# Octhilinone

sc-212468



LOW

Material Safety Data Sheet

Hazard Alert Code Key:

HIGH

MODERATE

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

## PRODUCT NAME

Octhilinone

## STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

EXTREME



#### SUPPLIER

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## **SYNONYMS**

C11-H19-N-O-S, N-octyl-3-isothiazolone, 2-octyl-3(2H)-isothiazolone, 2-N-octyl-4-isothiazolin-3-one, "octyl isothiazoline", isothiazalone, "Kathon LP preservative", "RH 893", "Skane M8", Isothiazaline, "Micro-Chek Skane", Pancil-T, microbiocide, biocide, fungicide, slimicide, "Micro-Chek 11", "Micro-Chek 11D"

#### Section 2 - HAZARDS IDENTIFICATION **CHEMWATCH HAZARD RATINGS** Min Max Flammability: 1 3 Toxicity: Min/Nil=0 Body Contact: 3 Low=1 Moderate=2 Reactivity: 1 High=3 Chronic: 2

Extreme=4

## **CANADIAN WHMIS SYMBOLS**



#### EMERGENCY OVERVIEW RISK

Harmful if swallowed. Causes burns. Risk of serious damage to eyes. May cause SENSITISATION by skin contact. Toxic by inhalation and in contact with 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 harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.

■ Isothiazolinones are moderately to highly toxic by oral administration.

The major signs of toxicity were severe gastric irritation, lethargy, and ataxia.

#### EYE

■ The material can produce chemical burns to the eye following direct contact.

- Vapors or mists may be extremely irritating.
- If applied to the eyes, this material causes severe eye damage.
- Solutions containing isothiazolinones may produce corrosion of the mucous membranes and cornea.

Instillation of 0.

#### SKIN

Skin contact with the material may produce toxic effects; systemic effectsmay result following absorption.

- The material can produce chemical burns following direct contact with the skin.
- This material can cause inflammation of the skin oncontact in some persons.
- The material may accentuate any pre-existing dermatitis condition.
- 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.

Aqueous solutions of isothiazolinones may be irritating or even corrosive depending on concentration.

Solutions containing more than 0.

#### INHALED

■ If inhaled, this material can irritate the throat andlungs of some persons.

■ Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects.

## CHRONIC HEALTH EFFECTS

Repeated or prolonged exposure to corrosives may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue.

Skin contact with the material is more likely to cause a sensitization reaction in some persons compared to the general population.

Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

The isothiazolinones are known contact sensitisers. Data are presented which demonstrate that, in comparison with the chlorinated and dichlorinated compounds which share immunological cross-reactivity, the non-chlorinated isothiazolinones have a lower potential for sensitization and no documented immunological cross-reaction with the chlorinated isothiazolinones. The risk of sensitization depends on how contact with the product occurs. The risk is greater when the skin barrier has been damaged and smaller when the skin is healthy. Dermatological studies have demonstrated that mixed isothiazolinone concentrations below 20 ppm may cause sensitisation and that allergic reactions can be provoked in sensitized persons even with concentrations in the range of 7-15 ppm active isothiazolinones.

The isothiazolinones are a group of heterocyclic sulfur-containing compounds. In general all are electrophilic molecules containing an activated N-S bond that enables them with nucleophilic cell entities, thus exerting biocidal activity. A vinyl activated chlorine atom makes allows to molecule to exert greater antimicrobial efficiency but at the same time produces a greater potential for sensitisation.

Several conclusions relating to the sensitising characteristics of the isothiazolinones may therefore be drawn\*: • The strongest sensitisers are the chlorinated isothiazolinones.

I he strongest sensitisers are the chlorinated isothiazolinones.

 $\cdot$  There are known immunological cross-reactions between at least 2 different chlorinated isothiazolinones.

· There appears to be no immunological cross reaction between non-chlorinated isothiazolinones and chlorinated isothiazolinones.

