

# CI-NiFe

## Safety Data Sheet

according to the Hazardous Products Regulation (WHMIS 2015) & OSHA Hazard Communication Standard 29 CFR 1910.1200 (HazCom 2012)  
Issue date: 4/30/2024 Version: 1.0

### SECTION 1: Identification

#### 1.1. Product identifier

Product form : Article  
Product name : CI-NiFe

#### 1.2. Recommended use and restrictions on use

Recommended use : SMAW (Shielded Metal Arc Welding)

#### 1.3. Supplier

##### Manufacturer

PrJSC Plasmatec  
18, Pravednykiv svitu Street  
Vynnytsia, 21036  
Ukraine  
T 38(067)433-54-64, 38(0432)55-49-71  
[quality@plasmatec.com.ua](mailto:quality@plasmatec.com.ua)

##### Supplier

Monolith Bison Inc  
#204, 40 Elizabeth Street  
Okotoks, AB, T1S 1B3  
Canada  
T +1 (368) 997-9960  
[sales@monolith-bison.ca](mailto:sales@monolith-bison.ca)

#### 1.4. Emergency telephone number

Emergency number : Europe: +38 (067) 433-1936; North America: +1 (368) 997-8889

### SECTION 2: Hazard identification

#### 2.1. Classification of the substance or mixture

##### Classification (GHS CA/US)

Carcinogenicity Category 1A  
Specific target organ toxicity (repeated exposure) Category 1  
Combustible Dust

May cause cancer  
Causes damage to organs through prolonged or repeated exposure  
May form combustible dust concentrations in air

#### 2.2. GHS Label elements, including precautionary statements

##### GHS CA/US labeling

Hazard pictograms (GHS CA/US) :



Signal word (GHS CA/US) :

Danger

Hazard statements (GHS CA/US) :

May form combustible dust concentrations in air  
May cause cancer  
Causes damage to organs through prolonged or repeated exposure

Precautionary statements (GHS CA/US) :

Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Do not breathe dust.  
Wash hands, forearms and face thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Wear protective gloves, protective clothing, eye protection, face protection.  
IF exposed or concerned: Get medical advice or attention.  
Store locked up.  
Dispose of contents and container to hazardous or special waste collection point, in accordance with local, regional, national or international regulation.

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Supplementary information : Under GHS, the product is classified as non-hazardous in its solid form. However, certain processes such as cutting, milling, grinding and welding could result in some hazardous material being emitted.

The classification information is for the hazardous elements which may be emitted during these processes.

### 2.3. Other hazards

Other hazards which do not result in classification : When this product is used in welding, the most important hazards are welding fumes, heat, radiation and electric shock. Electrical shock can kill. Arc rays can injure eyes and burn skin. Welding arcs and sparks can ignite combustibles and flammable materials. Overexposure to welding fumes and gases can be hazardous.

### 2.4. Unknown acute toxicity (GHS CA/US)

No additional information available

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Name	Product identifier	%
Barium carbonate	CAS-No.: 513-77-9	10 - 30
Carbonic acid, calcium salt (1:1)	CAS-No.: 471-34-1	5 – 10
Graphite	CAS-No.: 7782-42-5	5 – 10
Manganese	CAS-No.: 7439-96-5	1 – 5
Silicon	CAS-No.: 7440-21-3	0.1 – 2

Comments : The concentration ranges are provided due to batch-to-batch variability.

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures after inhalation : In solid form, not a normal route of exposure. However during further processing (welding, grinding, burning, etc.): Call a physician if symptoms develop or persist.

First-aid measures after skin contact : For skin burns from arc radiation, immediately flush with cold water. Get medical attention for burns or irritations that persist. For reddened or blistered skin, or thermal burns, obtain medical assistance immediately.

First-aid measures after eye contact : Arc rays can injure eyes. For radiation burns due to arc flash, obtain medical attention IMMEDIATELY. If dust or fumes get in eyes: Rinse cautiously with water for several minutes. Call a physician immediately.

First-aid measures after ingestion : Avoid eating and drinking when in contact with fluxes, metal fume or powder which can cause ingestion of particulates. Do not induce vomiting. If vomiting occurs have person lean forward. Never give anything by mouth to an unconscious person. Call a poison center or a doctor if you feel unwell.

