

Quantum Chemicals Pty. Ltd. A.C.N. 003 329 842

Head Office:

70 Quantum Close, Quantum Industrial Park, Dandenong South, Victoria 3175, Australia
P.O. Box 4107, Dandenong South B.C., Victoria 3164, Australia
Telephone (03) 8795-8000 International +61 3 8795-8000
Facsimile (03) 8795-8099 International +61 3 8795-8099
Email: info@quantumchemicals.com.au Web site: www.quantumchemicals.com.au



Branch Offices: Sydney, Brisbane, Adelaide, Perth and Auckland

24 HOURS EMERGENCY RESPONSE ONLY: 1300 131 001

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000) (Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552
Version No:2.1.1.1
CD 2013/1 Page 1 of 14

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)

PROPER SHIPPING NAME

SODIUM FLUOROSILICATE

PRODUCT USE

Used in fluoridation of water, laundry compounds, enamels and glazes in pottery manufacture. Additive in metallurgy (aluminium and beryllium). Component of some insecticides, rodenticides and moth repellent. Used as preservative in glue, leather and wood; chemical intermediate.

SUPPLIER

Company: DuluxGroup

Address:

1 Nicholson Street

Melbourne

VIC, 3000

Australia

Telephone: +61 3 9665 7111

Emergency Tel: **+1800 033 111 (All Hours)**

Fax: +61 3 9665 7937

Company: Bisley & Company Pty Ltd

Address:

Level 12, Tower B, Zenith Centre, 821 Pacific

Highway

Chatswood

NSW, 2067

Australia

Telephone: +61 2 8905 4200

Emergency Tel: **1800 039 008**

Fax: 02 8905 4238

Email: sales@bisley.com.au

Company: Bisley & Company Pty Ltd

Address:

PO Box 695

Chatswood

NSW, 2057

Australia

Telephone: +61 2 8905 4200

Fax: +61 2 8905 4238

Email: sales@bisley.com.au

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

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

CHEMWATCH HAZARD RATINGS

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)

(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

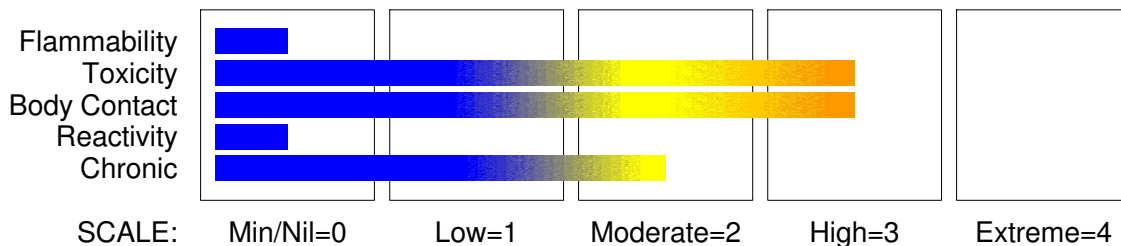
A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 2 of 14

Section 2 - HAZARDS IDENTIFICATION



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



RISK

- Toxic by inhalation, in contact with skin and if swallowed.
- Irritating to eyes, respiratory system and skin.
- Cumulative effects may result following exposure*.
- Limited evidence of a carcinogenic effect*.

* (limited evidence).

SAFETY

- Keep locked up.
- Do not breathe dust.
- Avoid contact with skin.
- Avoid contact with eyes.
- Wear suitable protective clothing.
- In case of insufficient ventilation, wear suitable respiratory equipment.
- 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 and detergent.
- This material and its container must be disposed of in a safe way.
- Keep away from food, drink and animal feeding stuffs.
- Take off immediately all contaminated clothing.
- In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.
- This material and its container must be disposed of as hazardous waste.
- In case of accident by inhalation: remove casualty to fresh air and keep at rest.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
sodium fluorosilicate	16893-85-9	>95

Section 4 - FIRST AID MEASURES

SWALLOWED

- Give a slurry of activated charcoal in water to drink. NEVER GIVE AN UNCONSCIOUS PATIENT WATER TO DRINK.
- At least 3 tablespoons in a glass of water should be given.

