



The David J. Joseph Company

Metals Group

1. Identification

Product identifier SILICOMANGANESE

Other means of identification

Product code SiMn

Recommended use Metal Alloys
Steel Manufacture

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Supplier

Company name David J Joseph Company
Address 300 Pike St, Cincinnati, OH 45202
Website www.DJJ.com

Non-Emergency Contact DJJ Safety Department

Non-Emergency Phone Number (513) 419-6200

Emergency Contact DJJ
Emergency Phone Number (513) 562-1699

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement The product does not meet the criteria for classification.

Precautionary statement

Prevention Not applicable.

Response Not applicable.

Storage Not applicable.

Disposal Not applicable.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

| Chemical name | CAS number | % |
|---------------|------------|---------|
| Manganese | 7439-96-5 | > 60 |
| Iron | 7439-89-6 | 10 - 20 |
| Silicon | 7440-21-3 | 10 - 20 |
| Carbon | 7440-44-0 | < 3 |
| Phosphorus | 7723-14-0 | < 1 |

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

| | |
|---|--|
| Inhalation | In case of exposure to fumes or particulates: Move to fresh air. Get medical attention if discomfort persists. |
| Skin contact | Contact with dust: Wash with soap and water. Get medical attention if irritation develops or persists. |
| Eye contact | Do not rub eyes. Remove any contact lenses. Flush eyes thoroughly with water, taking care to rinse under eyelids. If irritation persists, continue flushing for 15 minutes, rinsing from time to time under eyelids. If discomfort continues, consult a physician. |
| Ingestion | Rinse mouth thoroughly if dust is ingested. Do not induce vomiting. Get medical attention if any discomfort continues. |
| Most important symptoms/effects, acute and delayed | No specific symptoms noted. |
| Indication of immediate medical attention and special treatment needed | Treat symptomatically. |
| General information | Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. |

5. Fire-fighting measures

| | |
|--|---|
| Suitable extinguishing media | Special powder against metal fires. Dry sand. |
| Unsuitable extinguishing media | Do not use water or halogenated extinguishing media. |
| Specific hazards arising from the chemical | Fire or high temperatures create: Metal oxides. |
| Special protective equipment and precautions for firefighters | Self-contained breathing apparatus and full protective clothing must be worn in case of fire. |
| Fire fighting equipment/instructions | Move container from fire area if it can be done without risk. Cool containers with flooding quantities of water until well after fire is out. |
| General fire hazards | Fine dust may form explosive mixtures with air but the powder is not combustible. |

6. Accidental release measures

| | |
|--|---|
| Personal precautions, protective equipment and emergency procedures | Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet. |
| Methods and materials for containment and cleaning up | Avoid the generation of dusts during clean-up. Sweep up or vacuum up spillage and collect in suitable container for disposal. Vacuums used for this purpose should be equipped with HEPA filters. |
| Environmental precautions | None. |

7. Handling and storage

| | |
|---|--|
| Precautions for safe handling | Avoid inhalation of dust and contact with skin and eyes. Avoid generation and spreading of dust. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Avoid feeding dusty or wet alloy to steelmaking / alloymaking furnaces. |
| Conditions for safe storage, including any incompatibilities | Store away from incompatible materials (See Section 10). Store in a cool, dry, well-ventilated place. |

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

| Components | Type | Value | Form |
|----------------------------|---------|---|-------------------------------------|
| Manganese (CAS 7439-96-5) | Ceiling | 5 mg/m ³ | Fume. |
| Phosphorus (CAS 7723-14-0) | PEL | 0.1 mg/m ³ | |
| Silicon (CAS 7440-21-3) | PEL | 5 mg/m ³ 15 mg/m ³ | Respirable fraction. Total dust. |

US. OSHA Table Z-3 (29 CFR 1910.1000)

| Components | Type | Value | Form |
|------------------------|------|---|-------------------------------------|
| Carbon (CAS 7440-44-0) | TWA | 5 mg/m ³ 15 mg/m ³ | Respirable fraction. Total dust. |

US. ACGIH Threshold Limit Values

| Components | Type | Value | Form |
|---------------------------|------|---|---|
| Manganese (CAS 7439-96-5) | TWA | 0.1 mg/m ³ 0.02 mg/m ³ | Inhalable fraction. Respirable fraction. |

US. NIOSH: Pocket Guide to Chemical Hazards

| Components | Type | Value | Form |
|----------------------------|------|---|----------------------|
| Manganese (CAS 7439-96-5) | STEL | 3 mg/m ³ | Fume. |
| | TWA | 1 mg/m ³ | Fume. |
| Phosphorus (CAS 7723-14-0) | TWA | 0.1 mg/m ³ | |
| Silicon (CAS 7440-21-3) | TWA | 5 mg/m ³ 10 mg/m ³ | Respirable. Total |

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment if high dust/air concentrations are possible.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear dust-resistant safety goggles where there is danger of eye contact.

