

Heegermaterials

SAFETY DATA SHEET

Revision Date 18-Nov-2024

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Name: FeCoNiAlSi Alloy

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Laboratory chemicals, Synthesis of substances

Uses advised against

1.3. Details of the supplier of the safety data sheet

Manufacturer Address

Heeger Materials Inc. 230 Steele St Denver, CO 80206, United States
Tel: 925-385-8104

Section 2: HAZARDS IDENTIFICATION

This product is an article and, as such, does not present a hazard to human health by inhalation or ingestion

2.1. Classification of the substance or mixture

Hazard Classification:

Solid metal alloy, generally stable under normal conditions.

Dust or fine particles generated during machining or processing may pose respiratory and fire hazards.

2.2. Label elements

Emergency Overview



Signal Word: Warning

Hazard statements

H315: Causes skin irritation.

H319: Causes serious eye irritation.

H335: May cause respiratory irritation.

Precautionary Statements

Prevention:

Avoid breathing dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

Wear protective gloves/protective clothing/eye protection/face protection.

Response:

If on skin: Wash with plenty of soap and water. If skin irritation occurs, get medical advice/attention.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

If inhaled: Remove person to fresh air and keep comfortable for breathing. If feeling unwell, call a poison centre or doctor/physician.

Storage:

Store in a dry, well - ventilated place.
Keep container tightly closed.

Disposal:

Dispose of contents/container in accordance with local regulations.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances**Synonyms**

| Chemical Name | CAS No. | Content (%) |
|---------------|---------------|-------------|
| Iron (Fe) | 7439 - 89 - 6 | 15-25% |
| Cobalt (Co) | 7440 - 48 - 4 | 25-35% |
| Nickel (Ni) | 7440 - 02 - 0 | 25-35% |
| Aluminum (Al) | 7429 - 90 - 5 | 5-15% |
| Silicon (Si) | 7440 - 21 - 3 | 5-15% |

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

| | |
|---------------------|--|
| Inhalation | Immediately move the patient to an area with fresh air and keep the airway open. If the patient has difficulty breathing, give oxygen. If breathing stops, immediately perform artificial respiration and seek medical help. |
| Skin Contact | Immediately remove contaminated clothing and wash the affected area with plenty of running water for at least 15 minutes. If skin irritation or allergic symptoms occur, seek medical treatment. |
| Eye contact | Immediately lift the eyelids and rinse the eyes thoroughly with plenty of running water or normal saline for at least 15 minutes. Seek medical advice. |
| Ingestion | Do not induce vomiting. Seek immediate medical attention. |

4.2. Most important symptoms and effects, both acute and delayed

Symptoms May cause allergic skin reaction. May cause acute gastrointestinal effects if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed

Note to doctors Treat symptomatically.

Section 5: FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media

Dry powder, carbon dioxide, sand.

Unsuitable extinguishing media

Avoid using water to extinguish the fire, as water may cause the target powder to fly, increasing the risk of explosion.

5.2. Special hazards arising from the substance or mixture

The alloy itself is generally non - flammable. However, under high - temperature or specific conditions, its powder may form an explosive mixture with air.

It may react violently with strong oxidants.

5.3. Advice for firefighters

Wear self-contained breathing apparatus and protective suit. Use personal protective equipment as required.

Section 6: ACCIDENTAL RELEASE MEASURES

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

Use personal protective equipment as required.

For emergency responders

Use personal protective equipment as required.

6.2. Environmental precautions

Not applicable to massive product.

6.3. Methods and material for containment and cleaning up

Methods for containment Not applicable to massive product.

Methods for cleaning up Not applicable to massive product.

6.4. Reference to other sections

See Section 12: ECOLOGICAL INFORMATION.

Section 7: HANDLING AND STORAGE

7.1. Handling Precautions

Operations should be carried out in a well - ventilated area. It is best to use local exhaust ventilation equipment.

Avoid generating dust. Operators should wear self - absorbing filter dust masks, chemical safety goggles, rubber gloves and other protective equipment.

Handle with care during operation to prevent damage to the target and generation of powder.

Keep away from fire sources and heat sources. Smoking is strictly prohibited in the workplace.

7.2. Storage Precautions

Store in a cool, dry and well - ventilated warehouse.

Keep away from fire and heat sources.

Should be stored separately from oxidants and food chemicals. Do not store them together.

The storage area should be equipped with suitable materials to contain leaks.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Exposure controls

| | |
|--|---|
| Engineering Controls | Use local exhaust ventilation to control dust levels. |
| Personal protective equipment | |
| Eye/face protection | When airborne particles may be present, appropriate eye protection is recommended. For example, tight-fitting goggles, foam-lined safety glasses or other protective equipment that shield the eyes from particles. |
| Skin and body protection | Wear fire/flame resistant/retardant clothing. Cut-resistant gloves and/or protective clothing may be appropriate when sharp surfaces are present. |
| Respiratory protection | When the dust concentration in the air exceeds the standard, wear a self - absorbing filter dust mask. In case of emergency rescue or evacuation, wear an air respirator. |
| Other protection | Smoking, eating and drinking are prohibited in the workplace. Take a shower and change clothes after work. Maintain good hygiene habits. |
| Environmental exposure controls | Section 6: ACCIDENTAL RELEASE MEASURES. |