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)

(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 3 of 14

Section 4 - FIRST AID MEASURES

- Although induction of vomiting may be recommended (IN CONSCIOUS PERSONS ONLY), such a first aid measure is dissuaded due to the risk of aspiration of stomach contents. (i) It is better to take the patient to a doctor who can decide on the necessity and method of emptying the stomach. (ii) Special circumstances may however exist; these include non-availability of charcoal and the ready availability of the doctor.

NOTE: If vomiting is induced, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

NOTE: Wear protective gloves when inducing vomiting.

- REFER FOR MEDICAL ATTENTION WITHOUT DELAY.
- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
- If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
- If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS. (ICSC20305/20307).

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.
 - Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
 - Transport to hospital or doctor without delay.
 - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

- If skin or hair contact occurs:
 - Quickly but gently, wipe material off skin with a dry, clean cloth.
 - Immediately remove all contaminated clothing, including footwear.
 - Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
 - Transport to hospital, or doctor.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prosthesis such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.

NOTES TO PHYSICIAN

- For acute or short term repeated exposures to fluorides:
 - Fluoride absorption from gastro-intestinal tract may be retarded by calcium salts, milk or antacids.
 - Fluoride particulates or fume may be absorbed through the respiratory tract with 20-30% deposited at alveolar level.
 - Peak serum levels are reached 30 mins. post-exposure; 50% appears in the urine within 24 hours.
 - For acute poisoning (endotracheal intubation if inadequate tidal volume), monitor breathing and evaluate/monitor blood pressure and pulse frequently since shock may supervene with little warning. Monitor ECG immediately; watch for arrhythmias and evidence of Q-T prolongation or T-wave changes. Maintain monitor. Treat shock vigorously with isotonic saline (in 5% glucose) to restore blood volume and enhance renal excretion.
 - Where evidence of hypocalcaemic or normocalcaemic tetany exists, calcium gluconate (10 ml of a 10% solution) is injected to avoid tachycardia.

BIOLOGICAL EXPOSURE INDEX - BEI

These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)
(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 4 of 14

Section 4 - FIRST AID MEASURES

Determinant	Index	Sampling Time	Comments
Fluorides in urine	3 mg/gm creatinine	Prior to shift	B, NS
	10mg/gm creatinine	End of shift	B, NS

B: Background levels occur in specimens collected from subjects NOT exposed

NS: Non-specific determinant; also observed after exposure to other exposures.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Water spray or fog.
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

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 fire fighting procedures suitable for surrounding area.
- 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.
- Equipment should be thoroughly decontaminated after use.

When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 800 metres in all directions.

FIRE/EXPLOSION HAZARD

- Non combustible.
 - Not considered a significant fire risk, however containers may burn.
- Decomposition may produce toxic fumes of: hydrogen fluoride, silicon dioxide (SiO₂), metal oxides.
May emit poisonous fumes.

FIRE INCOMPATIBILITY

- None known.

HAZCHEM

2X

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

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

MAJOR SPILLS

- Clear area of personnel and move upwind.
- 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.
- No smoking, naked lights or ignition sources.

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)

(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

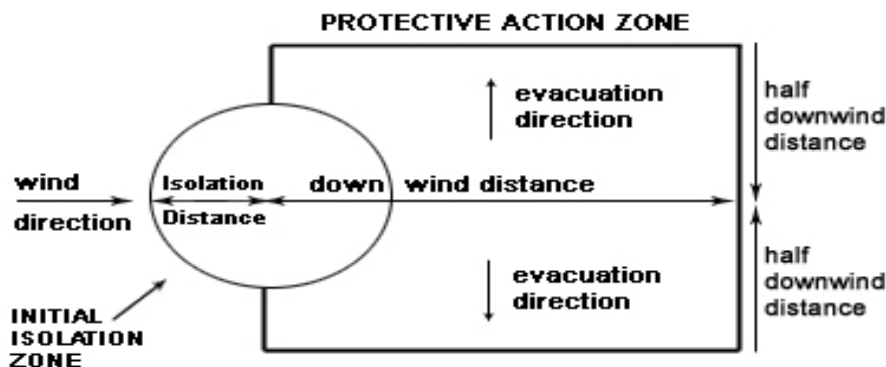
Version No:2.1.1.1

CD 2013/1 Page 5 of 14

Section 6 - ACCIDENTAL RELEASE MEASURES

- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse / absorb vapour.
- Contain or absorb spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- If contamination of drains or waterways occurs, advise emergency services.

