

Silweb 964

Chemwatch Material Safety Data Sheet
Issue Date: 4-Jul-2014
A317LP

Hazard Alert Code: MODERATE

CHEMWATCH 21-9673
Version No:4.1.1.1
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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

Silweb 964

SYNONYMS

"Printers Silicone, High solids silicone emulsion"

PRODUCT USE

Used according to manufacturer's directions.

Fatty acid amides are nonionic substances which have a strong tendency to reduce friction on various surfaces by forming a layer on surfaces. This coating action may be attributed to their hydrophobic character and strong hydrogen bonding. Primary, secondary, and bisamides are widely used as lubricating or slip agents and alkanolamides. Their ethoxylated counterparts are commonly used as surfactants in personal care and detergent applications.

The dehydration of amides that produces nitriles is of great commercial value. The most widely used synthetic route for primary amides is the reaction of a fatty acid with anhydrous ammonia.

Typical uses of fatty acid amides include lubricants for synthetic resins (polyethylene, polypropylene, etc.), anti-blocking agents, mold release agents, printing ink additives, and pigment/dye dispersants.

Used for the conditioning of paper in web offset printing.

SUPPLIER

Company: GSB Chemical Co. Pty Ltd

Address:

84 Camp Road

Broadmeadows

VIC, 3047

Australia

Telephone: +61 3 9457 1125

Fax: +61 3 9459 7978

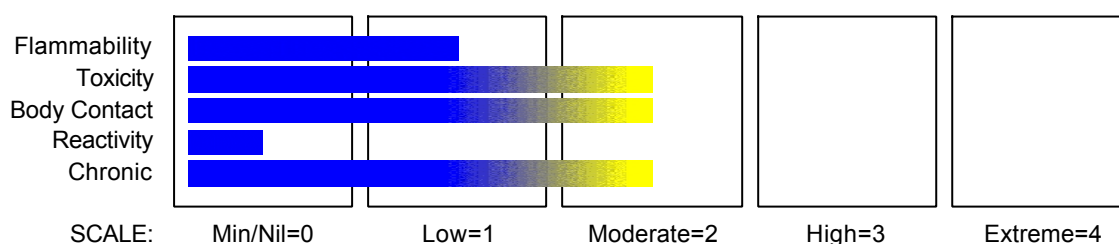
Email: info@gsbchem.com.au

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

CHEMWATCH HAZARD RATINGS



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Section 2 - HAZARDS IDENTIFICATION



RISK

- Harmful by inhalation, in contact with skin and if swallowed.
- Irritating to eyes and skin.
- May cause SENSITISATION by skin contact.
- Harmful to aquatic organisms.
- Cumulative effects may result following exposure*.
- Limited evidence of a carcinogenic effect*.

* (limited evidence).

SAFETY

- Do not breathe gas/fumes/vapour/spray.
- Avoid contact with skin.
- Avoid contact with eyes.
- Wear suitable protective clothing.
- Wear suitable gloves.
- Wear eye/face protection.
- Use only in well ventilated areas.
- Keep container in a well ventilated place.
- To clean the floor and all objects contaminated by this material, use water.
- Keep container tightly closed.
- Keep away from food, drink and animal feeding stuffs.
- In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.
- If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre. (show this container or label).

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
polydimethylsiloxane	63148-62-9	30-60
lauric diethanolamide	120-40-1	<10
poly electrolyte, proprietary		<10
5- chloro- 2- methyl- 4- isothiazolin- 3- one	26172-55-4	<10
water	7732-18-5	30-60

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.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.

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Section 4 - FIRST AID MEASURES

- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

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.
 - Seek medical attention without delay; if pain persists or recurs seek medical attention.
 - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

- If skin contact occurs:
 - Immediately remove all contaminated clothing, including footwear.
 - Flush skin and hair with running water (and soap if available).
 - Seek medical attention in event of irritation.