· Although classified as sensitisers, the nonchlorinated isothiazolinones are considerably less potent sensitisers than are the chlorinated

isothiazolinones.

· By avoiding the use of chlorinated isothiazolinones, the potential to induce sensitisation is greatly reduced.

• Despite a significant percentage of the population having been previously sensitised to chlorinated and non-chlorinated species, it is likely that careful and judicious use of non-chlorinated isothiazolinones will result in reduced risk of allergic reactions in those persons.

• Although presently available data promise that several non-chlorinated isothiazolinones will offer effective antimicrobial protection in industrial and personal care products, it is only with the passage of time that proof of their safety in use or otherwise will become available.

\* B.R. Alexander: Contact Dermatitis 2002, 46, pp 191-196

Although there have been conflicting reports in the literature, it has been reported by several investigators that isothiazolinones are mutagenic in Salmonella typhimurium strains (Ames test). Negative results were obtained in studies of the DNA-damaging potential of mixed isothiazolinones (Kathon) in mammalian cells in vitro and of cytogenetic effects and DNA-binding in vivo. The addition of rat liver S-9 (metabolic activation) reduced toxicity but did not eliminate mutagenicity. These compounds bind to the proteins in the S-9. At higher concentrations of Kathon the increase in mutagenicity may be due to an excess of unbound active compounds.

A study of cutaneous application of Kathon CG in 30 months, three times per week at a concentration of 400 ppm (0.04%) a.i. had no local or systemic tumourigenic effect in male mice. No dermal or systemic carcinogenic potential was observed.

Reproduction and teratogenicity studies with rats, given isothiazolinone doses of 1.4-14 mg/kg/day orally from day 6 to day 15 of gestation, showed no treatment related effects in either the dams or in the foetuses.

The isothiazolinones are used extensively in many industries where antibacterials are required. A mixture in common use contains three closely related chlorinated isothiazolinones, all of which exhibit allergenic activity;

5-chloro-2-methyl-4-isothiazolin-3-one (5243-K-CG)\*

2-methyl-4-isothiazolin-3-one (243-K-CG)\*

4,5-dichloro-2-methyl-4-isothiazolin-3-one (4523-K-CG)\*

typically in the ratio 45:15:1.

In guinea pigs equimolar concentrations of the 3 allergens show 5243-K-CG, and 4523-K-CG to be equally strong skin contact sensitisers. In humans, a similar strength of reactivity is apparent; reaction to 243-K-CG is unclear, although the biomedical manifestation may be require the chlorine moiety

to be present in the molecule. (\* K-CG=Kathon CG) Bruze etal; Contact Dermatitis 20:219-239 1989]

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS				
NAME	CAS RN	%		
2-octyl-4-isothiazolin-3-one	26530-20-1	>98		

## Section 4 - FIRST AID MEASURES

#### SWALLOWED

· For advice, contact a Poisons Information Center or a doctor at once. · Urgent hospital treatment is likely to be needed.

#### EYE

■ If this product comes in contact with the eyes: Immediately hold eyelids apart and flush the eye continuously with 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: · Immediately flush body and clothes with large amounts of water, using safety shower if available. · Quickly remove all contaminated clothing, including footwear.

#### INHALED

· If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested. Inhalation of vapors or aerosols (mists, fumes) may cause lung edema. Corrosive substances may cause lung damage (e.g.

#### NOTES TO PHYSICIAN

■ for corrosives:

-----BASIC TREATMENT

· Establish a patent airway with suction where necessary.

· Watch for signs of respiratory insufficiency and assist ventilation as necessary.

## Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Negligible
Upper Explosive Limit (%):	Not available.
Specific Gravity (water=1):	1.04
Lower Explosive Limit (%):	Not available.

#### EXTINGUISHING MEDIA

· Foam.

· Dry chemical powder.

#### FIRE FIGHTING

· Alert Emergency Responders and tell them location and nature of hazard.

· Wear full body protective clothing with breathing apparatus.

When any large container (including road and rail tankers) is involved in a fire,

consider evacuation by 800 metres in all directions.

## GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

· Combustible.

· Slight fire hazard when exposed to heat or flame.

Combustion products include: carbon dioxide (CO2), nitrogen oxides (NOx), sulfur oxides (SOx), other pyrolysis products typical of burning organic material.

# May emit corrosive fumes.

## FIRE INCOMPATIBILITY

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

#### PERSONAL PROTECTION

Glasses: Full face- shield. Gloves: Respirator:

Type A-P Filter of sufficient capacity

## Section 6 - ACCIDENTAL RELEASE MEASURES

#### MINOR SPILLS

· Clean up all spills immediately.

 $\cdot$  Avoid breathing vapors and contact with skin and eyes.

MAJOR SPILLS

· Absorb or contain isothiazolinone liquid spills with sand, earth, inert material or vermiculite.

• The absorbent (and surface soil to a depth sufficient to remove all of the biocide) should be shovelled into a drum and treated with an 11% solution of sodium metabisulfite (Na2S2O5) or sodium bisulfite (NaHSO3), or 12% sodium sulfite (Na2SO3) and 8% hydrochloric acid (HCI).

· Glutathione has also been used to inactivate the isothiazolinones.

· Use 20 volumes of decontaminating solution for each volume of biocide, and let containers stand for at least 30 minutes to deactivate microbicide before disposal.

· If contamination of drains or waterways occurs, advise emergency services.

· After clean up operations, decontaminate and launder all protective clothing

· and equipment before storing and re-using.

## Section 7 - HANDLING AND STORAGE

#### **PROCEDURE FOR HANDLING**

- $\cdot$  DO NOT allow clothing wet with material to stay in contact with skin.
- $\cdot$  Avoid all personal contact, including inhalation.
- $\cdot$  Wear protective clothing when risk of exposure occurs.

#### **RECOMMENDED STORAGE METHODS**

#### · Lined metal can, Lined metal pail/drum

- · Plastic pail.
- For low viscosity materials
- · Drums and jerricans must be of the non-removable head type.

· Where a can is to be used as an inner package, the can must have a screwed enclosure.

#### STORAGE REQUIREMENTS

· Store in original containers.

· Keep containers securely sealed.

Store at 4°C.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

#### **EXPOSURE CONTROLS**

The following materials had no OELs on our records

• 2-octyl-4-isothiazolin-3-one: CAS:26530-20-1

## PERSONAL PROTECTION



#### RESPIRATOR

•Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent) EYE

· Chemical goggles.

· Full face shield.

#### HANDS/FEET

· When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.

NOTE: The material may produce skin sensitization in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

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

· 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, AS/NZS 2161.1 or national equivalent).

• 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, AS/NZS 2161.10.1 or national equivalent) 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, AS/NZS 2161.10.1 or national equivalent) 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.

· Butyl rubber gloves.

· Nitrile rubber gloves.

#### OTHER

- · Overalls.
- · PVC Apron.

#### **ENGINEERING CONTROLS**

Local exhaust ventilation usually required. If risk of overexposure exists, wear an approved respirator.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

## PHYSICAL PROPERTIES

Does not mix with water. Sinks in water. Corrosive. Toxic or noxious vapors/gas.			
State	LIQUID	Molecular Weight	213.34
Melting Range (°F)	Not available.	Viscosity	Not Available
Boiling Range (°F)	248 (0.01 mm Hg)	Solubility in water (g/L)	Immiscible
Flash Point (°F)	Not available.	pH (1% solution)	6-7
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)	1.04
Lower Explosive Limit (%)	Not available.	Relative Vapor Density (air=1)	Not available.
Volatile Component (%vol)	Negligible	Evaporation Rate	Not available
VOC(regulatory)	lb/gall	VOC(actual)	lb/gall

#### APPEARANCE

Oily corrosive liquid. Soluble in alcohol, ether, propylene glycol, acetone, chloroform, butylcellosolve and mineral oil. Practically immiscible with water. Boiling Point @ 0.01 mm Hg = 120 C. Stable over a wide pH range, but deactivated by ammonia, primary & secondary amines, and strong oxidants & reducers. light sensitive.