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First-aid measures general : IF exposed or concerned: Get medical advice or attention. If you feel unwell, seek medical advice (show the label where possible). Medical personnel should be made aware of substance(s) involved and take measures for self protection. Show this safety data sheet to the doctor in attendance. Avoid contact with skin and eyes. Keep out of the reach of children.

### 4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : Short term exposure to fumes and gases from welding and other processes may result in metal fume fever, dizziness, nausea or dryness or irritation in the throat, nose or eyes. These emissions might also exacerbate pre-existing respiratory conditions like asthma or emphysema.

Long term exposure to fumes and gases could result in conditions such as siderosis (iron deposits in the lungs), impacts on the central nervous system effects, bronchitis and other pulmonary effects.

Symptoms/effects after skin contact : Causes skin irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin. May cause an allergic skin reaction.

Symptoms/effects after eye contact : Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Symptoms/effects after ingestion : May cause stomach distress, nausea or vomiting.

### 4.3. Immediate medical attention and special treatment, if necessary

Other medical advice or treatment : Treat symptomatically. Symptoms may be delayed.

## SECTION 5: Fire-fighting measures

### 5.1. Suitable extinguishing media

Suitable extinguishing media : Treat for surrounding material.

### 5.2. Unsuitable extinguishing media

Unsuitable extinguishing media : Do not use a water jet since it may cause the fire to spread.

### 5.3. Specific hazards arising from the hazardous product

Fire hazard : May form combustible dust concentrations in air. During fire, gases hazardous to health may be formed. In case of fire or explosion do not breathe fumes. As shipped, this product is nonflammable.

Explosion hazard : Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard. Welding arcs and sparks can ignite combustible and flammable materials. During fire, gases hazardous to health may be formed.

Hazardous decomposition products in case of fire : May include and are not limited to: oxides of carbon. irritating gases. Toxic fumes.

### 5.4. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Move containers from fire area if it can be done without personal risk.

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Keep unnecessary personnel away. For personal protection, see section 8 of the SDS. In the event of a significant spillage : Notify authorities if product enters sewers or public waters.

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### 6.2. Methods and materials for containment and cleaning up

Methods for cleaning up : Pick up spilled material and collect it in a suitable container for disposal. . Take up mechanically (sweeping, shoveling) and collect in suitable container for disposal. Clean contaminated surfaces with an excess of water. Minimize generation of dust.

### 6.3. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection"

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with skin and eyes. Do not breathe dust. Do not taste or swallow. Avoid dust formation. Ensure good ventilation of the work station. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Wear personal protective equipment. Floors, walls and other surfaces in the hazard area must be cleaned regularly.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Take off contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace.

### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep out of reach of children. Store tightly closed in a dry, cool and well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Store locked up.

Storage area : Store away from heat.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

<b>Carbonic acid, calcium salt (1:1) (471-34-1)</b>	
<b>Canada (Alberta) - Occupational Exposure Limits</b>	
OEL TWA	10 mg/m <sup>3</sup>
Notations and remarks	Occupational exposure limit is based on irritation effects and its adjustment to compensate for unusual work schedules is not required.
Regulatory reference	Alberta Regulation 191/2021
<b>Canada (Quebec) - Occupational Exposure Limits</b>	
VEMP (OEL TWA <sub>EV</sub> )	10 mg/m <sup>3</sup> (total dust)
Regulatory reference	S-2.1, r. 13 - Regulation respecting occupational health and safety
<b>Canada (Nunavut) - Occupational Exposure Limits</b>	
OEL TWA	10 mg/m <sup>3</sup> (Limestone)
OEL STEL	20 mg/m <sup>3</sup> (Limestone)
Regulatory reference	Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021)
<b>Canada (Northwest Territories) - Occupational Exposure Limits</b>	
OEL TWA	10 mg/m <sup>3</sup> (Limestone)
OEL STEL	20 mg/m <sup>3</sup> (Limestone)