PROTECTIVE ACTIONS FOR SPILL



From IERG (Canada/Australia)

Isolation Distance	25 metres
Downwind Protection Distance	250 metres
IERG Number	37

FOOTNOTES

- 1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.
- 2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.
- 3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.
- 4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills".
LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.
- 5 Guide 154 is taken from the US DOT emergency response guide book.
- 6 IERG information is derived from CANUTEC - Transport Canada.

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

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)

(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 6 of 14

Section 7 - HANDLING AND STORAGE

- 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

- Lined metal can, lined metal pail/ can.
- Plastic pail.
- Polyliner drum.
- Packing as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

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.

For materials with a viscosity of at least 2680 cSt. (23 deg. C) and solids (between 15 C deg. and 40 deg C.):

- Removable head packaging;
 - Cans with friction closures and
 - low pressure tubes and cartridges
- may be used.

-

Where combination packages are used, and the inner packages are of glass, there must be sufficient inert cushioning material in contact with inner and outer packages *.

-

In addition, where inner packagings are glass and contain liquids of packing group I and II there must be sufficient inert absorbent to absorb any spillage *.

-

* unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic.

STORAGE INCOMPATIBILITY

- Reacts vigorously with alkalis.
- Contact with acids produces toxic fumes.
- Fluosilicates (silicofluorides) are incompatible with strong acids, alkaline materials, iron containing materials. They may react with strong mineral acids to liberate highly toxic and corrosive hydrogen fluoride or hydrofluoric acid.
- Fluorosilicates are often weak oxidisers or reducing agents. They slowly react with water to produce silicic acid and hydrogen fluoride. The more soluble fluosilicates are generally neither strongly acidic or basic.
- Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride.
- These trifluorides are hypergolic oxidisers. They ignites on contact (without external source of heat or ignition) with recognised fuels - contact with these materials, following an ambient or slightly elevated temperature, is often violent and may produce ignition.
- The state of subdivision may affect the results.

Avoid reaction with hydrogen fluoride and silicon tetrafluoride gas.

STORAGE REQUIREMENTS

- Plastic bag
- NOTE: Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.
- Store in original containers.

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)

(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 7 of 14

Section 7 - HANDLING AND STORAGE

- Keep containers securely sealed.
- 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



X



X



+



X



X



+

+: May be stored together

O: May be stored together with specific preventions

X: Must not be stored together

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA mg/m ³
Australia Exposure Standards	sodium fluorosilicate (Fluorides (as F))	2.5

MATERIAL DATA

SODIUM FLUOROSILICATE:

■ 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.

For fluorides:

Based on a study in which the threshold for minimum increase in bone density due to fluoride exposure was 3.38 mg/m³ (as fluoride), the present TLV-TWA has been adopted to prevent irritant effects and disabling bone changes. There is also support for the proposition that occupational exposure below the TLV will have no adverse effect on pregnant women or off-spring. IARC has classified fluorides in drinking water as Group 3 carcinogens; i.e. Not classifiable as to its carcinogenicity to humans. Equivocal evidence of carcinogenic activity (osteosarcoma) has been found in male rats administered sodium fluoride in drinking water. (0-175 ppm) Evidence was not found in female rats or in male or female mice.

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)
(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 8 of 14

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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 lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent].

HANDS/FEET

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

The selection of the 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.
- 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.

OTHER

- Overalls.
- Eyewash unit.
- Barrier cream.
- Skin cleansing cream.

RESPIRATOR

- Particulate. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

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

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)

(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 9 of 14

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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.

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.

An approved self contained breathing apparatus (SCBA) may be required in some situations.

Provide adequate ventilation in warehouse or closed storage area.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

White, granular powder, free-flowing, odourless, tasteless. Partially soluble in cold water, i.e. 0.065% @ 17 C.; more soluble in hot water, insoluble in alcohol.

PHYSICAL PROPERTIES

Solid.

