

F Highly flammable

- **Information pertaining to particular dangers for man and environment**

R 11 Highly flammable.

R 36/37/38 Irritating to eyes, respiratory system and skin.

4 First aid measures

- **After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

- **After skin contact**

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

- **After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

- **After swallowing** Seek immediate medical advice.

5 Fire fighting measures

- **Suitable extinguishing agents** Extinguishing powder. Do not use water.

- **For safety reasons unsuitable extinguishing agents**

Water

Carbon dioxide

- **Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures

- **Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

- **Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

- **Measures for cleaning/collecting:**

Ensure adequate ventilation.

Keep away from ignition sources.

- **Additional information:**

See Section 7 for information on safe handling
See Section 8 for information on personal protection
equipment.
See Section 13 for disposal information.

7 Handling and storage

- **Handling**
- **Information for safe handling:**
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
- **Information about protection against explosions and fires:**
Keep ignition sources away.
Protect against electrostatic charges.
- **Storage**
- **Requirements to be met by storerooms and receptacles:**
Store in a cool location.
- **Information about storage in one common storage facility:**
Store away from oxidizing agents.
Store away from halogens.
Store away from water/moisture.
Do not store together with acids.
- **Further information about storage conditions:**
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.

8 Exposure controls and personal protection

- **Additional information about design of technical systems:**
Properly operating chemical fume hood designed for
hazardous chemicals and having an average face velocity of
at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

Silicon

mg/m³

ACGIH TLV 10

Belgium TWA 10

Denmark TWA 10

France TWA 10

Ireland TWA 5 (respirable); 10 (inhalable)

Netherlands TWA 10
 Switzerland TWA 4
 United Kingdom TWA 4 (respirable dust); 10 (total inhalable dust)
 USA PEL 5 (respirable fraction); 15 (total dust)

- **Additional information:** No data

- **Personal protective equipment**

- **General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

- **Breathing equipment:**

Use suitable respirator when high concentrations are present.

- **Protection of hands:** Impervious gloves

- **Eye protection:** Safety glasses

- **Body protection:** Protective work clothing.

9 Physical and chemical properties:

- **Form:** Powder

- **Color:** Yellow brown

- **Odor:** Odorless

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	<u>Value/Range</u>	<u>Unit</u>	<u>Method</u>
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- **Change in condition**

- **Melting point/Melting range:** 1410. ° C

- **Boiling point/Boiling range:** 2355 ° C

- **Sublimation temperature / start:** Not determined

- **Flash point:** Not applicable

- **Flammability (solid, gaseous)** Highly flammable.

- **Ignition temperature:** Not determined

- **Decomposition temperature:** Not determined

- **Explosion limits:**
- **Lower:** Not determined
- **Upper:** Not determined
- **Vapor pressure:** Not determined
- **Density:** at 20 ° C 2.329 g/cm³
- **Solubility in / Miscibility with**
- **Water:** Insoluble

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:**
Decomposition will not occur if used and stored according to specifications.
- **Materials to be avoided:**
Oxidizing agents
Acids
Bases
Interhalogens
Halogens
Water/moisture
Alkali metals
- **Dangerous reactions** Reacts violently with oxidizing agents
- **Dangerous products of decomposition:** Metal oxide fume

11 Toxicological information

- **Acute toxicity:**
LD/LC50 values that are relevant for classification:

Oral: LD50: 3160 mg/kg (rat)
Irritation of eyes: mild: 3 mg (rbt)
- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Subacute to chronic toxicity:**
Elementary silicon is an inert material that seems to have little adverse effect on lungs and does not appear to produce significant organic disease or toxic effects when exposures are kept under reasonable control.

- **Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

12 Ecological information:

- **General notes:**

Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations

- **Product:**

- **Recommendation**

Consult state, local or national regulations for proper disposal.

- **Uncleaned packagings:**

- **Recommendation:**

Disposal must be made according to official regulations.

14 Transport information

- **DOT regulations:**

- **Hazard class:** 4.1

- **Identification number:** UN3089

- **Packing group:** III

- **Proper shipping name (technical name):**

(silicon Metal powders, flammable, n.o.s.
powder)

- **Land transport ADR/RID (cross-border)**

- **ADR/RID class:** 4.1 Flammable solids

- **Item:** 13c

- **Danger code (Kemler):** 40

- **UN-Number:** 3089

- **Description of goods:** Metal powders, flammable, n.o.s.
(silicon powder)

- **Maritime transport IMDG:**
- **IMDG Class:** 4.1
- **UN Number:** 3089
- **Packaging group:** III
- **Proper shipping name:** Metal powders, flammable, n.o.s.
(silicon powder)
- **Air transport ICAO-TI and IATA-DGR:**
- **ICAO/IATA Class:** 4.1
- **UN/ID Number:** 3089
- **Packaging group:** III
- **Proper shipping name:** Metal powders, flammable, n.o.s.
(silicon powder)

15 Regulations

- **Product related hazard information:**
- **Hazard symbols:**
Xi Irritant F Highly flammable
- **Risk phrases:**
11 Highly flammable.
36/37/38 Irritating to eyes, respiratory system and skin.
- **Safety phrases:**
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
- **National regulations**
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory.
- **Information about limitation of use:**
For use only by technically qualified individuals.

16 Other information:

Employers should use this information only as a supplement to

other information gathered by them, and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.