

# Menadione sodium bisulfite

sc-215295



The Power is Question

Material Safety Data Sheet

Hazard Alert Code Key: **EXTREME** **HIGH** **MODERATE** **LOW**

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

Menadione sodium bisulfite

### STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

### NFPA



### SUPPLIER

Santa Cruz Biotechnology, Inc.  
2145 Delaware Avenue  
Santa Cruz, California 95060  
800.457.3801 or 831.457.3800

### EMERGENCY:

ChemWatch  
Within the US & Canada: 877-715-9305  
Outside the US & Canada: +800 2436 2255  
(1-800-CHEMCALL) or call +613 9573 3112

### SYNONYMS

C11-H9-Na-O5-S, "1, 2, 3, 4-tetrahydro-2-methyl-1, 4-dioxo-2-naphthalenesulfonic acid", sodium, "2-methyl-1, 4-naphthoquinone sodium bisulfite", "menaphthone sodium bisulfate", "menadione sodium bisulphate", "sodium 1, 2, 3, 4-tetrahydro-2-methyl-1, 4-dioxo-2-naphthalenesulfonate", Hemodal, Hyokinone, Ido-K, Kavitan, Klotogen, "natural product", "Vitamin K analogue"

## Section 2 - HAZARDS IDENTIFICATION

### CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	1	
Toxicity:	2	
Body Contact:	2	
Reactivity:	1	
Chronic:	2	

Min/Nil=0  
Low=1  
Moderate=2  
High=3  
Extreme=4



### CANADIAN WHMIS SYMBOLS



## EMERGENCY OVERVIEW

### RISK

Irritating to eyes, respiratory system and skin.

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

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

#### SWALLOWED

- Accidental ingestion of the material may be damaging to the health of the individual.
- Ingestion of sulfite salts may cause gastric irritation. Large doses may produce violent colic, diarrhea, circulatory disturbance, depression of vital functions and, sometimes, death.

#### EYE

- This material can cause eye irritation and damage in some persons.
- Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result.

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#### SKIN

- The material is not thought to produce adverse health effects or skin irritation following contact (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
- Open cuts, abraded or irritated skin should not be exposed to this material.
- Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
- This material can cause inflammation of the skin on contact in some persons.

#### INHALED

- The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.
- Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

#### CHRONIC HEALTH EFFECTS

- There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment. Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

Sulfites and bisulfites can cause narrowing of the airways, stomach upset, flushing, low blood pressure, tingling sensation, itchy wheal, swelling and shock, and asthmatics are especially prone.

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Quinones may undergo a reduction reaction giving rise to a semiquinone free radical. Semiquinone metabolites are highly reactive and may interact with biological macromolecules through covalent binding. They can also transfer an electron onto molecular oxygen producing superoxide radical anions, hydrogen peroxide and other reactive oxygen species. During this reaction, the quinone is regenerated and may undergo further enzyme-catalysed one-electron reduction. A reaction cycle is continuously activated - a "redox cycle".

Quinones may be produced from benzene, polycyclic aromatic hydrocarbons, estrogens, and catecholamines and give rise to reactive oxygen species that can damage DNA and other cellular macromolecules and activate signaling pathways. These molecular events may be associated with the initiation, promotion, and progression of carcinogenesis

The capacity of quinone derivatives to produce free radicals is largely influenced by the substituents on the molecule which in turn determine the efficiency of one electron reduction to semiquinone metabolites.

Oxygen activation (generation of a superoxide) occurs during one of the reactions of this metabolic sequence. Superoxide is a strong base and can therefore attract protons from a variety of compounds; it is also a potent reducing agent which can reduce transition metal ions (such as Fe<sup>3+</sup> and Cu<sup>+</sup>) to their reduced form. Superoxide may also act as a nucleophile and may readily react with a number of electrophilic agents. Finally superoxide may initiate oxidation reactions, for example, of molecules such as ascorbic acid or epinephrine (adrenaline) following hydrogen abstraction due to its basicity.