State	Divided solid	Molecular Weight	188.05
Melting Range (°C)	Decomposes	Viscosity	Not Applicable
Boiling Range (°C)	Not available.	Solubility in water (g/L)	Partly Miscible
Flash Point (°C)	Not Applicable	pH (1% solution)	3.5 approx.
Decomposition Temp (°C)	Not Applicable	pH (as supplied)	Not applicable
Autoignition Temp (°C)	Not available.	Vapour Pressure (kPa)	Negligible @ 20
Upper Explosive Limit (%)	Not applicable	Specific Gravity (water=1)	2.68
Lower Explosive Limit (%)	Not applicable	Relative Vapour Density (air=1)	Not applicable
Volatile Component (%vol)	Negligible	Evaporation Rate	Not applicable

Section 10 - STABILITY AND REACTIVITY

CONDITIONS CONTRIBUTING TO INSTABILITY

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

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)

(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 10 of 14

Section 11 - TOXICOLOGICAL INFORMATION

SWALLOWED

■ Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual. Ingestion may cause excessive salivation, thirst, stomach and intestinal irritation, nausea, vomiting, diarrhoea, abdominal pain, shortness of breath, weak irregular pulse and fast heart rate. Headaches, difficulty speaking, disturbed colour vision, muscle weakness, convulsions, loss of consciousness, numbness and cramps of the palms, feet, and legs may occur as well as damage to the liver and kidney, bleeding and low calcium levels, and death. There have been cases of accidental or suicidal poisonings by ingestion of known or unknown amounts of sodium, magnesium, zinc or other fluosilicates.

Fluoride causes severe loss of calcium in the blood, with symptoms appearing several hours later including painful and rigid muscle contractions of the limbs. Cardiovascular collapse can occur and may cause death with increased heart rate and other heart rhythm irregularities. The brain and kidneys may be affected. Other toxic effects include headache, increased saliva output, jerking of the eyeball and dilated pupils, lethargy, stupor, coma and rarely, convulsions.

EYE

■ There is evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Severe inflammation may be expected with pain. There may be damage to the cornea. Unless treatment is prompt and adequate there may be permanent loss of vision. Conjunctivitis can occur following repeated exposure.

Fluosilicates may produce severe irritation of the eyes; effects may be delayed.

SKIN

■ Skin contact with the material may produce toxic effects; systemic effects may result following absorption. The material may cause mild but significant inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.

Local lesions may arise as a result of contact with fluosilicates, which irritate the skin. Contact with skin causes rash, redness, and burning, sometimes followed by ulcer formation. Boils may occur on normal skin. Open cuts, abraded or irritated skin should not be exposed to this material.

Solution of material in moisture on the skin, or perspiration, may markedly increase skin corrosion and accelerate tissue destruction.

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.

INHALED

■ Inhalation of dusts, generated by the material, during the course of normal handling, may produce toxic effects.

The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

Inhalation of small amounts of dust or fume over long periods may cause poisoning.

Inhalation of fluosilicate-containing dusts or vapour may cause severe airway irritation and burns. Effects may not be immediately apparent, especially with dilute solutions. Symptoms may include coughing, sneezing, chest tightness, and difficulty in breathing. Inhaling excessive amounts may result in severe inflammation of the lung, which may be fatal.

Acute effects of fluoride inhalation include irritation of nose and throat, coughing and chest discomfort. A single acute over-exposure may even cause nose bleed. Pre-existing respiratory conditions such as emphysema, bronchitis may be aggravated by exposure. Occupational asthma may result from exposure.

CHRONIC HEALTH EFFECTS

■ Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.

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.

Long term over-exposure to fluosilicates may result in a condition called fluorosis.

Extended exposure to inorganic fluorides causes fluorosis, which includes signs of joint pain and stiffness, tooth discolouration, nausea and vomiting, loss of appetite, diarrhoea or constipation, weight loss, anaemia, weakness and general unwellness. There may also be frequent urination and thirst. Redness, itchiness and

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)

(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 11 of 14

Section 11 - TOXICOLOGICAL INFORMATION

allergy-like inflammation of the skin and mouth cavity can occur. The central nervous system may be involved. Chronic inhalation exposure may result in nasal ulceration and/or perforation of nasal septum.