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<b>Carbonic acid, calcium salt (1:1) (471-34-1)</b>	
Regulatory reference	Occupation Health and Safety Regulations R-039-2015 (R-013-2020)
<b>Canada (Saskatchewan) - Occupational Exposure Limits</b>	
OEL TWA	10 mg/m <sup>3</sup> (Limestone)
OEL STEL	20 mg/m <sup>3</sup> (Limestone)
Regulatory reference	The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10
<b>Canada (Yukon) - Occupational Exposure Limits</b>	
OEL TWA	30 mppcf 10 mg/m <sup>3</sup>
OEL STEL	20 mg/m <sup>3</sup>
<b>USA - NIOSH - Occupational Exposure Limits</b>	
NIOSH REL TWA	10 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable dust)
<b>Graphite (7782-42-5)</b>	
<b>Canada (Alberta) - Occupational Exposure Limits</b>	
OEL TWA	2 mg/m <sup>3</sup> (all forms except Graphite fibres-respirable)
Regulatory reference	Alberta Regulation 191/2021
<b>Canada (Quebec) - Occupational Exposure Limits</b>	
VEMP (OEL TWA EV)	2 mg/m <sup>3</sup> (containing no Asbestos and <1% Crystalline silica, except Graphite fibres-respirable dust)
Notations and remarks	Note 1: The standard corresponds to dust containing no asbestos and the percentage in crystalline silica is less than 1%
Regulatory reference	S-2.1, r. 13 - Regulation respecting occupational health and safety
<b>Canada (British Columbia) - Occupational Exposure Limits</b>	
OEL TWA	2 mg/m <sup>3</sup> (all forms except Graphite fibres-respirable)
Regulatory reference	OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC)
<b>Canada (Manitoba) - Occupational Exposure Limits</b>	
OEL TWA	2 mg/m <sup>3</sup> (all forms except Graphite fibers-respirable particulate matter)
Notations and remarks	TLV® Basis: Pneumoconiosis
Regulatory reference	ACGIH 2024
<b>Canada (New Brunswick) - Occupational Exposure Limits</b>	
OEL TWA	2 mg/m <sup>3</sup> (all forms except Graphite fibers-respirable fraction)
Notations and remarks	Pneumoconiosis
<b>Canada (Newfoundland and Labrador) - Occupational Exposure Limits</b>	
OEL TWA	2 mg/m <sup>3</sup> (all forms except Graphite fibers-respirable particulate matter)
Notations and remarks	TLV® Basis: Pneumoconiosis
Regulatory reference	ACGIH 2024
<b>Canada (Nova Scotia) - Occupational Exposure Limits</b>	
OEL TWA	2 mg/m <sup>3</sup> (all forms except Graphite fibers-respirable particulate matter)

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<b>Graphite (7782-42-5)</b>	
Notations and remarks	TLV® Basis: Pneumoconiosis
Regulatory reference	ACGIH 2024
<b>Canada (Nunavut) - Occupational Exposure Limits</b>	
OEL TWA	2 mg/m <sup>3</sup> (natural, all forms, except Graphite fibres-respirable fraction)
OEL STEL	4 mg/m <sup>3</sup> (natural, all forms, except Graphite fibres-respirable fraction)
Regulatory reference	Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021)
<b>Canada (Northwest Territories) - Occupational Exposure Limits</b>	
OEL TWA	2 mg/m <sup>3</sup> (natural, all forms, except Graphite fibres-respirable fraction)
OEL STEL	4 mg/m <sup>3</sup> (natural, all forms, except Graphite fibres-respirable fraction)
Regulatory reference	Occupation Health and Safety Regulations R-039-2015 (R-013-2020)
<b>Canada (Ontario) - Occupational Exposure Limits</b>	
OEL TWA	2 mg/m <sup>3</sup> (except Graphite fibres-respirable particulate matter)
Regulatory reference	Ontario Occupational Exposure Limits under Regulation 833
<b>Canada (Prince Edward Island) - Occupational Exposure Limits</b>	
OEL TWA	2 mg/m <sup>3</sup> (all forms except Graphite fibers-respirable particulate matter)
Notations and remarks	TLV® Basis: Pneumoconiosis
Regulatory reference	ACGIH 2024
<b>Canada (Saskatchewan) - Occupational Exposure Limits</b>	
OEL TWA	2 mg/m <sup>3</sup> (natural, except Graphite fibres-respirable fraction)
OEL STEL	4 mg/m <sup>3</sup> (natural, except Graphite fibres-respirable fraction)
Regulatory reference	The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10
<b>Canada (Yukon) - Occupational Exposure Limits</b>	
OEL TWA	20 mppcf 30 mppcf (synthetic) 10 mg/m <sup>3</sup> (synthetic)
<b>USA - ACGIH - Occupational Exposure Limits</b>	
ACGIH OEL TWA	2 mg/m <sup>3</sup> (all forms except graphite fibers-respirable particulate matter)
Remark (ACGIH)	TLV® Basis: Pneumoconiosis
Regulatory reference	ACGIH 2024
<b>USA - OSHA - Occupational Exposure Limits</b>	
OSHA PEL TWA [1]	15 mg/m <sup>3</sup> (synthetic-total dust) 5 mg/m <sup>3</sup> (synthetic-respirable fraction) 15 mppcf (natural-respirable dust)
OSHA PEL TWA [2]	15 mppcf
Remark (OSHA)	Table Z-3. CAS No. source: eCFR Table Z-1.
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-3 Mineral Dusts
<b>USA - IDLH - Occupational Exposure Limits</b>	
IDLH	1250 mg/m <sup>3</sup> (Graphite (natural))

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<b>Graphite (7782-42-5)</b>	
<b>USA - NIOSH - Occupational Exposure Limits</b>	
NIOSH REL TWA	2.5 mg/m <sup>3</sup> (natural-respirable dust)
<b>Manganese (7439-96-5)</b>	
<b>Canada (Alberta) - Occupational Exposure Limits</b>	
OEL TWA	0.2 mg/m <sup>3</sup>
Regulatory reference	Alberta Regulation 191/2021
<b>Canada (Quebec) - Occupational Exposure Limits</b>	
VEMP (OEL TWA/EV)	0.2 mg/m <sup>3</sup> (total dust and fume)
Regulatory reference	S-2.1, r. 13 - Regulation respecting occupational health and safety
<b>Canada (British Columbia) - Occupational Exposure Limits</b>	
OEL TWA	0.2 mg/m <sup>3</sup> (total) 0.02 mg/m <sup>3</sup> (respirable)
Notations and remarks	R (Adverse reproductive effect)
Regulatory reference	OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC)
<b>Canada (Manitoba) - Occupational Exposure Limits</b>	
OEL TWA	0.02 mg/m <sup>3</sup> (respirable particulate matter) 0.1 mg/m <sup>3</sup> (inhalable particulate matter)
Notations and remarks	TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2024
<b>Canada (New Brunswick) - Occupational Exposure Limits</b>	
OEL TWA	0.02 mg/m <sup>3</sup> (respirable fraction) 0.1 mg/m <sup>3</sup> (inhalable fraction)
Notations and remarks	CNS impair; A4
<b>Canada (Newfoundland and Labrador) - Occupational Exposure Limits</b>	
OEL TWA	0.02 mg/m <sup>3</sup> (respirable particulate matter) 0.1 mg/m <sup>3</sup> (inhalable particulate matter)
Notations and remarks	TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2024
<b>Canada (Nova Scotia) - Occupational Exposure Limits</b>	
OEL TWA	0.02 mg/m <sup>3</sup> (respirable particulate matter) 0.1 mg/m <sup>3</sup> (inhalable particulate matter)
Notations and remarks	TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2024
<b>Canada (Nunavut) - Occupational Exposure Limits</b>	
OEL TWA	0.2 mg/m <sup>3</sup>
OEL STEL	0.6 mg/m <sup>3</sup>
Regulatory reference	Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021)

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<b>Manganese (7439-96-5)</b>	
<b>Canada (Northwest Territories) - Occupational Exposure Limits</b>	
OEL TWA	0.2 mg/m <sup>3</sup>
OEL STEL	0.6 mg/m <sup>3</sup>
Regulatory reference	Occupation Health and Safety Regulations R-039-2015 (R-013-2020)
<b>Canada (Ontario) - Occupational Exposure Limits</b>	
OEL TWA	0.2 mg/m <sup>3</sup>
Regulatory reference	Ontario Occupational Exposure Limits under Regulation 833
<b>Canada (Prince Edward Island) - Occupational Exposure Limits</b>	
OEL TWA	0.02 mg/m <sup>3</sup> (respirable particulate matter) 0.1 mg/m <sup>3</sup> (inhalable particulate matter)
Notations and remarks	TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2024
<b>Canada (Saskatchewan) - Occupational Exposure Limits</b>	
OEL TWA	0.2 mg/m <sup>3</sup>
OEL STEL	0.6 mg/m <sup>3</sup>
Regulatory reference	The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10
<b>Canada (Yukon) - Occupational Exposure Limits</b>	
OEL C	5 mg/m <sup>3</sup>
<b>USA - ACGIH - Occupational Exposure Limits</b>	
ACGIH OEL TWA	0.02 mg/m <sup>3</sup> (respirable particulate matter) 0.1 mg/m <sup>3</sup> (inhalable particulate matter)
Remark (ACGIH)	TLV® Basis: CNS impair. Notations: A4 (Not classifiable as a Human Carcinogen)
ACGIH chemical category	Not Classifiable as a Human Carcinogen
Regulatory reference	ACGIH 2024
<b>USA - OSHA - Occupational Exposure Limits</b>	
OSHA PEL C	5 mg/m <sup>3</sup> (fume)
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
<b>USA - IDLH - Occupational Exposure Limits</b>	
IDLH	500 mg/m <sup>3</sup>
<b>USA - NIOSH - Occupational Exposure Limits</b>	
NIOSH REL TWA	1 mg/m <sup>3</sup> (fume)
NIOSH REL STEL	3 mg/m <sup>3</sup>
<b>Silicon (7440-21-3)</b>	
<b>Canada (Quebec) - Occupational Exposure Limits</b>	
VEMP (OEL TWA EV)	10 mg/m <sup>3</sup> (containing no Asbestos and <1% Crystalline silica-total dust)
Notations and remarks	Note 1: The standard corresponds to dust containing no asbestos and the percentage in crystalline silica is less than 1%
Regulatory reference	S-2.1, r. 13 - Regulation respecting occupational health and safety

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<b>Silicon (7440-21-3)</b>	
<b>Canada (British Columbia) - Occupational Exposure Limits</b>	
OEL TWA	10 mg/m <sup>3</sup> (total dust) 3 mg/m <sup>3</sup> (respirable fraction)
Regulatory reference	OHS Guidelines Part 5: Chemical Agents and Biological Agents (WorkSafe BC)
<b>Canada (Nunavut) - Occupational Exposure Limits</b>	
OEL TWA	10 mg/m <sup>3</sup>
OEL STEL	20 mg/m <sup>3</sup>
Regulatory reference	Occupational Health and Safety Regulations, Nu Reg 003-2016 (Amendment R-044-2021)
<b>Canada (Northwest Territories) - Occupational Exposure Limits</b>	
OEL TWA	10 mg/m <sup>3</sup>
OEL STEL	20 mg/m <sup>3</sup>
Regulatory reference	Occupation Health and Safety Regulations R-039-2015 (R-013-2020)
<b>Canada (Saskatchewan) - Occupational Exposure Limits</b>	
OEL TWA	10 mg/m <sup>3</sup>
OEL STEL	20 mg/m <sup>3</sup>
Regulatory reference	The Occupational Health and Safety Regulations, 2020. Chapter S-15.1 Reg 10
<b>Canada (Yukon) - Occupational Exposure Limits</b>	
OEL TWA	30 mppcf 10 mg/m <sup>3</sup>
OEL STEL	20 mg/m <sup>3</sup>
<b>USA - OSHA - Occupational Exposure Limits</b>	
OSHA PEL TWA [1]	15 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable fraction)
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
<b>USA - NIOSH - Occupational Exposure Limits</b>	
NIOSH REL TWA	10 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable dust)

### 8.2. Appropriate engineering controls

Appropriate engineering controls	: Ensure good ventilation of the work station. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
Environmental exposure controls	: Avoid release to the environment.

### 8.3. Individual protection measures/Personal protective equipment

#### Personal protective equipment:

Avoid all unnecessary exposure.

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### Hand protection:

Wear gauntlet-type cuff leather gloves or protective sleeves of similar material, to protect wrists and forearms. Leather is a good electrical insulator if kept dry.

### Eye protection:

Wear a welder's face shield to protect your face from radiation and flying particles.

Wear a fire-resistant skull cap or balaclava hood under your helmet to protect your head from burns and UV radiation.

### Skin and body protection:

Wear high-top boots fully laced to prevent sparks from entering into the boots. Use fire-resistant boot protectors or spats strapped around the pant legs and boot tops, to prevent sparks from bouncing in the top of the boots.

Wear layers of clothing. To prevent sweating, avoid overdressing in cold weather. Sweaty clothes cause rapid heat loss. Leather welding jackets are not very breathable and can make you sweat if you are overdressed.

### Respiratory protection:

Use respiratory protection. Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.

Respirator should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134), CAN/CSA-Z94.4 and ANSI's standard for respiratory protection (Z88.2).

### Thermal hazard protection:

Using a shield can help keep any sparks spray away from your clothing. Wear leather aprons to protect your chest and lap from sparks when standing or sitting.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Steel rod with extruded flux coating.
Color	: No data available
Odor	: No data available
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: No data available
Melting point	: No data available
Freezing point	: Not applicable
Boiling point	: No data available
Flash point	: Not applicable
Auto-ignition temperature	: Not applicable
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: No data available
Relative vapor density at 20°C	: No data available
Relative density	: No data available
Solubility	: No data available
Partition coefficient n-octanol/water (Log Pow)	: No data available
Viscosity, kinematic	: Not applicable
Explosive properties	: Not explosive.

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Oxidizing properties : Not oxidising.  
Explosion limits : Not applicable

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

Reactivity : The product is non-reactive under normal conditions of use, storage and transport.  
Chemical stability : Stable under normal conditions.  
Possibility of hazardous reactions : No dangerous reactions known under normal conditions of use.  
Conditions to avoid : No flames, no sparks. Eliminate all sources of ignition. Avoid dust formation.  
Incompatible materials : None known.  
Hazardous decomposition products : Does not decompose under normal conditions.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified  
Acute toxicity (dermal) : Not classified  
Acute toxicity (inhalation) : Not classified

Barium carbonate (513-77-9)	
LD50 oral rat	418 mg/kg (Source: JAPAN_GHS)

Carbonic acid, calcium salt (1:1) (471-34-1)	
LD50 oral rat	> 2000 mg/kg (OECD 420: Acute Oral toxicity – Acute Toxic Class Method, Rat, Female, Experimental value, Oral, 14 day(s))
LD50 dermal rat	> 2000 mg/kg body weight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male / female, Experimental value, Dermal, 14 day(s))
LC50 Inhalation - Rat	> 3 mg/l air (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male / female, Experimental value, Inhalation (aerosol), 15 day(s))

Graphite (7782-42-5)	
LD50 oral rat	> 2000 mg/kg (OECD 423: Acute Oral Toxicity – Acute Toxic Class Method, Rat, Female, Experimental value, Oral)
LC50 Inhalation - Rat	> 2000 mg/m <sup>3</sup> (Exposure time: 4 h Source: ECHA)

Manganese (7439-96-5)	
LD50 oral rat	9 g/kg (Source: NLM_CIP)
LC50 Inhalation - Rat	> 5.14 mg/l/4h

Silicon (7440-21-3)	
LD50 oral rat	3160 mg/kg (Source: NLM_CIP)
LD50 dermal rabbit	> 5000 mg/kg body weight Animal: rabbit

Skin corrosion/irritation : Not classified  
Serious eye damage/irritation : Not classified

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Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: May cause cancer.

<b>Barium carbonate (513-77-9)</b>	
NOAEL (chronic,oral,animal/male,2 years)	60 mg/kg body weight Animal: rat, Animal sex: male
NOAEL (chronic,oral,animal/female,2 years)	75 mg/kg body weight Animal: rat, Animal sex: female
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Causes damage to organs through prolonged or repeated exposure.

<b>Carbonic acid, calcium salt (1:1) (471-34-1)</b>	
NOAEL (oral, rat, 90 days)	1000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	≥ 0.212 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)

<b>Graphite (7782-42-5)</b>	
NOAEL (oral, rat, 90 days)	≥ 10000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity Study in Rodents)
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.

<b>Manganese (7439-96-5)</b>	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.

<b>Silicon (7440-21-3)</b>	
NOAEL (oral, rat, 90 days)	> 5000 mg/kg body weight Animal: rat, Animal sex: male

Aspiration hazard	: Not classified
Likely routes of exposure	: Skin and eye contact. Ingestion. Inhalation.
Symptoms/effects after inhalation	: Short term exposure to fumes and gases from welding and other processes may result in metal fume fever, dizziness, nausea or dryness or irritation in the throat, nose or eyes. These emissions might also exacerbate pre-existing respiratory conditions like asthma or emphysema.  Long term exposure to fumes and gases could result in conditions such as siderosis (iron deposits in the lungs), impacts on the central nervous system effects, bronchitis and other pulmonary effects.
Symptoms/effects after skin contact	: Causes skin irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin. May cause an allergic skin reaction.
Symptoms/effects after eye contact	: Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
Symptoms/effects after ingestion	: May cause stomach distress, nausea or vomiting.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general	: See below for route-specific details.
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Hazardous to the aquatic environment, short-term (acute) : Not classified.

Hazardous to the aquatic environment, long-term (chronic) : Not classified

<b>Barium carbonate (513-77-9)</b>	
EC50 72h - Algae [1]	> 1.15 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)
EC50 72h - Algae [2]	> 30.07 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)

<b>Carbonic acid, calcium salt (1:1) (471-34-1)</b>	
LC50 - Fish [1]	> 100 % (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value, Nominal concentration)
EC50 - Crustacea [1]	> 100 % (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)
ErC50 algae	> 100 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Nominal concentration)
EC50 72h - Algae [1]	> 14 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)

<b>Graphite (7782-42-5)</b>	
LC50 - Fish [1]	> 100 mg/l (Exposure time: 96 h - Species: Danio rerio [semi-static] Source: ECHA)
EC50 - Crustacea [1]	> 100 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Behaviour)
EC50 72h - Algae [1]	> 100 mg/l (OECD 201: Alga, Growth Inhibition Test, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Growth rate)
EC50 72h - Algae [2]	> 100 mg/l (OECD 201: Alga, Growth Inhibition Test, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Cell numbers)
NOEC (chronic)	47 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

<b>Manganese (7439-96-5)</b>	
LC50 - Fish [1]	> 3.6 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [semi-static] Source: ECHA)
EC50 - Crustacea [1]	> 1.6 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	4.5 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
EC50 72h - Algae [2]	2.8 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
NOEC (chronic)	1.7 mg/l Test organisms (species): Ceriodaphnia dubia Duration: '8 d'

<b>Silicon (7440-21-3)</b>	
EC50 72h - Algae [1]	≈ 250 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)

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### 12.2. Persistence and degradability

Carbonic acid, calcium salt (1:1) (471-34-1)	
Persistence and degradability	Biodegradability in soil: not applicable. Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

Graphite (7782-42-5)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

### 12.3. Bioaccumulative potential

Carbonic acid, calcium salt (1:1) (471-34-1)	
Bioaccumulative potential	Not bioaccumulative.
BCF - Fish [1]	(no bioaccumulation)

Graphite (7782-42-5)	
Bioaccumulative potential	Not bioaccumulative.

### 12.4. Mobility in soil

Carbonic acid, calcium salt (1:1) (471-34-1)	
Surface tension	No data available (test not performed)
Ecology - soil	Low potential for adsorption in soil.

### 12.5. Other adverse effects

Ozone : Not classified

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Waste treatment methods : Dispose of the material collected according to regulations.  
Sewage disposal recommendations : Disposal must be done according to official regulations.  
Product/Packaging disposal recommendations : Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling, disposal or collection.

## SECTION 14: Transport information

TDG	DOT
<b>14.1. UN number</b>	
Not regulated	Not regulated

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TDG	DOT
<b>14.2. Proper Shipping Name</b>	
Not regulated	Not regulated
<b>14.3. Transport hazard class(es)</b>	
Not regulated	Not regulated
<b>14.4. Packing group</b>	
Not regulated	Not regulated
<b>14.5. Environmental hazards</b>	
Not regulated	Not regulated
No supplementary information available	

### 14.6. Special precautions for user

#### TDG

Not regulated

#### DOT

Not regulated

### 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. National regulations

All components of this product are present on DSL

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Manganese

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

## SECTION 16: Other information

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Other information : For an updated SDS, please contact the supplier or manufacturer listed on the first page of the document.

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