INHALED

- If fumes, aerosols or combustion products are inhaled remove from contaminated area.
- Other measures are usually unnecessary.

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- The product contains a substantial proportion of water, therefore there are no restrictions on the type of extinguishing media which may be used. Choice of extinguishing media should take into account surrounding areas.

Though the material is non-combustible, evaporation of water from the mixture, caused by the heat of nearby fire, may produce floating layers of combustible substances.

In such an event consider:

- foam.
- dry chemical powder.
- carbon dioxide.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- Avoid spraying water onto liquid pools.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.

FIRE/EXPLOSION HAZARD

- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).

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Section 5 - FIRE FIGHTING MEASURES

- May emit acrid smoke.
 - Mists containing combustible materials may be explosive.
- Combustion products include: carbon dioxide (CO₂), nitrogen oxides (NO_x), silicon dioxide (SiO₂), other pyrolysis products typical of burning organic material.
- May emit poisonous fumes.

FIRE INCOMPATIBILITY

- None known.

HAZCHEM

None

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- Wipe up.
- Place in a suitable, labelled container for waste disposal.

MAJOR SPILLS

- Silicone fluids, even in small quantities, may present a slip hazard.
- It may be necessary to rope off area and place warning signs around perimeter.
- Clean up area from spill, with suitable absorbant, as soon as practically possible.
- Final cleaning may require use of steam, solvents or detergents.
- 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 (HCl).
- 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.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Alkanolamines and iron may produced unstable complexes. Monoethanolamine (MEA) and iron form a trisethanolamino-iron complex. This material may spontaneously decompose at temperatures between 130 and 160 degrees C. and is suspected of causing a fire in a nearly empty storage tank containing a "heel" of MEA in contact with carbon steel coils. If steam coil heating is used, low pressure steam in stainless steel coils should be considered. Drum heating should also be reviewed and, where possible, temperatures should be

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Section 7 - HANDLING AND STORAGE

maintained below 130 degrees C.

- DO NOT allow clothing wet with material to stay in contact with skin.
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

- Metal can or drum
- Packaging as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY

- Avoid reaction with oxidising agents.
strong acids.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: *May be stored together*

O: *May be stored together with specific preventions*

X: *Must not be stored together*

continued...

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- | | |
|--|------------------|
| • polydimethylsiloxane: | CAS:63148- 62- 9 |
| • lauric diethanolamide: | CAS:120- 40- 1 |
| • 5- chloro- 2- methyl- 4- isothiazolin- 3- one: | CAS:26172- 55- 4 |
| • water: | CAS:7732- 18- 5 |

MATERIAL DATA

5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE:

POLYDIMETHYLSILOXANE:

SILWEB 964:

Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE:

SILWEB 964:

CEL TWA: 0.1 mg/m³; STEL 0.3 mg/m³ total isothiazolinones (Rohm and Haas)

(CEL = Chemwatch Exposure Limit).

LAURIC DIETHANOLAMIDE:

WATER:

No exposure limits set by NOHSC or ACGIH.

LAURIC DIETHANOLAMIDE:

for diethanolamine:

Odour Threshold: 2.6 ppm

The TLV-TWA is thought to be protective against the significant risk of eye damage and skin irritation.

Odour Safety Factor (OSF)

OSF=1.7 (DIETHANOLAMINE).

PERSONAL PROTECTION



EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses 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], [AS/NZS 1336 or national equivalent].

HANDS/FEET

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber.

NOTE:

- The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
 - Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.
- The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.

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.
- Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.
- 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.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

- Butyl rubber gloves.
- Nitrile rubber gloves.

OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

RESPIRATOR

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

■ Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

■ Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.

Employers may need to use multiple types of controls to prevent employee overexposure.

General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in special circumstances. If risk of overexposure exists, wear approved respirator. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection. Provide adequate ventilation in warehouses and enclosed storage areas.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Fatty acid amides (FAAs) comprise a family of neutral lipids that is related to other classes of N-acyl amines, such as N-acyl amino acids, N-acylethanolamines, and more complicated species like sphingomyelins and ceramides.