TOXICITY AND IRRITATION

SODIUM FLUOROSILICATE:

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

TOXICITY

Oral (rat) LD50:125 mg/kg

IRRITATION

Skin (rabbit):500 mg - Mild

Eye (rabbit):100 mg - SEVERE

Eye (rabbit):100 mg/4 s - SEVERE

■ 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 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. The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

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.

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

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

CARCINOGEN

sodium
fluorosilicate

International
Agency for
Research on Cancer
(IARC) - Agents
Reviewed by the
IARC Monographs

Group

3

Not classifiable
as to its
carcinogenicity
to humans

Section 12 - ECOLOGICAL INFORMATION

SODIUM FLUOROSILICATE:

■ For Fluorides: Small amounts of fluoride have beneficial effects however; excessive intake over long periods may cause dental and/or skeletal fluorosis. Fluorides are absorbed by humans following inhalation of workplace and ambient air that has been contaminated, ingestion of drinking water and foods and dermal contact. Populations living in areas with high fluoride levels in groundwater may be exposed to higher levels of fluorides in their drinking water or in beverages prepared with the water. Among these populations, outdoor labourers, people living in hot climates, and people with excessive thirst will generally have the greatest daily intake of fluorides because they consume greater amounts of water.

Atmospheric Fate: Both hydrogen fluoride and particulate fluorides will be transported in the atmosphere and deposited on land or water by wet and dry deposition. Non-volatile inorganic fluoride particulates are removed from the atmosphere via condensation or nucleation processes. Fluorides adsorbed on particulate matter in the atmosphere are generally stable and are not readily hydrolyzed, although they may be degraded by radiation if they persist in the atmosphere. Fluorine and the silicon fluorides (fluosilicates, silicofluorides) are hydrolyzed in the atmosphere to form hydrogen fluoride. Hydrogen fluoride may combine with water vapour to produce an aerosol or fog of aqueous hydrofluoric acid. Inorganic fluoride compounds, with the exception of sulfur hexafluoride, are not expected to remain in the troposphere for long periods or to migrate to the stratosphere. Estimates of the residence time of sulfur hexafluoride in the atmosphere

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)

(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 12 of 14

Section 12 - ECOLOGICAL INFORMATION

range from 500 to several thousand years. Fluoride in aerosols can be transported over large distances by wind or as a result of atmospheric turbulence. Fluorosilicic acid and hydrofluoric acid in high aquatic concentrations such as may be found in industrial waste ponds may volatilize, releasing silicon tetrafluoride and hydrogen fluoride into the atmosphere. Soluble inorganic fluorides may also form aerosols at the air/water interface or vaporize into the atmosphere whereas undissolved species generally undergo sedimentation.

Terrestrial Fate: Soils - Atmospheric fluorides may be transported to soils and surface waters through both wet and dry deposition processes where they may form complexes and bind strongly to soil and sediment. Solubilisation of inorganic fluorides from minerals may also be enhanced by the presence of bentonite clays and humic acid. Factors that influence the mobility of inorganic fluorides in soil are pH and the formation of aluminium and calcium complexes. In more acidic soils, concentrations of inorganic fluoride were considerably higher in the deeper horizons. The low affinity of fluorides for organic material results in leaching from the more acidic surface horizon and increased retention by clay minerals and silts in the more alkaline, deeper horizons. The maximum adsorption of fluoride to soil was reported to occur at pH 5.5. In acidic soils with pH below 6, most of the fluoride is in complexes with either aluminium or iron. Fluoride in alkaline soils at pH 6.5 and above is almost completely fixed in soils as calcium fluoride, if sufficient calcium carbonate is available. Fluoride is extremely immobile in soil.

Aquatic Fate: Fresh Water: - In water, the transport and transformation of inorganic fluorides are influenced by pH, water hardness and the presence of ion-exchange materials such as clays. In natural water, fluoride forms strong complexes with aluminium in water, and fluorine chemistry in water is largely regulated by aluminium concentration and pH. Below pH 5, fluoride is almost entirely complexed with aluminium and consequently, the concentration of free F⁻ is low. Once dissolved, inorganic fluorides remain in solution under conditions of low pH and hardness and in the presence of ion-exchange material. Sea Water - Fluoride forms stable complexes with calcium and magnesium, which are present in sea water. Calcium carbonate precipitation dominates the removal of dissolved fluoride from sea water. The residence time for fluoride in ocean sediment is calculated to be 2-3 million years.