Skin protection

Hand protection

Wear suitable protective gloves to prevent cuts and abrasions. Suitable gloves can be recommended by the glove supplier.

Other

Wear suitable protective clothing. Wear suitable protective gloves to prevent cuts and abrasions.

Respiratory protection

In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Wash hands after handling. Routinely wash work clothing and protective equipment to remove contaminants. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Physical state

Solid.

Form

Metallic lumps.

Color

Silver.

Odor

Odorless.

Odor threshold

Not applicable.

pH

Not applicable.

Melting point/freezing point

2462 °F (1350 °C)

| | |
|---|--|
| Initial boiling point and boiling range | Not available. |
| Flash point | Not applicable. |
| Evaporation rate | Not applicable. |
| Flammability (solid, gas) | Non flammable. |
| Upper/lower flammability or explosive limits | |
| Flammability limit - lower (%) | Not applicable. |
| Flammability limit - upper (%) | Not applicable. |
| Vapor pressure | Not available. |
| Vapor density | Not applicable. |
| Relative density | 6.3 (20 °C) |
| Solubility(ies) | |
| Solubility (water) | Insoluble |
| Partition coefficient (n-octanol/water) | Not applicable for inorganic substances. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |
| Viscosity | Not applicable. |
| Other information | |
| Explosive properties | Not explosive. |
| Oxidizing properties | Not oxidizing. |

10. Stability and reactivity

| | |
|---|---|
| Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| Chemical stability | Massive metal is stable and non reactive under normal conditions of use, storage and transport. |
| Possibility of hazardous reactions | Hazardous polymerization does not occur. |
| Conditions to avoid | Dust generation. Avoid heat, sparks, open flames and other ignition sources. |
| Incompatible materials | Oxidizing agents. Peroxides. Acids. Alkalis. Water. |
| Hazardous decomposition products | During combustion: Metal oxides. |

11. Toxicological information

Information on likely routes of exposure

| | |
|---------------------|---|
| Inhalation | High concentrations of dust and fumes may irritate the throat and respiratory system and cause coughing. |
| Skin contact | Dust may irritate skin. |
| Eye contact | Dust may irritate the eyes. |
| Ingestion | May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure. |

Symptoms related to the physical, chemical and toxicological characteristics No specific symptoms noted.

Information on toxicological effects

Acute toxicity Expected to be a low hazard for usual industrial or commercial handling by trained personnel.

| Components | Species | Test Results |
|------------------------|---------|---------------|
| Carbon (CAS 7440-44-0) | | |
| <u>Acute</u> | | |
| Oral | | |
| LD50 | Rat | > 10000 mg/kg |

| Components | Species | Test Results |
|---|---|------------------------------------|
| Manganese (CAS 7439-96-5) | | |
| Acute | | |
| Inhalation | | |
| LC50/LC90 | Rat | > 1500 mg/m ³ , 4 hours |
| Oral | | |
| LD50 | Rat | 9000 mg/kg |
| Silicon (CAS 7440-21-3) | | |
| Acute | | |
| Oral | | |
| LD50 | Rat | 3160 mg/kg |
| Skin corrosion/irritation | May cause irritation through mechanical abrasion. | |
| Serious eye damage/eye irritation | May cause irritation through mechanical abrasion. | |
| Respiratory or skin sensitization | | |
| Respiratory sensitization | Due to lack of data the classification is not possible. | |
| Skin sensitization | Due to lack of data the classification is not possible. | |
| Germ cell mutagenicity | Due to lack of data the classification is not possible. | |
| Carcinogenicity | Due to lack of data the classification is not possible. | |
| IARC Monographs. Overall Evaluation of Carcinogenicity | | |
| Not listed. | | |
| NTP Report on Carcinogens | | |
| Not listed. | | |
| OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) | | |
| Not regulated. | | |
| Reproductive toxicity | Due to lack of data the classification is not possible. | |
| Specific target organ toxicity - single exposure | Due to lack of data the classification is not possible. | |
| Specific target organ toxicity - repeated exposure | Due to lack of data the classification is not possible. | |
| Aspiration hazard | Due to the physical form of the product it is not an aspiration hazard. | |
| Further information | Chronic exposure or exposure to high concentrations to some manganese compounds via inhalation has been reported to affect the central nervous system. Symptoms can include hand tremors, behavioral changes and slower reaction times. | |