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

| | | | |
|--------------------------------------|----------------------|---|----------------|
| Physical state | Solid | | |
| Appearance | Block or sheet | Odour | Odourless |
| Colour | Metallic grey silver | Odour threshold | Not applicable |
| Property | Values | Remarks • Method | |
| pH | - | | |
| Melting point/freezing point | | Not applicable | |
| Boiling point / boiling range | - | Not applicable | |
| Flash point | - | Not applicable | |
| Evaporation rate | - | Not applicable | |
| Flammability (solid, gas) | - | None in massive form, flammable as finely divided particles | |
| Flammability Limit in Air | | | |
| Upper flammability limit: | | - | |
| Lower flammability limit | | - | |
| Vapour pressure | - | Not applicable | |
| Vapour density | - | Not applicable | |
| Specific Gravity | - | | |
| Water solubility | - | Not applicable | |
| Solubility(ies) | | Not applicable | |
| Partition coefficient | - | Not applicable | |
| Autoignition temperature | - | Not applicable | |
| Decomposition temperature | - | Not applicable | |
| Kinematic viscosity | - | Not applicable | |
| Dynamic viscosity | - | Not applicable | |
| Explosive properties | Not applicable | | |
| Oxidising properties | Not applicable | | |

9.2. Other information

| | |
|-------------------------|----------------|
| Softening point | - |
| Molecular weight | - |
| VOC Content (%) | Not applicable |
| Density | - |
| Bulk density | - |

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

Not applicable

10.2. Chemical stability

Stable under normal conditions.

Explosion data

| | |
|----------------------------------|-------|
| Sensitivity to Mechanical Impact | None. |
| Sensitivity to Static Discharge | None. |

10.3. Possibility of hazardous reactions

Hazardous polymerisation

Hazardous polymerisation does not occur.

Possibility of Hazardous Reactions

None under normal processing.

10.4. Conditions to avoid

Dust formation and dust accumulation.

10.5. Incompatible materials

Strong oxidants, strong acids, strong alkalis, etc.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Product Information

| | |
|---------------------|--|
| Inhalation | Not an expected route of exposure for product in massive form. |
| Eye contact | Not an expected route of exposure for product in massive form. |
| Skin Contact | May cause sensitisation by skin contact. |
| Ingestion | Not an expected route of exposure for product in massive form. |

Information on toxicological effects

| | |
|-----------------|--|
| Symptoms | May cause sensitisation by skin contact. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause acute gastrointestinal effects if swallowed. |
|-----------------|--|

Delayed and immediate effects as well as chronic effects from short and long-term exposure

| | |
|--|---------------------------------|
| Acute oxicity | Harmful if swallowed. |
| Skin corrosion/irritation | Product not classified. |
| Serious eye damage/eye irritation | Product not classified. |
| Sensitization | Product not classified. |
| Germ cell mutagenicity | Product not classified. |
| Carcinogenicity | May cause cancer by inhalation. |

Section 12: ECOLOGICAL INFORMATION

12.1. Ecotoxicity

May be toxic to aquatic organisms, especially heavy metal components such as chromium.

12.2. Persistence and Degradability

The target is not easily degradable in the environment and may exist for a long time.

12.3. Bioaccumulation

Some metal components such as nickel and cobalt may have a certain bioaccumulation in organisms.

12.4. Mobility in Soil

Due to its insolubility, its mobility in soil is relatively low, but it may migrate to a certain extent with rainwater under specific conditions.

12.5. Other adverse effects

May have a certain impact on the soil ecosystem and plant growth.

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

| | |
|--|---|
| Waste from residues/unused products | Disposal should be in accordance with applicable regional, national and local laws and regulations. |
| Contaminated packaging | None anticipated. |

Section 14: TRANSPORT INFORMATION

IMDG

| | |
|--|----------------|
| 14.1 UN/ID no | Not regulated |
| 14.2 Proper shipping name | Not regulated |
| 14.3 Hazard Class | Not regulated |
| 14.4 Packing Group | Not regulated |
| 14.5 Marine pollutant | Not applicable |
| 14.6 Special Provisions | None |
| 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not applicable |

RID

| | |
|---------------------------|----------------|
| 14.1 UN/ID no | Not regulated |
| 14.2 Proper shipping name | Not regulated |
| 14.3 Hazard Class | Not regulated |
| 14.4 Packing Group | Not regulated |
| 14.5 Environmental hazard | Not applicable |
| 14.6 Special Provisions | None |

ADR

| | |
|---------------------------|----------------|
| 14.1 UN/ID no | Not regulated |
| 14.2 Proper shipping name | Not regulated |
| 14.3 Hazard Class | Not regulated |
| 14.4 Packing Group | Not regulated |
| 14.5 Environmental hazard | Not applicable |
| 14.6 Special Provisions | None |

ICAO (air)

| | |
|---------------------------|----------------|
| 14.1 UN/ID no | Not regulated |
| 14.2 Proper shipping name | Not regulated |
| 14.3 Hazard Class | Not regulated |
| 14.4 Packing Group | Not applicable |
| 14.5 Environmental hazard | Not applicable |
| 14.6 Special Provisions | None |

IATA

| | |
|---------------------------|----------------|
| 14.1 UN/ID no | Not regulated |
| 14.2 Proper shipping name | Not regulated |
| 14.3 Hazard Class | Not regulated |
| 14.4 Packing Group | Not regulated |
| Description | Not applicable |
| 14.5 Environmental hazard | Not applicable |
| 14.6 Special Provisions | None |

Section 15: REGULATORY INFORMATION

15.1. Applicable Regulations

Regulations on the Safety Management of Hazardous Chemicals
 Classification and Labelling of Chemicals (GB 30000 series)
 Occupational Exposure Limits for Hazardous Agents in the Workplace (GBZ 2 series)
 Other relevant national and local environmental protection and safety regulations.

15.2. Chemical safety assessment

No chemical safety assessment has been performed for this product.

Section 16: OTHER INFORMATION

Revision Date 18-Nov-2024

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Note:

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet