

MATERIAL SAFETY DATA SHEET

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ADDRESS: 1374 EAST 28TH ST.
LORAIN OH 44055
440/246-6500
EMERGENCY NO: JACK YAKOVICH
440/246-6041
MSDS NUMBER: 003 CALCIUM SILICON BARIUM
DATE PREPARED: 01/01/2011

Section 1-Product Family or Name

Calcium-Silicon Alloys

Formula - CaSi

Products Covered - Calcium-Silicon

Section 2-Physical Data

Appearance and Odor - Grey metallic. Odorless

Melting Pt. - 700 C to 935 C

Specific Gravity - 2.0 - 2.5

Solubility - Insoluble in water

Reactivity in Water - Calcium-Silicon Alloys may react slightly with water

Section 3-TLV Data on Principal Alloy Ingredients

Significant Ingredients	TLV
Calcium - 12-20	No TLV established
Silicon - 57-62	15mg/m3 as Silicon (OSHA)
Aluminum 0-1.6	10mg/m3 as Aluminum (ACGIH)
BARIUM 12-20	

Section 4-Fire and Explosion Hazard Data

Combustibility - Based upon combustibility tests, fine material is considered very active. Concentrations of alloy dust, when suspended in air, can be ignited, propagate flame readily, generate considerable pressure, and/or explode. Lump material is not combustible

Extinguishing Media - Class "D" fires - Use dry chemical, dry sand or Co2 to smother fire. Fire may also be isolated and allowed to burn itself out. Do not disturb burning metal while extinguishing the fire

Section 5-Health Hazard Data

First Aid Procedures - Inhalation - Remove from dusty area to fresh air

Skin Contact - No hazard associated with skin contact

Eye Contact - Flush with water to be sure that no particles remain in the eye

Effects of Overexposure - Acute - Alloys are of low toxicity in lump form and no residual injury is expected. High concentration of metallic dust may cause some irritation to eye, nose and throat

Chronic - Similar to acute. No residual injury is expected

OSHA and ACGIH classify dust of Calcium-Silicon alloys as a nuisance dust

There is no data to indicate that calcium silicon is a carcinogen.

Section 6-Reactivity Hazard Data

Stability - Stable in all sizes

Conditions to avoid - Prolonged contact with moisture during storage. Ventilation should be supplied in areas of extended storage. Avoid generation of airborne dusts.

Materials to avoid - Moisture, acids

Hazardous reaction/decomposition products - Small amounts of arsine, phosphine, and hydrogen may evolve if moisture is present.

Reaction with acids can produce silanes that will spontaneously ignite

Section 7-Spill, Leak or Disposal Information

Steps to be taken in case of spills - Avoid using compressed air to maneuver spills or leaks of fine material. Fine material should be swept up or vacuumed. No problem is associated with spills or leaks of lump material. Keep wet material separated from dry material

Waste disposal or repack information - Avoid repackaging wet material in sealed containers. Dispose of in accordance with applicable federal, state and local regulations.

Section 8-Employee Protection Information

Respiratory protection - In dusty areas, use NIOSH-approved Schedule 21C respirator

Eye protection - Subject to safety rules. Recommend wearing safety goggles

Ventilation - Local for dusty areas. Provide ventilation during storage or handling of moist material

Other clothing & equipment - Protective gloves are recommended during handling. Lump material may have sharp edges. As with other metal dusts avoid contamination of work clothing

Section 9-Additional Information

Handling/Storage - Exclude contact with moisture and acids as much as possible. Calcium-silicon alloys should be kept away from sparks, heat and open flames in a well-ventilated area

Milling - Special precautions, such as the use of inert atmosphere should be used when sizing to minus 8 mesh. Minimize and control dusty operations. Grinding wet material may be hazardous due to the possibility of hydrogen evolution.

Labeling - 30 mesh X down requires no special labeling.

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MATERIAL SAFETY DATA SHEET

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ADDRESS: 2115 WEST PARK DRIVE
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PHONE: 440/282-4646
EMERGENCY NO.: RICK TURMAN
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MSDS NO.: 040 MAGNESIUM/FERROSILICON
DATE PREPARED: JANUARY 6, 2000

Section 1 - Material Identification and Information

Magnesium (Free Metallic)	CAS #7439-95-4
Silicon Dioxide	CAS #69012-64-2
Aluminum Silicate	CAS #66402-68-4
Magnesium Oxide	CAS #1309-48-4
FerroSilicon	CAS #8049-17-0

Section 2 - Composition

Typical Analysis

Magnesium	30%
Silicon	53%
Aluminum	1% Max
Iron	16% Max

Section 3 - Physical/Chemical Characteristics

Melting Point -- 1202 degree F
Boiling Point - 2025 degree F
Flash Point - N/A
Flammability - Flammable metal
Auto Flammability - Magnesium may autoignite if damp or wet with water, especially if other flammable material is also present, i.e. paper, wood, rags.
Explosive Properties - Magnesium powder, dust or fines may explode if suspended in air.

Section 4 - Fire and Explosion Hazard Information

Autoignition temperature - Magnesium granules in air will sometimes autoignite at temperatures significantly less than their melting point of 1202 degrees F. The thinner and smaller the granule is, the easier it is to ignite.

Flammability Characteristics- Magnesium granules may be easily ignited by open flame. They will also autoignite when heated, even though kept below the melting point. Extreme care should be taken when fine particles are present.

Extinguishing Media - Water should NOT be used on a magnesium fire. Water acts as an accelerant. Smother burning magnesium by GENTLY covering with DRY agents only. Do not use foam, halogenated extinguishers or carbon dioxide.

Fire Fighting Procedures - Wear fire fighting glasses when fighting fires. Burning magnesium produces a very bright white flame. Apply extinguishing agents carefully to avoid disturbing or spreading the burning magnesium. Monitor carefully for flare-up. Use self-contained breathing apparatus.

Section 5 - Health Hazard Data

Exposure Guideline - No exposure guidelines have been established for magnesium metal. Treat magnesium powder or fines present as a nuisance dust with a low health hazard.

Respiratory Protection - None normally required. If dust is present, use an approved dust mask or respirator.

Skin Protection - Use gloves and clothing as required to protect skin from mechanical injury. The use of clothing without pockets or cuffs is recommended. flame resistant clothing is recommended.

Eye Protection - Safety glasses or goggles are recommended.,

Housekeeping - Prevent accumulations of magnesium powders or dust.

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ADDRESS: 1374 EAST 28TH ST.
LORAIN OH 44055
440/246-6500
EMERGENCY NO: JACK YAKOVICH
440/246-8041
MSDS NUMBER: 006 FERROSILICON
DATE PREPARED: 01/01/05

Section 1-Product Identification

Product Name: Ferrosilicon
Formula: FeSi CAS No. 8049-17-0

Section 2-Physical Data

Form: Product is in granule form
Solubility: Product is insoluble in water
Reactivity: Product may react slightly with water

Section 3-Composition

Typical Analysis (Wt % Range)

Silicon	45 - 86%
Iron	15 - 55%
Chromium	<0.5%

Section 4-Hazard Data

Part A - Air Contaminants

No permissible exposure limits or threshold limit values are known for Ferrosilicon. Values for ingredients in the product may be appropriate.

<u>Ingredient</u>	<u>PEL</u>	<u>TLV</u>
Chromium	1	.5
Silicon	10	10
Iron	10	5

Part B - Short Term Exposure

Ferrosilicon is a low toxicity in lump form. Overexposure to dusts may irritate eyes, nose or throat.

Part C - Long Term Exposure

Long term exposure to dust or to fumes emitted from the melting of ferrosilicon may cause obstructive lung disease such as chronic bronchitis.

Other Precautions: These products contain chromium in the metallic state. The International Agency for Research on cancer has determined that chromium and certain compounds are "causally associated with cancer in humans: but "the compounds responsible for the carcinogenic effect in humans cannot be specified." This requires that chromium in all forms be identified as carcinogenic under OSHA (29 CFR 1910.1200). The American Conference of Governmental Industrial Hygienists has reviewed the available data and concluded that chromium metal is not carcinogenic to humans.

Part D - Fire Hazard

Lump ferrosilicon is not flammable; very fine dust (minimum 325 mesh) may present an explosion hazard when airborne.

Class D Fires: Use dry chemical, sand or CO₂ to smother fire. Fire may be isolated and allowed to burn itself out. Do not disturb burning metal while extinguishing the fire.

Section 5-Precautions

A. Atmosphere:

Avoid generation of dust and collect fumes emitted by melting of ferrosilicon in compliance with OSHA regulations.

B. Spill and leak information:

Fine material should be swept or vacuumed. Spill or leak of lump material presents no hazard. Disposal should be in accordance with regulations that apply. Avoid placing wet material in sealed containers.

C. Employee:

Respirators, that are NIOSH approved in accordance with 29CFR 1010.134 to control inhalations of fine dust are necessary when exposure limits must be exceeded due to inadequate ventilation. Industrial hygiene monitoring is required to establish exposure levels.

Ferrosilicon may have sharp edges, therefore, protective gloves are recommended for handling.

Eye protection should conform with local safety regulations.

D. Stable as lump and dry:

When fine sized, avoid contact with moisture. Avoid contact with halogen acids. Ventilation should be supplied in areas of extended storage. Reacts rapidly in hydrofluoric/nitric acids as well as molten alkali. Small amounts of arsine, phosphine, and hydrogen may evolve if moisture is present.

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