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

| Components | Species | Test Results |
|----------------------------|---------|--------------------------------|
| Phosphorus (CAS 7723-14-0) | | |
| Aquatic | | |
| Crustacea | EC50 | Water flea (Daphnia magna) |
| | | 0.025 - 0.037 mg/l, 48 hours |
| Fish | LC50 | Bluegill (Lepomis macrochirus) |
| | | 0.002 - 0.006 mg/l, 96 hours |
| | | 0.001 - 0.004 mg/l, 96 hours |

Persistence and degradability Not relevant for inorganic substances.

Bioaccumulative potential The product is not bioaccumulating.

Mobility in soil This product has very low solubility in water and low mobility in the environment.

Mobility in general This product has a very low solubility in water and will sediment in water systems.

Other adverse effects None known.

13. Disposal considerations

Disposal instructions Dispose of in accordance with all applicable regulations.

Hazardous waste code Not regulated.

Waste from residues / unused products Recover and recycle, if practical. Dispose of in accordance with local regulations.

Contaminated packaging Dispose in accordance with all applicable regulations.

14. Transport information

DOT

UN number UN3077
UN proper shipping name Environmentally hazardous substances, solid, n.o.s.
Transport hazard class(es)
Class 9
Subsidiary risk -
Label(s) 9
Packing group III
Environmental hazards
Marine pollutant Yes
Special precautions for user Not available.
Special provisions 8, 146, 335, A112, B54, IB8, IP3, N20, T1, TP33
Packaging exceptions 155
Packaging non bulk 213
Packaging bulk 240

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable. This product is a solid. Therefore, bulk transport is governed by IMSBC code.

MARPOL Annex V: This product is not considered harmful to the marine environment (HME).

15. Regulatory information

US federal regulations This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Manganese compounds (CAS -) LISTED

Phosphorus (CAS 7723-14-0) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

| Chemical name | CAS number | Reportable quantity (pounds) | Threshold planning quantity (pounds) | Threshold planning quantity, lower value (pounds) | Threshold planning quantity, upper value (pounds) |
|---------------|------------|------------------------------|--------------------------------------|---|---|
| Phosphorus | 7723-14-0 | 1 | 100 | | |

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

| Chemical name | CAS number | % by wt. |
|---------------|------------|----------|
| Manganese | 7439-96-5 | > 60 |
| Phosphorus | 7723-14-0 | < 1 |

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Manganese (CAS 7439-96-5)

Phosphorus (CAS 7723-14-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Phosphorus (CAS 7723-14-0) 80 %WT

DEA Exempt Chemical Mixtures Code Number

Phosphorus (CAS 7723-14-0) 6795

US state regulations California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US. Massachusetts RTK - Substance List

Manganese (CAS 7439-96-5)
Phosphorus (CAS 7723-14-0)
Silicon (CAS 7440-21-3)

US. New Jersey Worker and Community Right-to-Know Act

Manganese (CAS 7439-96-5)
Phosphorus (CAS 7723-14-0)
Silicon (CAS 7440-21-3)

US. Pennsylvania Worker and Community Right-to-Know Law

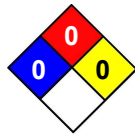
Manganese (CAS 7439-96-5)
Phosphorus (CAS 7723-14-0)
Silicon (CAS 7440-21-3)

US. Rhode Island RTK

Carbon (CAS 7440-44-0)
Manganese (CAS 7439-96-5)
Phosphorus (CAS 7723-14-0)
Silicon (CAS 7440-21-3)

16. Other information

NFPA ratings



List of abbreviations

LD50: Lethal Dose, 50%.
LC50: Lethal Concentration, 50%.
EC50: Effective Concentration, 50%.
HEPA: High efficiency particulate air.
NOAEL: No observed adverse effect level.
NOAEC: No Observed Adverse Effect Concentration.
CAS: Chemical Abstract Service number - used to uniquely identify chemical compounds.
mg/m³: Milligrams per Cubic Metre.
pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
Ppm: Parts Per Million.
PEL: Permissible Exposure Limit.
STEL: Short term exposure limit.
TWA: Time Weighted Average.
OEL: Occupational Exposure Limit.