Dry chemical powder. Foam and water spray are effective but may cause frothing.

Firefighting**Protective Equipment**

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s)

Flammable solid. Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures**Procedure to be Followed in Case of Leak or Spill**

Evacuate area. Shut off all sources of ignition.

Procedure(s) of Personal Precaution(s)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage**Handling****User Exposure**

Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Storage
Suitable

Keep container closed. Keep away from heat, sparks, and open flame.

Section 8 - Exposure Controls / PPE

Engineering Controls

Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

Personal Protective Equipment

Respiratory

Government approved respirator.

Hand

Compatible chemical-resistant gloves.

Eye

Chemical safety goggles.

General Hygiene Measures

Wash thoroughly after handling. Wash contaminated clothing before reuse.

Exposure Limits

Country	Type	Value
Poland	NDS	20 MG/M3
Poland	NDSCh	75 MG/M3
Poland	NDSP	-

Exposure Limits, RTECS

Country	Source	Type	Value
USA	ACGIH	STEL	15 PPM
USA	ACGIH	TWA	10 PPM
USA	MSHA Standard-air	TWA	10 PPM (50 MG/M3)
USA	OSHA	PEL	8H TWA 10 PPM (50 MG/M3)
New Zealand	OEL		
USA	NIOSH	TWASTEL	10 PPM 15 PPM

Section 9 - Physical/Chemical Properties

Appearance

Physical State

Solid

Molecular Weight: 128.17 AMU

Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	218 °C	760 mmHg
MP/MP Range	77 °C	
Freezing Point	N/A	
Vapor Pressure	0.03 mmHg	25 °C
Vapor Density	4.4 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	N/A	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	

VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	31.8 mN/m	100 °C
Partition Coefficient	Log Kow: 3.30	
Decomposition Temp.	N/A	
Flash Point °F	176 °F	
Flash Point °C	80 °C	
Explosion Limits	Lower: 0.9 % Upper: 5.9 %	
Flammability	N/A	
Autoignition Temp	526 °C	100 °C
Refractive Index	1.582	
Solubility		
Other Solvents:	ALCOHOL, ACETATE, ETHER.	

Method: closed cup
Method: closed cup

N/A = not available

Section 10 - Stability and Reactivity

Stability

Stable

Stable.

Materials to Avoid

Strong oxidizing agents.

Hazardous Decomposition Products

Hazardous Decomposition Products

Carbon monoxide, Carbon dioxide.

Hazardous Polymerization

Hazardous Polymerization

Will not occur.

Section 11 - Toxicological Information

Route of Exposure

Skin Contact

Causes skin irritation.

Skin Absorption

May be harmful if absorbed through the skin.

Eye Contact

Causes eye irritation.

Inhalation

May be harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.

Ingestion

Harmful if swallowed.

Target Organ(s) or System(s)

Eyes. Blood. Kidneys. Lungs. Central nervous system.

Signs and Symptoms of Exposure

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer. Naphthalene is retinotoxic and systemic absorption of its vapors above 15ppm, may result in cataracts, optical neuritis, injuries to the cornea, and marked eye irritation. Ingestion of large quantities have been reported to cause severe hemolytic anemia and hemoglobinuria.

RTECS Number: QJ0525000

Toxicity Data

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Oral - Child: 100 mg/kg (LDLO)

Oral - Rat: 490 mg/kg (LD50)

Inhalation - Rat: > 340 mg/m³ (LC50)

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Lacrimation.
Behavioral:Somnolence (general depressed activity).

Skin - Rat: > 2500 mg/kg (LD50)

Oral - Mouse: 533 mg/kg (LD50)

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Etosis.
Behavioral:Ataxia.
Lungs, Thorax, or Respiration:Respiratory depression.

Intraperitoneal - Mouse: 150 MG/KG (LD50)

Subcutaneous - Mouse: 969 MG/KG (LD50)

Remarks: Behavioral:Tremor.

