

# LITHIUM STEARATE Bisley International LLC

Chemwatch: 35053 Version No: 5.1.1.1

Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

# Chemwatch Hazard Alert Code: 1

Issue Date: **27/06/2017**Print Date: **15/03/2021**S.GHS.USA.EN

# **SECTION 1 Identification**

# **Product Identifier**

Product name	LITHIUM STEARATE
Chemical Name	lithium stearate
Synonyms	C18-H35-O2.Li; stearic acid, lithium salt; lithium octadecanoate; octadecanoic acid, lithium salt; Lithalure; Litholite; Stavinor
Chemical formula	C18H36O2.Li
Other means of identification	Not Available
CAS number	4485-12-5

# Recommended use of the chemical and restrictions on use

Relevant identified uses

Thickening agent for lubricating oil.

Lubricating greases are solid or semi-solid materials made by thickening lubricating oils with soaps. The soaps are formed in-situ in the lubricating oil, containing hydrocarbon chains of 9 to 22 atoms, by the chemical reaction of an alkali and the respective fatty acid. Corrosion inhibitor in petroleum; gelling agent in waxes, greases, cosmetics, plastics; powder metallurgy lubricant; flatting agent in varnishes and lubricants; high temperature lubricant.

# Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Registered company name	Bisley International LLC	
Address	790 Hughes Landing Boulevard Suite 400 The Woodlands TX 77380 United States	
Telephone	(844) 424 7539	
Fax	Not Available	
Website	www.bisley.biz	
Email	compliance@bisley.biz	

# **Emergency phone number**

Association / Organisation	Bisley International LLC	CHEMWATCH EMERGENCY RESPONSE	
Emergency telephone numbers	+1 855 237 5573	+61 2 9186 1132	
Other emergency telephone numbers	+61 2 9186 1132	+1 855-237-5573	

Once connected and if the message is not in your prefered language then please dial  ${\bf 01}$ 

Una vez conectado y si el mensaje no está en su idioma preferido, por favor marque 02

# SECTION 2 Hazard(s) identification

# Classification of the substance or mixture

Considered a Hazardous Substance by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). Not classified as Dangerous Goods for transport purposes.

# NFPA 704 diamond



Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

Classification Eye Irritation Category 2B

# Label elements

Hazard pictogram(s)

Not Applicable

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Signal word

Warning

# Hazard statement(s)

H320

Causes eye irritation.

## Hazard(s) not otherwise classified

Not Applicable

# Precautionary statement(s) Prevention

P264

Wash all exposed external body areas thoroughly after handling.

## Precautionary statement(s) Response

P305+P351+P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 If eve irritat

If eye irritation persists: Get medical advice/attention.

# Precautionary statement(s) Storage

Not Applicable

# Precautionary statement(s) Disposal

Not Applicable

# **SECTION 3 Composition / information on ingredients**

# Substances

CAS No	%[weight]	Name
4485-12-5	>98	lithium stearate

#### **Mixtures**

See section above for composition of Substances

## **SECTION 4 First-aid measures**

# Description of first aid measures

Eye Contact	<ul> <li>If this product comes in contact with the eyes:</li> <li>Wash out immediately with fresh running water.</li> <li>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.</li> <li>Seek medical attention without delay; if pain persists or recurs seek medical attention.</li> <li>Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>
Skin Contact	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.
Inhalation	<ul> <li>If dust is inhaled, remove from contaminated area.</li> <li>Encourage patient to blow nose to ensure clear passage of breathing.</li> <li>If irritation or discomfort persists seek medical attention.</li> </ul>
Ingestion	<ul> <li>If swallowed do NOT induce vomiting.</li> <li>If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> <li>Observe the patient carefully.</li> <li>Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.</li> <li>Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.</li> <li>Seek medical advice.</li> </ul>

# Most important symptoms and effects, both acute and delayed

See Section 11

# Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

Clinical effects of lithium intoxication appear to relate to duration of exposure as well as to level.

- Lithium produces a generalised slowing of the electroencephalogram; the anion gap may increase in severe cases.
- Emesis (or lavage if the patient is obtunded or convulsing) is indicated for ingestions exceeding 40 mg (Li)/Kg.
- ▶ Overdose may delay absorption; decontamination measures may be more effective several hours after cathartics.
- ▶ Charcoal is not useful. No clinical data are available to guide the administration of catharsis.
- Haemodialysis significantly increases lithium clearance; indications for haemodialysis include patients with serum levels above 4 meq/L.
- ► There are no antidotes.