Commercial FAAs generally consist of a fatty acid, usually derived from coconut oil, which is linked to an amide group by a C-N bond. The amide may either be monoethanolamide (MEA), diethanolamide (DEA), or monoisopropanolamide (MIPA). Representative structures of FAA are indicated below. The alkyl chain usually contains 12 to 18 carbon atoms.

FAAs can be represented as R-C(=O)-N(R)'R" .

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

FAAs which contain a saturated or unsaturated alkyl chain derived from a fatty acid, can be divided into three categories (based on the following notation).

- The first is primary monoamides in which R is a fatty alkyl or alkenyl chain of C5-C23 and R' =R"= H.
- The second is substituted monoamides, including secondary, tertiary, and alkanolamides in which R is a fatty alkyl or alkenyl chain of C5-C23; R' and R" may be a hydrogen, fatty alkyl, aryl, or alkylene oxide condensation groups with at least one alkyl, aryl, or alkylene oxide group.
- The third category is bisamides where R groups are fatty alkyl or alkenyl chains. R' and R" may be hydrogen, fatty alkyl, aryl, or alkylene oxide condensation groups.

Primary and secondary amides show strong hydrogen bonding that account for their high melting points and low solubilities in most solvents. With tertiary amides (disubstituted amides), hydrogen bonding is not possible, as exhibited by their increased solubility and lower melting points. Many fatty acid amides are essentially insoluble in water. Amides have a strong tendency to reduce friction on various surfaces by forming a layer on surfaces. This coating action may be attributed to their hydrophobic character and strong hydrogen bonding. Fatty acid amides in general are stable to elevated processing temperatures, air oxidation, and dilute acids and bases. Alkanolamides are made from triglycerides or fatty acid methyl esters reacted with monoethanolamine or diethanolamine that then can be ethoxylated with ethylene oxide under basic catalyses. Common products are stearamide, cocamide, ethylene bis(stearamide), cocamide, DEA or MEA, cocamidopropyl dimethyl amine, and cocamide monoethanolamine ethoxylate

Regardless of the carbon number, the melting point of saturated fatty acid amides falls in a range of 100 to 110 C. In contrast, the melting point of unsaturated fatty acid amides is significantly affected by the carbon number of such fatty acid amides; their melting points fall in a range of 70 to 85 C relative to the carbon number in a range of 18 to 22.

Off white creamy liquid with a characteristic odour; miscible with water.

PHYSICAL PROPERTIES

Liquid.

Mixes with water.

State	Liquid	Molecular Weight	Not Applicable
Melting Range (°C)	Not Available	Viscosity	Not Available
Boiling Range (°C)	100	Solubility in water (g/L)	Miscible
Flash Point (°C)	101	pH (1% solution)	Not Available
Decomposition Temp (°C)	Not Available	pH (as supplied)	Not Available
Autoignition Temp (°C)	Not Available	Vapour Pressure (kPa)	as for water
Upper Explosive Limit (%)	Not Available	Specific Gravity (water=1)	1.0
Lower Explosive Limit (%)	Not Available	Relative Vapour Density (air=1)	as for water
Volatile Component (%vol)	>50	Evaporation Rate	as for water

Section 10 - STABILITY AND REACTIVITY

CONDITIONS CONTRIBUTING TO INSTABILITY

- Silicone fluids are stable under normal storage conditions.
- Hazardous polymerisation will not occur.
- At temperatures > 150 C, silicones can slowly react with the oxygen in air.
- When heated > 300 C, silicones can slowly depolymerise to volatile siloxanes whether or not air is present.
- Unstable in the presence of incompatible materials.
- Product is considered stable.