Ecotoxicity: Fluorides have been shown to accumulate in animals that consume fluoride-containing foliage. However, accumulation is primarily in skeletal tissue and therefore, it is unlikely that fluoride will biomagnify up the food chain.

DO NOT discharge into sewer or waterways.

Aquatic Toxicity:

LC50 (Trout): 2-7 mg/L

LC50 (Mosquito Fish) 96h: 419 mg/L

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
sodium fluorosilicate	No Data Available	No Data Available	No Data Available	No Data Available

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. Shelf life considerations should also be applied in making decisions of this type. Note

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)

(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 13 of 14

Section 13 - DISPOSAL CONSIDERATIONS

that properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted.

- 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.

For chemical treatment of fluosilicates:

- Add slowly to a large container of water.
- Stir in an excess of soda ash and then slaked lime.
- Allow to stand for 24 hrs.
- Dispose of liquor and the precipitated sludge of calcium fluoride, according to the Local Waste Authority.
- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

Labels Required: TOXIC

HAZCHEM:

2X (ADG7)

ADG7:

Class or Division:	6.1	Subsidiary Risk:	None
UN No.:	2674	Packing Group:	III
Special Provision:	None	Limited Quantity:	5 kg
Portable Tanks & Bulk Containers - Instruction:	T1	Portable Tanks & Bulk Containers - Special Provision:	TP33
Packagings & IBCs - Packing Instruction:	P002 IBC08 LP02	Packagings & IBCs - Special Packing Provision:	B3

Name and Description: SODIUM FLUOROSILICATE

Land Transport UNDG:

Class or division:	6.1	Subsidiary risk:	None
UN No.:	2674	UN packing group:	III

Shipping Name:SODIUM FLUOROSILICATE

Air Transport IATA:

ICAO/IATA Class:	6.1	ICAO/IATA Subrisk:	None
UN/ID Number:	2674	Packing Group:	III

Special provisions: None

Shipping name:SODIUM FLUOROSILICATE

Maritime Transport IMDG:

IMDG Class:	6.1	IMDG Subrisk:	None
-------------	-----	---------------	------

SODIUM FLUOROSILICATE POWDER - UL GRADE (SODFLUSILPDR1000)
(Chemwatch name: SODIUM FLUOROSILICATE)

Chemwatch Independent Material Safety Data Sheet

Issue Date: 20-Jul-2012

A317LP

CHEMWATCH 22552

Version No:2.1.1.1

CD 2013/1 Page 14 of 14

Section 14 - TRANSPORTATION INFORMATION

UN Number:	2674	Packing Group:	III
EMS Number:	F- A, S- A	Special provisions:	None
Limited Quantities:	5 kg		
Shipping name:	SODIUM FLUOROSILICATE		

Section 15 - REGULATORY INFORMATION

Indications of Danger:

T Toxic

POISONS SCHEDULE S6

REGULATIONS

sodium fluorosilicate (CAS: 16893-85-9) is found on the following regulatory lists;

"Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm - Domestic water supply quality", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (IRRIG)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (STOCK)", "Australia - South Australia Controlled Substances (Poisons) Regulations - Schedule E: Schedule 2 poisons authorised to be sold by holder of a medicine sellers licence", "Australia Drinking Water Guideline Values For Physical and Chemical Characteristics", "Australia Exposure Standards", "Australia Hazardous Substances", "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "Australia New Zealand Food Standards Code - Maximum Residue Limits (Australia only) - Schedule 1", "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 2", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 3", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6", "FisherTransport Information", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Council of Chemical Associations (ICCA) - High Production Volume List", "International Maritime Dangerous Goods Requirements (IMDG Code) - Substance Index", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information", "The Australia Group Export Control List: Chemical Weapons Precursors", "United Nations Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved by Governments", "WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water"

Section 16 - 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.

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.

This document is copyright. Apart from any fair dealing for the purposes of private study, research, review or criticism, as permitted under the Copyright Act, no part may be reproduced by any process without written permission from CHEMWATCH. TEL (+61 3) 9572 4700.

Issue Date: 20-Jul-2012

Print Date: 20-May-2013

This is the end of the MSDS.