Under certain conditions the rate of formation of reactive oxygen species may exceed the capacity of the body's auto-oxidative defence mechanisms and, as a result, result in "oxidative stress". Oxidative stress appears to be involved in some biological processes such as aging and inflammation reactions and is thought to play a role in the pathogenesis of several diseases, including acute pancreatitis, post-ischaemic syndrome, tumour formation, atherosclerosis and diabetic angiopathy.

Free radicals can react with specific cellular molecules including low molecular weight biomolecules such as neurotransmitters and co-enzymes and, as a consequence, inactivate them. Macromolecules and cellular membranes are particularly vulnerable to free radical damage with the resultant loss of physiological function and cell death. Depolymerisation of polysaccharides (such as hyaluronic acid) may result in inflammation of the joints.

Free radicals have a high affinity for sulfur containing amino-acids and therefore many proteins. They may bind covalently to these proteins leading to loss of biological function such as catalysis exhibited by enzymes. Covalent binding may also result in allergic reactions when the modified protein is recognised, by the body's immune system, as "foreign". Free radicals are also capable of causing proteins to cross-link to yield larger aggregates.

Free radicals are also able to react with the nucleic acids of DNA which may affect cell division or cell death. Oxidative modifications of DNA may result in tumour initiation.

Lipids containing several double bonds (such as polyunsaturated fatty acids and cholesterol) are also subject to damage. In the case of membrane phospholipids, such "peroxidation" results in impairment of cellular and/ or subcellular membranes which may produce cell death. Transition metal ions may also play an important role in lipid peroxidation after free radical-induced change of valency . Fe<sup>3+</sup>/Fe<sup>2+</sup>, copper and mercury ions, as well as vanadate and chromate ions seem to initiate this process and may even exacerbate it by producing secondary radicals when the phospholipid is modified.

Menadione and its water-soluble derivatives (such as menadiol sodium diphosphate) have been reported to compete with bilirubin during their metabolism and thereby induce hyperbilirubinaemia in the neonate. Subjects deficient in glucose-6-phosphate dehydrogenase show haemolysis which may exacerbate the hyperbilirubinaemia. Deficiency of Vitamin K produces hypoprothrombinaemia in which the clotting time of blood is prolonged and spontaneous haemorrhage may occur. Deficiency may result from poor intestinal absorption, from obstructive jaundice or severe liver disease or from the administration of coumarin or indanedione anticoagulants which interfere with Vitamin K metabolism.

### Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
menadione sodium bisulfite	130-37-0	>98

### Section 4 - FIRST AID MEASURES

#### SWALLOWED

· If swallowed do NOT induce vomiting. · If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

#### EYE

■ If this product comes in contact with the eyes: · Wash out immediately with fresh running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

#### SKIN

■ If skin or hair contact occurs: · Flush skin and hair with running water (and soap if available). · Seek medical attention in event of irritation.

#### INHALED

· If dust is inhaled, remove from contaminated area. · Encourage patient to blow nose to ensure clear passage of breathing. · If irritation or discomfort persists seek medical attention. Inhalation of vapors or aerosols (mists, fumes) may cause lung edema. Corrosive substances may cause lung damage (e.g. <p>.

#### NOTES TO PHYSICIAN

■ Treat symptomatically.

Depending on the degree of exposure, periodic medical examination is indicated. The symptoms of lung edema often do not manifest until a few hours have passed and they are aggravated by physical effort.

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### Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Negligible
Upper Explosive Limit (%):	Not available.
Specific Gravity (water=1):	Not available
Lower Explosive Limit (%):	Not available.

#### EXTINGUISHING MEDIA

· Water spray or fog.  
· Foam.

#### FIRE FIGHTING

· Alert Emergency Responders and tell them location and nature of hazard.  
· Wear breathing apparatus plus protective gloves.  
When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 100 metres in all directions.

#### GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

· Combustible solid which burns but propagates flame with difficulty.  
· Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.  
Combustion products include: carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), sulfur oxides (SO<sub>x</sub>), metal oxides, other pyrolysis products typical of burning organic material.