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Section 10 - STABILITY AND REACTIVITY

- Hazardous polymerisation will not occur.
For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

- Accidental ingestion of the material may be damaging to the health of the individual. Silicone fluids do not have a high acute toxicity. They may have a laxative effect and produce central nervous system depression. They have been known to reduce bloating and gas. Aspiration of silicone fluids can produce inflammation of the lungs. Taken by mouth, isothiazolinones have moderate to high toxicity. The major signs of toxicity are severe stomach irritation, lethargy, and inco-ordination.

EYE

- Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals. Prolonged eye contact may cause inflammation characterised by a temporary redness of the conjunctiva (similar to windburn). Eye exposure to silicone fluids causes temporary irritation of the conjunctiva. Injection into the specific structures of the eye, however, causes corneal scarring, permanent eye damage, allergic reactions and cataract, and may lead to blindness. Non-ionic surfactants can cause numbing of the cornea, which masks discomfort normally caused by other agents and leads to corneal injury. Irritation varies depending on the duration of contact, the nature and concentration of the surfactant. Solutions containing isothiazolinones may damage the mucous membranes and cornea. Animal testing showed very low concentrations (under 0.1%) did not cause irritation, while higher levels (3-5.5%) produced severe irritation and damage to the eye. Symptoms included clouding of the cornea and eye swelling. Animal testing shows that low concentrations of fatty acid amides, such as cocoamide DEA, are severely irritating to the eyes. Eye contact with fatty acid diethanolamides and monoethanolamides may seriously damage the eyes.

SKIN

- The material may accentuate any pre-existing dermatitis condition. Low molecular weight silicone fluids may exhibit solvent action and may produce skin irritation. Solutions of isothiazolinones may be irritating or even damaging to the skin, depending on concentration. A concentration of over 0.1% can irritate, and over 0.5% can cause severe irritation. Open cuts, abraded or irritated skin should not be exposed to this material. Animal testing showed that a 30% fatty acid amide was a moderate skin irritant. In products intended for prolonged contact with the skin, the concentration of cocoamide DEA should not exceed 5%. CESIO classifies diethanolamides and monoethanolamides as irritating. There is some evidence to suggest that this material can cause inflammation of the skin on contact in some persons. Excessive use or prolonged contact may lead to defatting, drying and irritation of sensitive skin.

INHALED

- The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an

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occupational setting.

Vapours of silicones are generally fairly well tolerated, however very high concentrations can cause death within minutes due to respiratory failure. At high temperatures, the fumes and oxidation products can be irritating and toxic and can cause depression leading to death in very high doses.

Not normally a hazard due to non-volatile nature of product.

CHRONIC HEALTH EFFECTS

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

There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

The isothiazolinones are known contact sensitizers. Sensitization is more likely with the chlorinated species as opposed to the non-chlorinated species. Risk of sensitization depends on how contact occurs – it is higher when the skin has been damaged. Skin specialist studies have shown sensitization has occurred with concentrations of 0.02% or less, and allergic reactions can occur in sensitized people with even lower concentrations. There is immune cross reaction between chlorinated isothiazolinones, but not between the non-chlorinated species or between non-chlorinated and chlorinated species. More experience is needed before conclusion of the safety of non-chlorinated species can be made.

There are conflicting reports in the literature, but isothiazolinones have been reported to cause mutations in certain bacteria. This effect has not been shown to occur in mammal cells. Animal testing showed no reproductive or tumour-inducing effects.

Prolonged or chronic exposure to alkanolamines may result in liver, kidney or nervous system injury. Repeated inhalation may aggravate asthma and lung disease involving inflammation or scarring.

Results of animal testing with diethanolamine (DEA) and monoethanolamine (MEA) has shown a wide range of possible effects, including induction of tumours, developmental abnormalities and injury to the foetus and mother.

Many amines greatly sensitise the skin and respiratory system, and certain individuals, especially those predisposed to asthma and other allergic responses, may show allergic reactions when chronically exposed to alkanolamines.

TOXICITY AND IRRITATION

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

WATER:**5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE:**

■ No significant acute toxicological data identified in literature search.

