MATERIAL SAFETY DATA SHEET

Silicon Metal

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Applicable Standard: GHS Globally Harmonized System, REACH (EC 1907/2006), OSHA HCS
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SECTION 1: IDENTIFICATION OF SUBSTANCE AND COMPANY

1.1 Product Identification

- **Product Name**: Silicon Metal
- **Synonyms**: Metallurgical Grade Silicon, Industrial Silicon, Si-Metal
- **Model Grade**: 553 Grade
- **CAS Number**: 7440-21-3
- **EC Number**: 231-130-8
- **Chemical Formula**: Si
- **Molecular Weight**: 28.09 g/mol

1.2 Typical Chemical Composition (Standard)

- Silicon (Si): ≥98.5%
- Iron (Fe): ≤0.50%
- Aluminum (Al): ≤0.50%
- Calcium (Ca): ≤0.30%
- Impurity (P/B): ≤0.05% (Total)

1.3 Recommended Use and Restrictions

- **Recommended Use**: Alloy additive for aluminum/steel industry, raw material for chemical industry and refractory materials
- **Forbidden Use**: No non-specified industrial use, prohibited for food, pharmaceutical and daily chemical fields

1.4 Supplier Information

- **Company Name**: Reserved for filling
- **Address**: Reserved for filling
- **Contact Tel**: Reserved for filling
- **Emergency Tel**: Reserved for filling

SECTION 2: HAZARD IDENTIFICATION

2.1 GHS Classification

This substance is **not classified as hazardous substance** under GHS revised 9th edition, REACH and OSHA standards

- Physical Hazard: No classification
- Health Hazard: No classification
- Environmental Hazard: No classification

2.2 GHS Label Elements

- Hazard Pictogram: Not applicable
- Signal Word: Not applicable
- Hazard Statement: None
- Precautionary Statement: None

2.3 Special Hazard Description

- Fine silicon dust may cause mild respiratory irritation after long-term inhalation
- No flammable, explosive, corrosive or toxic risk under normal storage and transportation conditions

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Main Ingredient

Ingredient Name	CAS No.	Content	Hazardous Property
Silicon (Si)	7440-21-3	≥98.5%	Non-hazardous

3.2 Trace Impurities

Iron, aluminum, calcium and other trace minerals, no hazardous ingredients exceeding limit standards

SECTION 4: FIRST AID MEASURES

4.1 Inhalation

- Remove the exposed person to fresh air immediately
- Keep breathing unobstructed; if cough or mild discomfort occurs, rest in ventilated area
- Seek medical attention if persistent respiratory irritation

4.2 Skin Contact

- Rinse contact skin with plenty of clean running water
- Remove contaminated clothing, wash clothes before reuse
- No allergic or corrosive skin damage under normal contact

4.3 Eye Contact

- Flush eyes continuously with plenty of clean water for 10-15 minutes, keep eyelids open
- Do not rub eyes violently
- Seek medical treatment if foreign body sensation or redness persists

4.4 Ingestion

- Rinse mouth thoroughly with water, do not induce vomiting voluntarily
- Drink plenty of warm water to dilute
- Seek medical assistance if abdominal discomfort occurs

SECTION 5: FIRE FIGHTING MEASURES

5.1 Flammability

- Bulk silicon metal 553: **Non-flammable, non-combustible**
- Fine silicon dust: May form combustible dust mixture with air under high concentration

5.2 Suitable Extinguishing Media

- Ordinary fire: Water spray, dry powder, foam extinguisher
- Dust fire: Dry powder extinguisher (avoid direct high-pressure water flushing to prevent dust diffusion)

5.3 Unsuitable Extinguishing Media

No prohibited extinguishing media for conventional fire scenarios

5.4 Fire Hazard Characteristics

No combustion decomposition toxic gas under normal fire temperature; no explosion risk

5.5 Firefighter Protection

Wear standard fire protective clothing and breathing apparatus, avoid dust inhalation during fire fighting

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions

- Avoid dust inhalation and skin/eye direct contact
- Wear disposable dust mask and ordinary labor gloves during disposal

6.2 Environmental Precautions

- Prevent bulk materials from entering water body, soil and sewer pipeline
- Avoid dust diffusion causing ambient air pollution

6.3 Clean-up Methods

1. Small leakage: Collect scattered materials with clean tools, place in sealed packaging bags
2. Large leakage: Enclose the leakage area, clean up thoroughly, recycle usable materials
3. Clean the site with water after disposal to eliminate residual dust

6.4 Post-disposal Treatment

No residual hazard after complete cleaning, restore normal site use

SECTION 7: HANDLING AND STORAGE

7.1 Handling Precautions

- Operate in well-ventilated workplace, reduce dust generation
- Avoid violent collision, friction and dust flying
- Do not eat, drink or smoke during operation
- Follow industrial operation specifications to avoid long-term dust exposure

7.2 Storage Conditions

- Store in dry, ventilated, clean indoor warehouse
- Keep away from moisture, rain, high temperature and open fire
- Isolated storage with strong oxidants, acids and corrosive substances
- Stack neatly, prevent extrusion damage of packaging
- Storage temperature: 0℃~40℃, relative humidity ≤80%