#### FIRE INCOMPATIBILITY

■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

#### PERSONAL PROTECTION

Glasses:  
Chemical goggles.

Gloves:  
 Respirator:  
 Particulate

## Section 6 - ACCIDENTAL RELEASE MEASURES

### MINOR SPILLS

- Environmental hazard - contain spillage.
- Clean up waste regularly and abnormal spills immediately.
- Avoid breathing dust and contact with skin and eyes.
- Wear protective clothing, gloves, safety glasses and dust respirator.
- Use dry clean up procedures and avoid generating dust.
- Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).
- Dampen with water to prevent dusting before sweeping.
- Place in suitable containers for disposal.

### MAJOR SPILLS

- Environmental hazard - contain spillage.
- Moderate hazard.
- CAUTION: Advise personnel in area.
- Alert Emergency Responders and tell them location and nature of hazard.

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
  - Wear protective clothing when risk of exposure occurs.
- Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
- Do NOT cut, drill, grind or weld such containers.
  - In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

### RECOMMENDED STORAGE METHODS

- Glass container.
- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

### STORAGE REQUIREMENTS

- Observe manufacturer's storing and handling recommendations.
- NOTE: Decomposes in sunlight.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA mg/m <sup>3</sup>	Notes
US - Oregon Permissible Exposure Limits (Z-3)	menadione sodium bisulfite (Inert or Nuisance Dust: Total dust)	10	(d)
US OSHA Permissible Exposure Levels (PELs) - Table Z3	menadione sodium bisulfite (Inert or Nuisance Dust: (d) Respirable fraction)	5	
US OSHA Permissible Exposure Levels (PELs) - Table Z3	menadione sodium bisulfite (Inert or Nuisance Dust: (d) Total dust)	15	
US - Hawaii Air Contaminant Limits	menadione sodium bisulfite (Particulates not other wise regulated - Total dust)	10	
US - Hawaii Air Contaminant Limits	menadione sodium bisulfite (Particulates not other wise regulated - Respirable fraction)	5	
US - Oregon Permissible Exposure Limits (Z-3)	menadione sodium bisulfite (Inert or Nuisance Dust: Respirable fraction)	5	(d)
US ACGIH Threshold Limit Values (TLV)	menadione sodium bisulfite (Particles Insoluble or Poorly Soluble) [NOS] Inhalable particles)	10	See Appendix B current TLV/BEI Book

US - California Permissible Exposure Limits for Chemical Contaminants	menadione sodium bisulfite (Particulates not otherwise regulated Respirable fraction)	5	(n)
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	menadione sodium bisulfite (Particulates not otherwise regulated Respirable fraction)	5	
US - Michigan Exposure Limits for Air Contaminants	menadione sodium bisulfite (Particulates not otherwise regulated, Respirable dust)	5	
Canada - Prince Edward Island Occupational Exposure Limits	menadione sodium bisulfite (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)	10	See Appendix B current TLV/BEI Book
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	menadione sodium bisulfite (Particulates not otherwise regulated (PNOR)(f)- Respirable fraction)	5	

ENDOELTABLE

## PERSONAL PROTECTION



### RESPIRATOR

Particulate

Consult your EHS staff for recommendations

### EYE

■ When handling very small quantities of the material eye protection may not be required.

For laboratory, larger scale or bulk handling or where regular exposure in an occupational setting occurs:

- Chemical goggles
- Face shield. Full face shield may be required for supplementary but never for primary protection of eyes
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

### HANDS/FEET

■ Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).

- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.

· Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

- Rubber gloves (nitrile or low-protein, powder-free latex). Employees allergic to latex gloves should use nitrile gloves in preference.
- Double gloving should be considered.
- PVC gloves.
- Protective shoe covers.
- Head covering.
- Polyethylene gloves.

Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.

- polychloroprene
- nitrile rubber
- butyl rubber
- fluorocautchouc
- polyvinyl chloride

Gloves should be examined for wear and/ or degradation constantly.