5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE:**SILWEB 964:**

■ The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.

POLYDIMETHYLSILOXANE:**5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE:****continued...**

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Section 11 - TOXICOLOGICAL INFORMATION

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■ The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

LAURIC DIETHANOLAMIDE:

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■ Laboratory testing shows that the fatty acid amide, cocoamide DEA, causes occupational allergic contact dermatitis, and that allergy to this substance is becoming more common.

Alkanolamides are manufactured by condensation of diethanolamine and the methyl ester of long chain fatty acids. The alkanolamides are susceptible to the formation of nitrosamines, by either existing contamination or the presence of nitrosating agents. According to the Cosmetic Directive (2000), cocoamide DEA must not be used in products with nitrosating agents, because of the risk of formation of N-nitrosamines. In cosmetics a maximum concentration of 5% fatty acid dialkanolamides is permissible. N-nitrosamines, in animal testing, have been shown to cause cancer. Animal testing has not shown that cocoamide DEA or other FAAs can cause mutations.

■ The chemicals in the Fatty Nitrogen Derived (FND) Amides are generally similar in terms of physical and chemical properties, environmental fate and toxicity. Its low acute oral toxicity is well established across all subcategories by the available data and show no apparent organ specific toxicity, mutation, reproductive or developmental defects.

POLYDIMETHYLSILOXANE:

SILWEB 964:

■ Siloxanes may impair liver and hormonal function, as well as the lung and kidney. They have not been found to be irritating to the skin and eyes. They may potentially cause cancer (tumours of the womb in females) and may cause impaired fertility or infertility.

POLYDIMETHYLSILOXANE:

TOXICITY

Inhalation (rat) LC50:>1100 mg/m³*

Oral (rat) LD50:>35000 mg/kg*

Dermal (rabbit) LD50:>3000 mg/kg*

No toxic response noted during 90 day subchronic inhalation toxicity studies

The no observable effect level is 450 mg/m³.

Non-irritating and non-sensitising in human patch test. [Xerox]*

IRRITATION

Eye (rabbit):100 mg/1h - Mild

LAURIC DIETHANOLAMIDE:

TOXICITY

Oral (rat) LD50:2700 mg/kg

IRRITATION

Nil reported.

5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE:

■ The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

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 RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of

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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.

NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.

Considered to be the major sensitiser in Kathon CG (1)

(1). Bruze et al - Contact Dermatitis 20: 219-39, 1989

SKIN

lauric diethanolamide	GESAMP/EHS Composite	D1: skin	(1)
	List - GESAMP Hazard Profiles	irritation/corrosion	

Section 12 - ECOLOGICAL INFORMATION

5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE:

LAURIC DIETHANOLAMIDE:

DO NOT discharge into sewer or waterways.

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

Very toxic to aquatic organisms.

POLYDIMETHYLSILOXANE:

Fish LC50 (96hr.) (mg/l): 10000

For Siloxanes:

Environmental Fate: Siloxanes are used in cosmetics, wax, polishes, and to a minor extent in several other applications.

Atmospheric Fate: In the presence of nitrate ions, short chain siloxanes are broken down by sunlight to the level of silicate within days. The main source atmospheric siloxane release to the air is via evaporation.

Aquatic Fate: It is well accepted that polydimethylsiloxane fluids become permanent residents of sediment but should not have adverse environmental effects. Silicone fluids are very surface active on surface waters.

These substances tend to move into the aquatic compartment attached to textiles, sewage sludge, hair, algae, sediment, etc. Non-evaporating silicone fluids used in cosmetics, wax, polishes, cleaning products and those used in textile applications, (softeners), will, to a large extent, end up in wastewater and be directed to wastewater treatment plants.