7.3 Packaging Storage Requirements

Standard ton bag packaging, sealed storage, avoid long-term exposure to air moisture

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Exposure Limit Standards

No occupational exposure limit specified for silicon metal by international occupational health standards

8.2 Engineering Controls

- Equip workplace with natural ventilation and mechanical dust removal equipment
- Keep production and handling area air circulating

8.3 Personal Protective Equipment (PPE)

- Respiratory Protection: Wear dust mask when operating in dusty environment
- Skin Protection: Wear ordinary labor protective gloves and work clothes
- Eye Protection: Wear dust-proof goggles in dust-intensive operation
- Body Protection: Standard industrial labor protective clothing

8.4 Hygiene Measures

- Wash hands and face thoroughly after operation
- Take off contaminated work clothes in time, separate from daily clothes
- Maintain good workplace hygiene habits

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Basic Physical Properties

- Appearance: Silver-gray metallic lump/crushed particle
- Odor: Odorless
- Melting Point: 1414℃
- Boiling Point: 2355℃
- Density: 2.33 g/cm³ (20℃)
- Solubility in Water: Insoluble in water
- Volatility: Non-volatile at normal temperature
- PH Value: Neutral (insoluble in water)

9.2 Chemical Properties

- Stable chemical property under normal temperature and pressure
- No reaction with water, dilute acid and dilute alkali at room temperature
- Reacts with strong oxidants and strong alkali under high temperature
- No polymerization reaction, no decomposition hazard

SECTION 10: STABILITY AND REACTIVITY

10.1 Chemical Stability

Stable under normal storage, transportation and ambient conditions

10.2 Hazardous Reaction Possibility

No spontaneous combustion, explosion or violent reaction risk

10.3 Conditions to Avoid

High temperature, open fire, long-term damp environment, contact with strong oxidants

10.4 Incompatible Substances

Strong oxidants, concentrated strong alkali, fluorine-containing strong corrosive substances

10.5 Hazardous Decomposition Products

No toxic and harmful decomposition products under normal conditions; no hazardous polymer

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Acute Toxicity

No acute oral, dermal and inhalation toxicity data; non-toxic grade substance

11.2 Irritation

- Skin: No irritation to human skin
- Eye: Fine dust may cause mild temporary eye irritation

11.3 Long-term Exposure Hazard

Long-term inhalation of high-concentration silicon dust may cause mild respiratory discomfort, no occupational disease risk

11.4 Other Toxicity

No sensitization, mutagenicity, carcinogenicity and reproductive toxicity confirmed by international test data

SECTION 12: ECOLOGological INFORMATION

12.1 Ecotoxicity

Low ecological hazard, no toxic effect on aquatic organisms and soil organisms

12.2 Bioaccumulation

No bioaccumulation in organisms

12.3 Degradability

Inert inorganic substance, stable in natural environment, no environmental degradation hazard

12.4 Environmental Impact

No ozone depletion, greenhouse effect and environmental pollution risk under normal use

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Method

- Recyclable residual materials: Recycle and reuse through industrial recovery channels
- Unusable waste: Dispose in accordance with local industrial solid waste management regulations

13.2 Disposal Precautions

- Prohibit random dumping into water body, farmland and living garbage station
- Disposal personnel shall wear basic labor protection equipment
- Follow local environmental protection laws and international waste disposal standards

SECTION 14: TRANSPORT INFORMATION

14.1 UN Number: None

14.2 Proper Shipping Name: Silicon Metal

14.3 Transport Hazard Class: Non-dangerous goods

14.4 Packaging Category: Not applicable

14.5 Marine Pollutant: No

14.6 Transport Precautions

1. Applicable for sea, land and air conventional transportation
2. Keep goods sealed during transportation, prevent rain, moisture and dust leakage
3. Prohibit mixed transportation with strong oxidants, corrosive and flammable dangerous goods
4. Avoid violent vibration, extrusion and high-temperature exposure during transportation

5. Vehicle warehouse shall be kept dry and ventilated

SECTION 15: REGULATORY INFORMATION

This MSDS complies with the following international and domestic standard specifications:

1. UN GHS Globally Harmonized System of Classification and Labelling of Chemicals
2. EU REACH Regulation (EC 1907/2006) Annex II
3. OSHA HCS Hazard Communication Standard (USA)
4. GB/T 16483-2008, GB/T 17519-2013 (China Standard)

The product is not included in international hazardous chemical control catalogs, no special supervision restrictions for export and transportation

SECTION 16: OTHER INFORMATION

16.1 Revision Statement

This MSDS is compiled based on the latest international chemical safety standards and product test data, version V1.0

16.2 Disclaimer

All contents in this document are for safety operation, storage, transportation and emergency guidance only. The information is true and accurate based on current data, but does not constitute any quality guarantee and technical specification commitment. Users shall judge and use according to actual application scenarios.

16.3 Usage Scope

Suitable for global international trade, customs declaration, warehouse management, factory safety production and customer inquiry