### OTHER

- For quantities up to 500 grams a laboratory coat may be suitable.

- For quantities up to 1 kilogram a disposable laboratory coat or coverall of low permeability is recommended. Coveralls should be buttoned at collar and cuffs.
- For quantities over 1 kilogram and manufacturing operations, wear disposable coverall of low permeability and disposable shoe covers.
- For manufacturing operations, air-supplied full body suits may be required for the provision of advanced respiratory protection.
- Eye wash unit.
- Ensure there is ready access to an emergency shower.
- For Emergencies: Vinyl suit.

## ENGINEERING CONTROLS

- Enclosed local exhaust ventilation is required at points of dust, fume or vapor generation. HEPA terminated local exhaust ventilation should be considered at point of generation of dust, fumes or vapors.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Solid.

Mixes with water.

State	Divided solid	Molecular Weight	276.24
Melting Range (°F)	Not available	Viscosity	Not Applicable
Boiling Range (°F)	Not available	Solubility in water (g/L)	Miscible
Flash Point (°F)	Not available	pH (1% solution)	Not available
Decomposition Temp (°F)	Not available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available.	Vapour Pressure (mmHG)	Negligible
Upper Explosive Limit (%)	Not available.	Specific Gravity (water=1)	Not available
Lower Explosive Limit (%)	Not available.	Relative Vapor Density (air=1)	Not Applicable
Volatile Component (%vol)	Negligible	Evaporation Rate	Not available

### APPEARANCE

White, odourless, hygroscopic crystalline powder; mixes with water (1:3). May discolor and turn purple under the influence of light.

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.

### STORAGE INCOMPATIBILITY

- Contact with acids produces toxic fumes.
- Incidents involving interaction of active oxidants and reducing agents, either by design or accident, are usually very energetic and examples of so-called redox reactions.
- Avoid strong bases.
- Sulfites and hydrosulfites (dithionites) :
  - may react explosively with strong oxidising agents.
  - react with water or steam to produce corrosive acid solutions and sulfur oxide fumes - aqueous solutions are incompatible with oxidisers, strong acids, alkalis, ammonia, aliphatic amines, alkanolamines, alkylene oxides, amides, epichlorohydrin, organic anhydrides, isocyanates, nitromethane, vinyl acetate
  - aqueous solutions attack metals in presence of moisture
  - generate gaseous sulfur dioxide in contact with oxidising and nonoxidising acids.
- Sulfur dioxide:
  - reacts with water or steam forming sulfurous acid; reaction may be violent
  - reacts with acrolein, alcohols, aluminium powder, alkali metals, amines, bromine, pentafluoride, caustics, caesium, acetylene carbide, chlorates, chlorine trifluoride, chromium powder, copper or its alloy powders, diethylzinc, fluorine, lead dioxide, lithium acetylene carbide, metal powders, monolithium acetylide-ammonia, nitril chloride, potassium acetylene carbide, potassium acetylide, potassium chlorate, rubidium carbide, silver azide, sodium, sodium acetylide, stannous oxide; reaction may be violent
  - decomposes above 60 deg. C releasing oxides of sulfur
  - Incompatible with alkalis, alkylene oxides, ammonia, aliphatic amines, alkanolamines, amides, organic anhydrides, caesium monoxide, epichlorohydrin, ferrous oxide, halogens, interhalogens, isocyanates, lithium nitrate, manganese, metal acetylides, metal oxides, perbromyl fluoride, red phosphorus, potassium azide, rubidium acetylide, sodium hydride, sulfuric acid
  - attacks some plastics, coatings and rubber
  - attacks metals, especially chemically active metals, in the presence of moisture.

For incompatible materials - refer to Section 7 - Handling and Storage.