The high water solubility and low log Kow values of several chlorinated and non-chlorinated indicate a low potential for bioaccumulation. Material Value

## Section 10 - CHEMICAL STABILITY

#### CONDITIONS CONTRIBUTING TO INSTABILITY

· Presence of incompatible materials.

· Product is considered stable.

STORAGE INCOMPATIBILITY

Avoid reaction with oxidizing agents.

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

## Section 11 - TOXICOLOGICAL INFORMATION

2-octyl-4-isothiazolin-3-one

## TOXICITY AND IRRITATION

#### 2-OCTYL-4-ISOTHIAZOLIN-3-ONE:

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LD50: 550 mg/kg	Skin (rabbit): 500 mg/24 hours
Dermal (rabbit) LD50: 690 mg/kg	Eye(rabbit):100 mg SEVERE
Oral (male) rat: LD50 248 mg/kg	Skin (rabbit): 45% conc SEVERE
Oral (female) rat: LD50 293 mg/kg	Eye (rabbit): 45% conc CORROSIVE
Dermal (male) rabbit: LD50 311 mg/kg	Eye (rabbit): 5% conc Moderate
	Eye (rabbit): 0.5% non Irritant

■ Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's edema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type.

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

ROHM & HAAS Data ADI: 0.03 mg/kg/day

NOEL: 60 mg/kg/day

## **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.

#### Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
2-octyl-4-isothiazolin-3-one	HIGH	No Data Available	LOW	MED

## Section 13 - DISPOSAL CONSIDERATIONS

#### **US EPA Waste Number & Descriptions**

A. General Product Information

Corrosivity characteristic: use EPA hazardous waste number D002 (waste code C)

#### **Disposal Instructions**

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

| Puncture containers to prevent re-use and bury at an authorized landfill.

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. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. 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: None Hazard class or Division: 8 Identification Numbers: UN2922 PG: III Label Codes: 8, 6.1 Special provisions: IB3, T7, **TP1, TP28** Packaging: Exceptions: 154 Packaging: Non- bulk: 203 Packaging: Exceptions: 154 Quantity limitations: 5 L Passenger aircraft/rail: Quantity Limitations: Cargo 60 L Vessel stowage: Location: B aircraft only: Vessel stowage: Other: 40 Hazardous materials descriptions and proper shipping names: Corrosive liquids, toxic, n.o.s. Air Transport IATA: UN/ID Number: 2922 Packing Group: III Special provisions: A3 Cargo Only Packing Instructions: 856 Maximum Qty/Pack: 60 L Passenger and Cargo Passenger and Cargo Packing Instructions: Y841 Maximum Qty/Pack: 5 L Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity Packing Instructions: 852 Maximum Qty/Pack: 1 L

Shipping Name: CORROSIVE LIQUID, TOXIC, N.O.S. \*(CONTAINS 2-OCTYL-4-ISOTHIAZOLIN-3-ONE)

## Maritime Transport IMDG:

IMDG Class: 8 IMDG Subrisk: 6.1 UN Number: 2922 Packing Group: III EMS Number: F-A,S-B Special provisions: 223 274 Limited Quantities: 5 L Marine Pollutant: Yes Shipping Name: CORROSIVE LIQUID, TOXIC, N.O.S.(contains 2-octyl-4-isothiazolin-3-one)

## Section 15 - REGULATORY INFORMATION

## 2-octyl-4-isothiazolin-3-one (CAS: 26530-20-1) is found on the following regulatory lists;

"Canada Domestic Substances List (DSL)","US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory","US TSCA Section 8 (d) - Health and Safety Data Reporting"

## Section 16 - OTHER INFORMATION

#### LIMITED EVIDENCE

Cumulative effects may result following exposure\*.
\* (limited evidence).

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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.

■ 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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