[Ellenhorn and Barceloux: Medical Toxicology]

# **SECTION 5 Fire-fighting measures**

# **Extinguishing media**

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- ► Foam
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

#### Special hazards arising from the substrate or mixture

Fire Incompatibility

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

## Special protective equipment and precautions for fire-fighters

# Fire Fighting

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses
- Use water delivered as a fine spray to control fire and cool adjacent area.

# Fire/Explosion Hazard

Combustible solid which burns but propagates flame with difficulty; it is estimated that most organic dusts are combustible (circa 70%) - according to the circumstances under which the combustion process occurs, such materials may cause fires and / or dust explosions.

Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions).
 Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and

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 (420 micron or less) may burn rapidly and fiercely if ignited - particles exceeding this limit will generally not form flammable dust clouds; once initiated, however, larger particles up to 1400 microns diameter will contribute to the propagation of an explosion.

Combustion products include:

carbon monoxide (CO) carbon dioxide (CO2)

metal oxides

other pyrolysis products typical of burning organic material.

May emit poisonous fumes May emit corrosive fumes.

acrolein

## **SECTION 6 Accidental release measures**

# Personal precautions, protective equipment and emergency procedures

See section 8

## **Environmental precautions**

See section 12

# Methods and material for containment and cleaning up

Minor	Snil	ŀ

- Remove all ignition sources.
- Clean up all spills immediately.Avoid contact with skin and eyes
- ▶ Control personal contact with the substance, by using protective equipment.

# Major Spills

# Moderate hazard.

- CAUTION: Advise personnel in area.
- ▶ Alert Emergency Services and tell them location and nature of hazard.
- ► Control personal contact by wearing protective clothing.

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

# **SECTION 7 Handling and storage**

# Precautions for safe handling

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- ► Use in a well-ventilated area
- Safe handling
- Prevent concentration in hollows and sumps.
- Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions)
- Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame.
- ▶ Establish good housekeeping practices.
- ▶ Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds.

# Other information

- Store in original containers.
- Keep containers securely sealed.
   Store in a cool, dry area protected from environmental extremes.
- Store away from incompatible materials and foodstuff containers.

# Conditions for safe storage, including any incompatibilities

# Suitable container

- ► Glass container is suitable for laboratory quantities
- ► Polyethylene or polypropylene container
- Check all containers are clearly labelled and free from leaks.

# Storage incompatibility

Inorganic alkaline metal derivative

Storage incompatibility

Avoid reaction with oxidising agents

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- X Must not be stored together
- May be stored together with specific preventions
- + May be stored together

# SECTION 8 Exposure controls / personal protection

#### Control parameters

# Occupational Exposure Limits (OEL)

# INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
US ACGIH Threshold Limit Values (TLV)	lithium stearate	Stearates (Respirable particulate matter)	3 mg/m3	Not Available	Not Available	LRT irr
US ACGIH Threshold Limit Values (TLV)	lithium stearate	Stearates (Inhalable particulate matter)	10 mg/m3	Not Available	Not Available	LRT irr

#### Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
lithium stearate	45 mg/m3	500 mg/m3	3,000 mg/m3

Ingredient	Original IDLH	Revised IDLH
lithium stearate	Not Available	Not Available

# **Exposure controls**

# Appropriate 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.

# Personal protection











# Eye and face protection

- ► 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.

# Skin protection

See Hand protection below

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.

# Hands/feet protection

Personal hygiene is a key element of effective hand care.

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.

# Body protection

▶ Overalls.

Other protection

- Overalls.
- P.V.C apron.
- Barrier cream.Skin cleansing cream.

See Other protection below

# Respiratory protection

Particulate. (AS/NZS 1716 & 1715, EN 143:2000 & 149:001, ANSI Z88 or national equivalent)

- Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Use approved positive flow mask if significant quantities of dust becomes airborne.
- Try to avoid creating dust conditions.