## Section 11 - TOXICOLOGICAL INFORMATION

MENADIONE SODIUM BISULFITE

## TOXICITY AND IRRITATION

### MENADIONE SODIUM BISULFITE:

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
- Biologically active naphthoquinones readily pass through the cellular membranes where their electrophilicity enables them to conjugate with other compounds. This reaction has been implicated in the toxicity of quinones. Nucleophilic targets include thiol groups which results in inhibition of enzymes such as parvulin-like peptidyl-prolyl cis/trans isomerases, glutathione-S-transferase and cardiac sarcoplasmic reticulum Ca<sup>2+</sup> ATPase

The toxicity of quinone compounds has been extensively studied and is generally accepted to be a function of (a) the capacity of quinones to produce oxygen free radicals and (b) the electrophilicity of quinones, which enables them to form adducts to cellular macromolecules. In vitro experiments designed to examine the relative rates of enzymatic single-electron reduction demonstrated that naphthoquinones, especially juglone, undergo rapid single-electron reduction.

Unsubstituted naphthoquinones generally do not show mutagenicity in the Salmonella mutation assay in the presence or absence of S-9 metabolic activation. However, substituted naphthoquinones containing one or more hydroxyl groups and/or methoxyl groups have been shown to be mutagenic in *S. typhimurium* in the presence of S-9.

No significant acute toxicological data identified in literature search.

### The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

## Section 12 - ECOLOGICAL INFORMATION

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

This material and its container must be disposed of as hazardous waste.

Avoid release to the environment.

Refer to special instructions/ safety data sheets.

## Section 13 - DISPOSAL CONSIDERATIONS

### Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

! Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

- Recycle wherever possible.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

## Section 14 - TRANSPORTATION INFORMATION



DOT:

Symbols: G Hazard class or Division: 9

Identification Numbers: UN3077 PG: III

Label Codes: 9 Special provisions: 8, 146,

335, B54,

IB8, IP3,

N20, T1,

TP33

Packaging: Exceptions: 155 Packaging: Non- bulk: 213

Packaging: Exceptions: 155 Quantity limitations: No limit

Passenger aircraft/rail:

Quantity Limitations: Cargo No limit Vessel stowage: Location: A aircraft only:

Vessel stowage: Other: None

Hazardous materials descriptions and proper shipping names:

Environmentally hazardous substance, solid, n.o.s

**Air Transport IATA:**

ICAO/IATA Class: 9 ICAO/IATA Subrisk: None

UN/ID Number: 3077 Packing Group: III

Special provisions: A97

Cargo Only

Packing Instructions: 911 Maximum Qty/Pack: 400 kg

Passenger and Cargo Passenger and Cargo

Packing Instructions: 911 Maximum Qty/Pack: 400 kg

Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity

Packing Instructions: Y911 Maximum Qty/Pack: 30 kg G

■ Air transport may be forbidden if this material is flammable, corrosive or toxic gases may be released under normal conditions of transport.

Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,

N.O.S. \*(CONTAINS MENADIONE SODIUM BISULFITE)

**Maritime Transport IMDG:**

IMDG Class: 9 IMDG Subrisk: None

UN Number: 3077 Packing Group: III

EMS Number: F-A , S-F Special provisions: 179 274 335 909

Limited Quantities: 5 kg Marine Pollutant: Yes

Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(contains menadione sodium bisulfite)

## Section 15 - REGULATORY INFORMATION

**menadione sodium bisulfite (CAS: 130-37-0,6147-37-1) is found on the following regulatory lists;**

"Canada Domestic Substances List (DSL)", "US Toxic Substances Control Act (TSCA) - Inventory"

## Section 16 - OTHER INFORMATION

### LIMITED EVIDENCE

- Ingestion may produce health damage\*.
- Cumulative effects may result following exposure\*.
- Limited evidence of a carcinogenic effect\*.
- May possibly be harmful to the foetus/ embryo\*.

\* (limited evidence).

### Ingredients with multiple CAS Nos

Ingredient Name CAS menadione sodium bisulfite 130-37-0, 6147-37-1

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■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

[www.chemwatch.net/references](http://www.chemwatch.net/references).

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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