

SDS no. 27BPX73S • Version 1.0 • Date of issue: 2023-11-10

GHS Product identifier

Product name	SILICON
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SILICON METAL POWDER TG

Silicon powder

Alloying agent for steels, aluminium, bronze, copper, and iron (ferrosilicon); production of halogenated silanes; organosilicon compounds (silicone resins); silicon carbide; spring steels; deoxidizer in steel manufacture; semiconductor in integrated circuits, rectifiers, transistors, diodes, solar batteries, other solid state devices (single crystals doped with boron or phosphorus); special refractories.

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General hazard statement

Classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Flammable solids, Cat. 2

GHS label elements, including precautionary statements

Pictograms



Signal word

Warning

Hazard statement(s)

H228

Flammable solid

Precautionary statement(s)

P210

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P240

Ground and bond container and receiving equipment.

P241

Use explosion-proof [electrical/ventilating/lighting/...] equipment.

P280

Wear protective gloves/protective clothing/eye protection/face protection.

P370+P378

In case of fire: Use agents recommended in Section 5 of SDS for extinction

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight: 28.08

Components

Component	CAS no.	Concentration
Silicon (powder) (EC no.: 231-130-8)	7440-21-3	100 % (weight)
CLASSIFICATIONS: Flammable solids, Cat. 2. HAZARDS: H228 - Flammable solid.		

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice

First Aid Facilities: Maintain eyewash fountain in work area.

If inhaled

If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Immediately obtain medical aid if cough or other symptoms appear.

In case of skin contact

Immediately remove contaminated clothing and wash affected area with water for at least 15 minutes. Ensure contaminated clothing is washed before re-use. Seek medical advice /attention depending on the severity.

In case of eye contact

Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. In all cases of eye contamination it is a sensible precaution to seek medical advice.

If swallowed

Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek medical advice.

Most important symptoms/effects, acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of immediate medical attention and special treatment needed, if necessary

Treat symptomatically based on judgement of doctor and individual reactions of the patient.

For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor.

SECTION 5: Fire-fighting measures

Suitable extinguishing media

DO NOT USE WATER, FOAM or CO2.

Dousing a metallic fire with water may generate hydrogen gas, an extremely dangerous explosion hazard, particularly if fire is in a confined area (e.g. building, cargo hold, etc.)

Use DRY sand, dry chemical, graphite powder, dry sodium chloride based or or alcohol-resistant foam extinguishers.

Confining or smothering metal fire is preferable to applying water.

If safe to do so, move undamaged containers from the fire area.

Specific hazards arising from the chemical

May explode from heating, shock, friction or contamination. May be ignited by friction, heat, sparks or flame. Dust or fumes may form explosive mixtures with air. Will burn with intense heat. May re-ignite after fire is extinguished. Fire may produce irritating, poisonous and/or corrosive gases. Containers may explode when heated. May react explosively with water.

Special protective actions for fire-fighters

Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Eliminate all ignition sources (no smoking, flares, sparks or flame) within at least 25m. Do NOT touch or walk through spilled material. Stop leak if safe to do so. Prevent entry into waterways, drains, confined areas.

SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL.

Avoid contact with skin, eyes, nose, mouth. Do not breathe dust. Evacuate the area of all non-essential personnel.

Methods and materials for containment and cleaning up

Sweep up (avoid generating dust) and using clean non-sparking tools transfer to a clean, suitable, clearly labelled container for disposal in accordance with local regulations.

SECTION 7: Handling and storage

Precautions for safe handling

Avoid ingestion and inhalation of dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Minimize dust generation and accumulation. Keep containers closed when not in use. Work in fumehood and use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Wear suitable protective clothing. Contaminated clothing should be removed and washed before re-use. Wash hands and face thoroughly after working with material. Keep container dry.

Conditions for safe storage, including any incompatibilities

Keep away from heat and other sources of ignition. Keep in a cool, dry, well-ventilated place. Keep container tightly closed

SECTION 8: Exposure controls/personal protection

Control parameters

CAS: 7440-21-3

Silicon (powder)

AU/SWA (Australia): 10 mg/m³ TWA inhalation

Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Skin protection

Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Hand Protection: Ensure hand protection complies with AS 2161, Occupational protective gloves - Selection, use and maintenance.

Body protection

Footwear: Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.

Body Protection: Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Respiratory protection

Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Appearance	Dark brown powder.
Color	No data available.
Odor	Odourless.
Odor threshold	No data available.
Melting point/freezing point	1410 °C
Boiling point or initial boiling point and boiling range	2355 °C
Flammability	Flammable in powder form.
Lower and upper explosion limit/flammability limit	No data available.
Flash point	No data available.
Explosive properties	No data available.
Auto-ignition temperature	780C

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Decomposition temperature
Oxidizing properties
pH
Kinematic viscosity
Solubility

No data available.
No data available.
No data available.
No data available.
Solubility in Water: Insoluble Solubility in Organic Solvents:
Soluble in a mixture of nitric and hydrofluoric acids and in
alkalies. Insoluble in nitric acid, and hydrochloric acid.
No data available.
No data available.
No data available.
Specific Gravity: 2.329 (water = 1)
No data available.
No data available.

