



SIGMA-ALDRICH

Material Safety Data Sheet

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Version 1.50

Section 1 - Product and Company Information

Product Name	Menadione		
Product Number	M5625		
Brand	Sigma Chemical		
Company	Sigma-Aldrich		
Street Address	3050 Spruce Street		
City, State, Zip, Country	SAINT LOUIS, MO 63103 US		
Technical Phone:	800-325-5832	Emergency Phone:	314-776-6555
Fax:	800-325-5052		

Section 2 - Composition/Information on Ingredient

<u>Substance Name</u>	<u>CAS #</u>	<u>SARA 313</u>	<u>EC no</u>	<u>Annex I Index Number</u>
2-METHYL-1,4-NAPHTHOQUINONE	58-27-5	No	200-372-6	

Formula	C11H8O2
Synonyms	Aquakay, Aquinone, 1,4-Dihydro-1,4-dioxo-2-methylnaphthalene, Hemodal, JuvaK, Kaergona, Kanone, Kappaxan, Kappaxin, Karcon, Kareon, KativG, Kayklot, Kaykot, Kayquinone, Kipca, Kipca, oil soluble, Klottone, Koaxin, Kolklot, K-Thrombyl, K-Vitan, Memodol, Menadion, Menadione, Menaphthon, Menaphthone, Menaquinone, Menaquinone O, Menaphtone, Methyl-1,4-naftochinon (Czech), 2-Methyl-1,4-naphthalenedione, 2Methyl-1,4-naphthochinon (German), 2Methyl-1,4-naphthoquinone, 3Methyl-1,4-naphthoquinone, Mitenon, Mienone, MNQ, 1,4-Naphthalenedione, 2 methyl- (9CI), NSC 4170, Panosine, Prokayvit, Synkay, Thyloquinone, USAF EK5185, Vitamin K0, Vitamin K2(0), Vitamin K3

Section 3 - Hazards Identification

Emergency Overview

Toxic (USA) Harmful (EU).
Harmful if swallowed. Irritating to eyes, respiratory system and skin.
Readily absorbed through skin. Possible sensitizer. Target organ(s): Blood, Liver.

HMS Rating

Health: 2* Flammability: 0 Reactivity: 1

NFPA Rating

Health: 2 Flammability: 0 Reactivity: 1

*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.

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

Autoignition Temp: N/A

Extinguishing Media

Suitable

Water spray, Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting

Protective Equipment

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

Specific Hazard(s)

Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill

Evacuate area.

Procedure(s) of Personal Precaution(s)

Wear respirator, chemical safety goggles, 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 tightly closed.

Special Requirements

Light sensitive.

Section 8 - Exposure Controls / PPE

Engineering Controls

Safety shower and eye bath. Mechanical exhaust required.

Personal Protective Equipment

Respiratory

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143) respirator.

Hand
Compatible chemical-resistant gloves.
Eye
Chemical safety goggles.

General Hygiene Measures
Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance	Color	Form
Physical State Solid	Yellow	Powder
Molecular Weight	172.18 AMU	
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	102 °C	
Freezing Point	N/A	
Vapor Pressure	N/A	
Vapor Density	N/A	
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	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point °F	N/A	
Flash Point °C	N/A	
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Solubility	N/A	

N/A = not available

Section 10 - Stability and Reactivity

Stability
Stable
Stable.
Conditions of Instability
May discolor on exposure to light.
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
Readily absorbed through skin.
Eye Contact
Causes eye irritation.
Inhalation
Material is irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.
Ingestion
Harmful if swallowed.
Sensitization
Sensitization
Possible sensitizer.

Target Organ(s) or System(s)
Blood. Liver. Kidneys.

Signs and Symptoms of Exposure
The chemical, physical, and toxicological properties of this product have not been thoroughly investigated.

RTECS Number: QL9100000

Toxicity Data

Intraperitoneal - Rat: 75 MG/KG (LD50)
Oral - Mouse: 500 mg/kg (LD50)
Intraperitoneal - Mouse: 50 MG/KG (LD50)
Subcutaneous - Mouse: 138 MG/KG (LD50)

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.
Mouse - Skin: 1860 MG/KG 27W I
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.
Tumorigenic: Tumors at site or application.
Mouse - Skin: 8400 MG/KG 21W I
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.

IARC Carcinogen List

Rating
Group 3

Chronic Exposure - Teratogen

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
Rat	3 GM/KG	Oral	(1-20D PREG)
	Result: Specific Developmental Abnormalities: Musculoskeletal system.		
Mouse	20 MG/KG	Intravenous	(8D PREG)
	Result: Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Musculoskeletal system.		

Chronic Exposure- Mutagen

<u>Species</u>	<u>Dose</u>
Human	20 UMOL/L
Hamster	15 UMOL/L
Human	10 NMOL/L
Rat	10 UMOL/L
Mouse	750 UG/L
Hamster	2 MG/L
Hamster	10 UMOL/L

<u>Cell Type</u>	<u>Mutation test</u>
fibroblast	DNA damage
Other cell types	DNA damage
lymphocyte	Sister chromatid exchange
liver	DNA damage
Embryo	Morphological transformation.
lung	Cytogenetic analysis
lung	Sister chromatid exchange

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations**Appropriate Method of Disposal of Substance or Preparation**

Contact a licensed professional waste disposal service to dispose of this material.
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information**DOT**

Proper Shipping Name: None

Non-Hazardous for Transport This substance is considered to be nonhazardous for transport.

IATA

Non-Hazardous for Air Transport Non-hazardous for air transport.

Section 15 - Regulatory Information**EU Additional Classification**

Symbol of Danger: Xn

Indication of Danger

Harmful.

Risk Statements

R: 22 36/37/38

Harmful if swallowed. Irritating to eyes, respiratory system and skin.

Safety Statements

S: 26 36

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

US Classification and Label Text**Indication of Danger**

Toxic (USA) Harmful (EU).

Risk Statements

Harmful if swallowed. Irritating to eyes, respiratory system and skin.

Safety Statements

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

US Statements

Readily absorbed through skin. Possible sensitizer. Target organ(s): Blood. Liver.

United States Regulatory Information

SARA Listed: No

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.

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Sigma-Aldrich Corporation
www.sigma-aldrich.com

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. SigmaAldrich Inc., shall not be held liable for any damage resulting from handling or fom contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2008 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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