Intravenous - Mouse: 100 MG/KG (LD50)

Skin - Rabbit: > 20000 mg/kg (LD50)

Oral - Guinea pig: 1200 mg/kg (LD50)

Remarks: Behavioral:Somnolence (general depressed activity).
Behavioral:Change in motor activity (specific assay).

Irritation Data

Skin - Rabbit: 495 mg

Remarks: Open irritation test

Eyes - Rabbit: 100 mg

Remarks: Mild irritation effect

Chronic Exposure - Carcinogen

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Rat - Subcutaneous: 3500 MG/KG 12W 1

Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Blood:Lymphomas including Hodgkin's disease.
Tumorigenic Effects: Uterine tumors

Mouse - Inhalation: 30 PPM 6H/2Y 1

Result: Tumorigenic:Neoplastic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors.

NTP Carcinogen List

Rating

Some evidence.

Species

Mouse

Route

Inhalation

ACGIH Carcinogen List

Rating

A4

Chronic Exposure - Teratogen

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
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Rat	4500 MG/KG	Oral	(6-15D PREG)
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Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Specific Developmental Abnormalities: Other developmental abnormalities.

Rat	5925 MG/KG	Intraperitoneal	(1-15D PREG)
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Result:Specific Developmental Abnormalities: Musculoskeletal system.

Specific Developmental Abnormalities: Cardiovascular (circulatory) system.

Chronic Exposure - Mutagen

<u>Species</u>	<u>Dose</u>	<u>Cell Type</u>	<u>Mutation test</u>
Human	30 MG/L	lymphocyte	Micronucleus test
Hamster	30 MG/L	ovary	Cytogenetic analysis
Hamster	15 MG/L	ovary	Sister chromatid exchange

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Chronic Exposure - Reproductive Hazard

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
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Mouse	2400 MG/KG	Oral	(7-14D PREG)
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Result: Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive).

Section 12 - Ecological Information

Physical Properties Affecting Ecotoxicity

COD:

22.00 %

BOD:

BOD after 5 Days:

0.00 %

Acute Ecotoxicity Tests

Test Type

EC50 Algae

Time:

24.0 h

Value:

33 mg/l

Test Type

EC50 Daphnia

Species

Daphnia magna

Time:

48.0 h

Value:

1.0 - 3.4 mg/l

Test Type

LC50 Fish

Time:

96.0 h

Value:

0.12 mg/l

Test Type

LC50 Fish

Species

Onchorhynchus mykiss (Rainbow trout)

Time:

96.0 h

Value:

0.9 - 9.8 mg/l

Test Type

LC50 Fish

Species

Pimephales promelas (Fathead minnow)

Time:

96.0 h

Value:

1.0 - 6.5 mg/l

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Naphthalene, crude [or] Naphthalene, refined

UN#: 1334

Class: 4.1

Packing Group: Packing Group III

Hazard Label: Flammable solid

PIH: Not PIH

IATA

Proper Shipping Name: Naphthalene, refined

IATA UN Number: 1334

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Hazard Class: 4.1
Packing Group: III

Section 15 - Regulatory Information

EU Directives Classification

Symbol of Danger: Xn N

Indication of Danger

Harmful. Dangerous for the environment.

Risk Statements R: 22 50/53

Harmful if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Statements S: 36/37 60 61

Wear suitable protective clothing and gloves. This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.

US Classification and Label Text

Indication of Danger

Flammable (USA) Highly Flammable (EU), Toxic (USA) Harmful (EU), Dangerous for the environment.

Risk Statements

Harmful if swallowed. Irritating to eyes, respiratory system and skin. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Statements

Keep away from sources of ignition - no smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and gloves. This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.

US Statements

Target organ(s): Blood, Eyes.

United States Regulatory Information

SARA Listed: Yes

Demimis: 1 %

Notes: This product is subject to SARA section 313 reporting requirements.

TSCA Inventory Item: Yes

Canada Regulatory Information

WHMIS Classification

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

Disclaimer

For R&D use only. Not for drug, household or other uses.

Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.