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# **SECTION 9 Physical and chemical properties**

# Information on basic physical and chemical properties

Appearance	White crystals; do not mix with water. Gels in mineral oil.		
Physical state	Divided Solid	Relative density (Water = 1)	1.025
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	Not Applicable	Decomposition temperature	Not Available
Melting point / freezing point (°C)	220	Viscosity (cSt)	Not Applicable
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	290.47
Flash point (°C)	Not Available	Taste	Not Available
Evaporation rate	Not Applicable	Explosive properties	Not Available
Flammability	Not Available	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Applicable
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Negligible
Vapour pressure (kPa)	Negligible	Gas group	Not Available
Solubility in water	Immiscible	pH as a solution (1%)	Not Applicable
Vapour density (Air = 1)	Not Applicable	VOC g/L	Not Available

# **SECTION 10 Stability and reactivity**

Reactivity	See section 7
Chemical stability	<ul> <li>Unstable in the presence of incompatible materials.</li> <li>Product is considered stable.</li> <li>Hazardous polymerisation will not occur.</li> </ul>
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

# **SECTION 11 Toxicological information**

Information on toxicological ef	fects
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 occupational setting.  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.  If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.  Fine mists generated from plant/ vegetable (or more rarely from animal) oils may be hazardous. Extreme heating for prolonged periods, at high temperatures, may generate breakdown products which include acrolein and acrolein-like substances.
Ingestion	Accidental ingestion of the material may be damaging to the health of the individual.  Lithium, in large doses, can cause dizziness and weakness. If a low salt diet is in place, kidney damage can result.  Ingestion of anionic surfactants may produce diarrhoea, bloated stomach, and occasional vomiting.
Skin Contact	Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.  Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.  There is some evidence to suggest that this material can cause inflammation of the skin on contact in some persons.  Anionic surfactants can cause skin redness and pain, as well as a rash. Cracking, scaling and blistering can occur.  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.
Еуе	There is some evidence to suggest that this material can cause eye irritation and damage in some persons.  Direct eye contact with some anionic surfactants in high concentration can cause severe damage to the cornea. Low concentrations can cause discomfort, excess blood flow, and corneal clouding and swelling. Recovery may take several days.
Chronic	Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Lithium compounds can affect the nervous system and muscle. This can cause tremor, inco-ordination, spastic jerks and very brisk reflexes. Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis, caused by particles less than 0.5 micron penetrating and remaining in the lung.  Prolonged or repeated skin contact may cause degreasing, followed by drying, cracking and skin inflammation.

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	TOXICITY	IRRITATION	
lithium stearate	Dermal (rabbit) LD50: >33 mg/kg <sup>[1]</sup>	Eye: no adverse e	ffect observed (not irritating) <sup>[1]</sup>
	Oral(Rat) LD50; >655 mg/kg <sup>[1]</sup>	Skin: no adverse	effect observed (not irritating) <sup>[1]</sup>
Legend:	Value obtained from Europe ECHA Registered Substance     specified data extracted from RTECS - Register of Toxic Efr.	•	ned from manufacturer's SDS. Unless otherwise
LITHIUM STEARATE	Fatty acid salts of low acute toxicity. Their potential to irritate Somnolence and changes in motor activity recorded.	e the skin and eyes is dependent	on chain length.
LITHIUM STEARATE  Acute Toxicity		e the skin and eyes is dependent  Carcinogenicity	on chain length.
	Somnolence and changes in motor activity recorded.	, ,	•
Acute Toxicity	Somnolence and changes in motor activity recorded.	Carcinogenicity	X
Acute Toxicity Skin Irritation/Corrosion	Somnolence and changes in motor activity recorded.	Carcinogenicity Reproductivity	×

Legend:

★ - Data either not available or does not fill the criteria for classification

– Data available to make classification

# **SECTION 12 Ecological information**

# **Toxicity**

	Endpoint	Test Duration (hr)	Species	Value	Source
lithium stearate	Not Available	Not Available	Not Available	Not Available	Not Available
Legend:	V3.12 (QSAR		ed Substances - Ecotoxicological Information - Aqua otox database - Aquatic Toxicity Data 5. ECETOC Ac Bioconcentration Data 8. Vendor Data		

Greases are produced by chemical reaction of mineral oil, fatty acid, and a metal caustic e.g. calcium or lithium hydroxide.

Environmental Fate: Greases cannot enter the atmosphere due its very low vapour pressure. Greases and grease thickeners can undergo biodegradation. Greases may not persist in the environment; however, some form may take longer to be mineralized.