Ecotoxicity: Siloxanes are chemically stable which makes them very persistent in the environment, where they are expected to remain for many years. The cyclic siloxanes and small-chain linear siloxanes are will concentrate in the food chain concentrated (long-chained siloxanes have not been assessed). The estimated bioconcentration factors, (BCF), of the small siloxanes range from 340 for HMDS to 40,000 for a phenyl trimethicone. The small phenylated siloxanes may be substances are the most toxic for aquatic organisms. EPA screening criteria indicates that all siloxane's are of high concern as to environmental toxicity and that the phenyl siloxanes are considered very bioaccumulative.

Ecotoxicity: Siloxanes are moderately toxic to fish, including rainbow trout, and sheepshead minnow. These substances are also moderately toxic to Daphnia magna water fleas, and mysid shrimp.

LAURIC DIETHANOLAMIDE:

Marine Pollutant Yes

For diethanolamine (DEA):l og Kow: -1.43 Koc: 4Half-life (hr) air: 4Henry's atm m3 /mol: 5.35E-14BOD 5: 0.03-0.1,0.9%BOD 28: 57 mg/gmCOD : 1590 mg/gmTPC 470 mg/gm ThOD: 2.13 BCF: <1

DEA is not expected to pose a high risk to drinking water, and its potential for bioconcentration in aquatic organisms is low. DEA is categorized as "practically nontoxic" on an acute basis to freshwater invertebrates,

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estuarine/marine invertebrates, and freshwater plants.

Environmental Fate: In soil and water, DEA is expected to biodegrade fairly rapidly following acclimation (half-life on the order of days to weeks). In soil, DEA should leach. In the atmosphere, DEA is expected to exist almost entirely in the vapor phase. Reaction with photochemically generated hydroxyl radicals is expected to be the dominant removal mechanism (half-life, four hours), but may also be removed from the atmosphere in precipitation. DEA is essentially nonvolatile from water. The half-life for DEA vapour reacting with photochemically generated hydroxyl radicals in the atmosphere has been estimated to be four hours. DEA can form N-nitrosodiethanolamine (NDELA) when nitrites are present. In air, NDELA is expected to exist solely as a vapor where it is degraded by reaction with photochemically-produced hydroxyl radicals with an estimated half-life of 13 hours. NDELA is stable in light and degradation by photolysis is unlikely.

In soil it is expected to have very high mobility: it is expected to biodegrade slowly in soil. In summary, it appears that DEA is relatively short lived and that it does not present a high risk to contaminate drinking waters. NDELA, a potential formation product, is persistent to biotic and abiotic processes, and mobile. The water quality criteria (WQC) for nitrosamines is 0.0008 ug/L (U.S. Clean Water Act). DEA's potential for bioconcentration in aquatic organisms is low. At very low concentrations (about 10 ppm) diethanolamine can be degraded in biological wastewater treatment plants.

Ecotoxicity: Fish LC50 (96 h): Fathead minnow 100 mg/l; (48 h): Bluegill sunfish 1850 mg/l; Daphnia magna LC50 (48 h): 109 mg/l. DEA is categorized as ranging from moderately toxic to practically nontoxic to freshwater invertebrates based on EC50 values ranging from 2.15 to 306 mg/L. DEA is categorized as "practically nontoxic" to estuarine/marine invertebrates. EC50 values for estuarine/marine invertebrates (shrimps and molluscs) exposed to DEA ranged from >100 to 2,800 mg/L. DEA is categorised as practically nontoxic to freshwater plants on an acute basis based on EC50 values ranging from 103 to 523 mg/L.