Partition coefficient n-octanol/water (log value)
Vapor pressure
Evaporation rate
Density and/or relative density
Relative vapor density
Particle characteristics

Supplemental information regarding physical hazard classes
No data available.

Further safety characteristics (supplemental)
No data available.

SECTION 10: Stability and reactivity

Reactivity
Stable under normal conditions of storage and handling.

Chemical stability
Stable.

Possibility of hazardous reactions
Hazardous Polymerization: Will not occur.

Conditions to avoid
Heat, ignition sources, incompatible materials.

Incompatible materials
Alkali carbonates, aluminium plus lead oxide, calcium, cesium carbide, chlorine, fluorine, sodium-potassium alloy, oxidizers, metallic halides, interhalogens, acids, strong bases, powdered metals, CoF₂, MnF₃, Rb₂C₂. When heated, will react with water or steam to produce hydrogen gas.

Hazardous decomposition products
Silicon dioxide and hydrogen gas.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Acute Toxicity - Oral: LD₅₀ (rat): 3160 mg/kg

Ingestion: Harmful if ingested. May cause gastroenteritis with abdominal pain, nausea, vomiting and diarrhea. Systemic effects may follow and may include ringing of the ears, dizziness, elevated blood pressure, blurred vision and tremors.

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Inhalation: Harmful if inhaled. May cause irritation to the mucous membranes and respiratory tract. Symptoms may be coughing, shortness of breath, sore throat and runny nose.

Skin corrosion/irritation

Causes irritation, redness, swelling, itching and pain.

Serious eye damage/irritation

May cause irritation, conjunctivitis, redness, swelling, itching, pain and tearing.

Respiratory or skin sensitization

No data available.

Germ cell mutagenicity

No data available.

Carcinogenicity

No data available.

Reproductive toxicity

No data available.

Summary of evaluation of the CMR properties

No data available.

Specific target organ toxicity (STOT) - single exposure

No data available.

Specific target organ toxicity (STOT) - repeated exposure

No data available.

Aspiration hazard

No data available.

Additional information

Chronic Effects: High concentrations of dust may cause pulmonary irritation. Powder of dust may cause eye irritation or conjunctivitis.

Silicon (powder): rat LD50 oral 3160mg/kg (3160mg/kg) FAO Nutrition Meetings Report Series. Vol. 53A, Pg. 21, 1974.
rat LDLo intraperitoneal 500mg/kg (500mg/kg) SENSE ORGANS AND SPECIAL SENSES: OTHER CHANGES: OLFACTION

SENSE ORGANS AND SPECIAL SENSES: OTHER: EYE

LUNGS, THORAX, OR RESPIRATION: RESPIRATORY STIMULATION National Technical Information Service. Vol. OTS0536164,

SECTION 12: Ecological information

Toxicity

No data available.

Persistence and degradability

No data available.

Bioaccumulative potential

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No data available.

Mobility in soil

No data available.

Results of PBT and vPvB assessment

No data available.

Endocrine disrupting properties

No data available.

Other adverse effects

No data available.

SECTION 13: Disposal considerations

Disposal methods

Product disposal

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Other disposal recommendations

Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)

UN Number: 1346

Class: 4.1

Packing Group: III

Proper Shipping Name: SILICON POWDER, AMORPHOUS

Hazchem emergency action code (EAC)

1[Z]

IMDG

UN Number: 1346

Class: 4.1

Packing Group: III

EMS Number:

Proper Shipping Name: SILICON POWDER, AMORPHOUS

IATA

UN Number: 1346

Class: 4.1

Packing Group: III

Proper Shipping Name: SILICON POWDER, AMORPHOUS

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

Australia SUSMP

Poison Schedule: NS

SECTION 16: Other information

Further information/disclaimer

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Preparation information

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Standard for the Uniform Scheduling of Medicines and Poisons, Commonwealth of Australia

National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'

Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', July 2020.

Safe Work Australia, 'National Guide for Classifying Hazardous Chemicals', July 2020.

Safe Work Australia, Workplace Exposure Standards for Airborne Contaminants, December 2019

Safe Work Australia, Hazardous Chemical Information System (HCIS), hcis.safeworkaustralia.gov.au

IATA, Dangerous Goods Regulations (DGR)

IMO, International Maritime Dangerous Goods Code (IMDG)