For Fatty Acid Salts:

Environmental Fate: Fatty acid salts are widely used in household cleaning products, cosmetics, lubricants, (and other miscellaneous industrial applications), and coatings. Uses in household cleaning include fabric washing products, fabric conditioners, laundry additives, and surface and toilet cleaners. The hydrocarbon portion of these substances will eventually degrade to carbon dioxide and water; however, the fatty acid components may take longer to break down. Fatty acid salt soaps include the two pesticide active ingredients potassium salts of fatty acids, (including potassium laurate, potassium myristate, potassium oleate, and potassium ricinoleate), and ammonium salts of fatty acids, (ammonium oleate). For lithium (Anion):

Environmental Fate: Lithium hypochlorite is an algaecide, disinfectant, fungicide and food

contact surface sanitizer. Its primary use is as a pesticide to control algae, bacteria and mildew in swimming pool water systems, hot tubs and spas. Lithium is an element that occurs naturally at low levels in food and drinking water. Compounds of lithium that would most likely enter freshwater environments are from mining, refining, and fabrication.

DO NOT discharge into sewer or waterways.

# Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

# **Bioaccumulative potential**

Ingredient	Bioaccumulation
	No Data available for all ingredients

# Mobility in soil

Ingredient	Mobility	
	No Data available for all ingredients	

# **SECTION 13 Disposal considerations**

# Waste treatment methods

Product / Packaging disposal

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.

- ▶ 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.

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- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed
  apparatus (after admixture with suitable combustible material)
- ▶ Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

# **SECTION 14 Transport information**

# Labels Required

**Marine Pollutant** 

NO

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
lithium stearate	Not Available

# Transport in bulk in accordance with the ICG Code

Product name	Ship Type
lithium stearate	Not Available

# **SECTION 15 Regulatory information**

# Safety, health and environmental regulations / legislation specific for the substance or mixture

# lithium stearate is found on the following regulatory lists

US ACGIH Threshold Limit Values (TLV)
US ACGIH Threshold Limit Values (TLV) - Carcinogens
US AIHA Workplace Environmental Exposure Levels (WEELs)

US DOE Temporary Emergency Exposure Limits (TEELs)
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

US TSCA Chemical Substance Inventory - Interim List of Active Substances

# **Federal Regulations**

# Superfund Amendments and Reauthorization Act of 1986 (SARA)

# Section 311/312 hazard categories

Flammable (Gases, Aerosols, Liquids, or Solids)	No
Gas under pressure	No
Explosive	No
Self-heating	No
Pyrophoric (Liquid or Solid)	No
Pyrophoric Gas	No
Corrosive to metal	No
Oxidizer (Liquid, Solid or Gas)	No
Organic Peroxide	No
Self-reactive	No
In contact with water emits flammable gas	No
Combustible Dust	No
Carcinogenicity	No
Acute toxicity (any route of exposure)	No
Reproductive toxicity	No
Skin Corrosion or Irritation	No
Respiratory or Skin Sensitization	No
Serious eye damage or eye irritation	No
Specific target organ toxicity (single or repeated exposure)	No
Aspiration Hazard	No
Germ cell mutagenicity	No
Simple Asphyxiant	No
Hazards Not Otherwise Classified	No

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

None Reported

# State Regulations

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# US. California Proposition 65

None Reported

# **National Inventory Status**

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (lithium stearate)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (lithium stearate)
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	No (lithium stearate)
Vietnam - NCI	Yes
Russia - ARIPS	No (lithium stearate)
Legend:	Yes = All CAS declared ingredients are on the inventory  No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

# **SECTION 16 Other information**

Revision Date	27/06/2017
Initial Date	Not Available

# **SDS Version Summary**

Version Issue D	Sections Updated
4.1.1.1 01/10/20	Acute Health (eye), Acute Health (inhaled), Acute Health (skin), Acute Health (swallowed), Chronic Health, Classification, Disposal, Engineering Control, Environmental, Fire Fighter (fire/explosion hazard), Fire Fighter (fire fighting), First Aid (swallowed), Handling Procedure, Personal Protection (other), Personal Protection (eye), Personal Protection (hands/feet), Physical Properties, Spills (major), Storage (storage requirement), Storage (suitable container)

# Other information

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.

The 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.

# **Definitions and abbreviations**

PC-TWA: Permissible Concentration-Time Weighted Average

PC-STEL: Permissible Concentration-Short Term Exposure Limit

IARC: International Agency for Research on Cancer

ACGIH: American Conference of Governmental Industrial Hygienists

STEL: Short Term Exposure Limit

TEEL: Temporary Emergency Exposure Limit。

IDLH: Immediately Dangerous to Life or Health Concentrations

OSF: Odour Safety Factor

NOAEL :No Observed Adverse Effect Level

LOAEL: Lowest Observed Adverse Effect Level

TLV: Threshold Limit Value

LOD: Limit Of Detection OTV: Odour Threshold Value

BCF: BioConcentration Factors BEI: Biological Exposure Index

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