Fatty acid amides (FAA) are nonionics used in hair shampoo, liquid soaps, shaving creams and other personal care products. FAA consists of a fatty acid, usually derived from coconut oil, which is linked to an amide group by a C-N bond. The amide may be typically either be monoethanolamide (MEA), diethanolamide (DEA), or monoisopropanolamide (MIPA). Tests show that most fatty acid amides (FAA), such as the widely used cocodiethanolamide (cocoamide DEA) and cocomonethanolamide (cocoamide MEA), are ultimately degraded under aerobic conditions, however test results for the aerobic biodegradability of the ethoxylated FAA are contradictory. Tests results for anaerobic biodegradability of cocoamide MEA showed 79% of the theoretical gas production during incubation of diluted digested sludge for 42 days at 35 degree C using the ECETOC screening test, and attained 81% during 56 days when tested with the ISO 11734 screening test. No experimental data describing the bioaccumulation potential of fatty acid amides were found in the literature. The aquatic toxicity of FAA has been determined for species representing the three trophic levels: algae, invertebrates, and fish. Cocoamide DEA appears to be more toxic to aquatic organisms than cocoamide MEA. An exceptionally high toxicity of cocoamide MEA was reported for two tests with the green alga *Scenedesmus subspicatus* as the 96 h-EC50 were 1.0 and 1.1 mg/l. More recent tests indicate that the toxicity of cocoamide MEA to algae are not markedly higher than the toxicity to daphnids and fish, and EC50 values above 10 mg/l are probably more representative for the toxicity towards algae. The ethoxylated FAA show the same level of aquatic toxicity as the non-ethoxylated FAA. Environmental and Health Assessment of Substances in Household Detergents and Cosmetic Detergent Products, Environment Project, 615, 2001. Miljoministeriet (Danish Environmental Protection Agency).

For Fatty Nitrogen-Derived Amides (FND Amides)

Environmental Fate: Models predict that these chemicals are non-volatile, however these predictions are of limited practical use. Measured values indicate that FND Amides are insoluble in water, however models predict that they are insoluble to moderately soluble but this is of little value in determining environmental fate and effects. Modelled predictions of photodegradation indicate that these chemicals would be expected to degrade relatively rapidly when exposed to sunlight (t1/2 values ranged from 2.2 to 9.5 hours). Due to the surfactant properties and solubility of the FND Amides, hydrolytic stability is of little value in determining environmental fate or effects. Biodegradability: Measured and modelled data indicate that these chemicals are readily or inherently biodegradable across Subcategories I, II, and IV. Minimal degradability of one chemical from Subcategory III indicates that these chemicals are slowly degraded. However, slower degradation of these chemicals is probably due to limited water solubility and behavior of the chemicals in aqueous solution. Longer single alkyl group substitutions and/or multiple long-chain substituents reduce "inherent" biodegradability.

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Ecotoxicity: Data on acute toxicity to fish and daphnid show that FND Amides may adversely affect aquatic organisms. While models suggest that these chemicals are "not toxic at solubility", for surfactants such as the FND Amides acute aquatic toxicity is related to the effects of the surfactant properties on the organism as opposed to direct chemical toxicity.

For Surfactants: Kow cannot be easily determined due to hydrophilic/hydrophobic properties of the molecules in surfactants. BCF value: 1-350.

Aquatic Fate: Surfactants tend to accumulate at the interface of the air with water and are not extracted into one or the other liquid phases.

Terrestrial Fate: Anionic surfactants are not appreciably sorbed by inorganic solids. Cationic surfactants are strongly sorbed by solids, particularly clays. Significant sorption of anionic and non-ionic surfactants has been observed in activated sludge and organic river sediments. Surfactants have been shown to improve water infiltration into soils with moderate to severe hydrophobic or water-repellent properties.

Ecotoxicity: Some surfactants are known to be toxic to animals, ecosystems and humans, and can increase the diffusion of other environmental contaminants. The acute aquatic toxicity generally is considered to be related to the effects of the surfactant properties on the organism and not to direct chemical toxicity.

Surfactants should be considered to be toxic to aquatic species under conditions that allow contact of the chemicals with the organisms. Surfactants are expected to transfer slowly from water into the flesh of fish.

During this process, readily biodegradable surfactants are expected to be metabolized rapidly during the process of bioaccumulation. Surfactants are not to be considered to show bioaccumulation potential if they are readily biodegradable.

5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE:

Marine Pollutant

Yes

Environmental Fate: Isothiazolinones are antimicrobials used to control bacteria, fungi, and for wood preservation and antifouling agents. They are frequently used in personal care products such as shampoos and other hair care products, as well as certain paint formulations. The most common isothiazolinone combinations are 5-chloro-2-methyl-4-isothiazolin-3-one, (CMI), and 2-methyl-4-isothiazolin-3-one, (MI).

Aquatic Fate: 5-chloro-2-methyl-4-isothiazolin-3-one, (CMI), and 2-methyl-4-isothiazolin-3-one, (MI), undergo primary biological breakdown with half-lives of less than 24 hours in both oxygenated and low oxygen sediments with >55% breakdown occurring within 29 days.

Ecotoxicity: The isothiazolinones are very toxic to marine organisms, (fish, Daphnia magna water fleas, and algae), and have low potential for accumulation in aquatic species. The proposed metabolites of MI and CMI are considered to have a low aquatic toxicity, based partially on data for the structurally related N-(n-octyl) malonic acid.

Prevent, by any means available, spillage from entering drains or water courses.

Octanol/water Coefficient = 0.401 (log P)

Biodegradation (aquatic metabolism)

half life t_{1/2} anerobic = 4.8 hours

half life t_{1/2} aerobic = 17.3 hours

as mixed isothiazolinones

Rainbow trout LC₅₀(96 hr) = 0.19 mg/L.

Bluegill Sunfish LC₅₀(96hr) = 0.28 mg/L.

Daphnia EC₅₀(48hr) = 0.16 mg/L.

Algal Selenastrum EC₅₀: 0.018 mg/L.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
polydimethylsiloxane	No Data Available	No Data Available	LOW	No Data Available
lauric diethanolamide	LOW	No Data Available	LOW	HIGH

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Section 12 - ECOLOGICAL INFORMATION

5- chloro- 2- methyl- 4- isothiazolin- 3- one	HIGH	No Data Available	LOW	HIGH
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Section 13 - DISPOSAL CONSIDERATIONS

- Containers may still present a chemical hazard/ danger when empty.
- Return to supplier for reuse/ recycling if possible.

Otherwise:

- If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.

- Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

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 or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Authority for disposal.
- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM:

None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADG7, IATA, IMDG

Section 15 - REGULATORY INFORMATION

Indications of Danger:

Xn Harmful

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Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE

None

REGULATIONS

Regulations for ingredients

polydimethylsiloxane (CAS: 63148-62-9) is found on the following regulatory lists;

"Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Inventory of Chemical Substances (AICS)", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR National List of Candidates for Substitution – United Kingdom", "Sigma-AldrichTransport Information"

lauric diethanolamide (CAS: 120-40-1) is found on the following regulatory lists;

"Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO Provisional Categorization of Liquid Substances - List 1: Pure or technically pure products", "OECD List of High Production Volume (HPV) Chemicals"

5-chloro-2-methyl-4-isothiazolin-3-one (CAS: 26172-55-4) is found on the following regulatory lists;

"Australia - Victoria Occupational Health and Safety Regulations - Schedule 9: Materials at Major Hazard Facilities (And Their Threshold Quantity) Table 2", "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD List of High Production Volume (HPV) Chemicals"

water (CAS: 7732-18-5) is found on the following regulatory lists;

"Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "IMO IBC Code Chapter 18: List of products to which the Code does not apply", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR National List of Candidates for Substitution – Norway", "Sigma-AldrichTransport Information"

No data for Silweb 964 (CW: 21-9673)

Section 16 - OTHER INFORMATION

Denmark Advisory list for selfclassification of dangerous substances

Substance	CAS	Suggested codes
lauric diethanolamide	120- 40- 1	R43 Xi; R38 N; R50
5- chloro- 2- methyl- 4- isothiazolin- 3- one	26172- 55- 4	R43

■ 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:

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Section 16 - OTHER INFORMATION

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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This is the end of the MSDS.