



Safety Data Sheet

Skyspring Nanomaterials, Inc.

www.ssnano.com

Revision Date: 02/01/2024

- **1 Identification of substance:**

- **Product details:**

- **Trade name:** Nickel Iron Alloy powder

- **Stock number:** 9295JH

- **Manufacturer/Supplier:**

SkySpring Nanomaterials, Inc.

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- **2 Hazards identification**

- **2.1 Classification of the substance or mixture**

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable solids (Category 2), H228

Self-heating chemicals (Category 2), H252

Skin sensitization (Category 1), H317

Carcinogenicity (Category 2), H351

Specific target organ toxicity - repeated exposure, Inhalation (Category 1), H372

Short-term (acute) aquatic hazard (Category 3), H402

Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

- **2.2 GHS Label elements, including precautionary statements**



Pictogram

Signal Word

Danger

Hazard Statements

- | | |
|------|--|
| H228 | Flammable solid. |
| H252 | Self-heating in large quantities; may catch fire. |
| H317 | May cause an allergic skin reaction. |
| H351 | Suspected of causing cancer. |
| H372 | Causes damage to organs through prolonged or repeated exposure if inhaled. |
| H412 | Harmful to aquatic life with long lasting effects. |

Precautionary Statements

- | | |
|-------------|---|
| P201 | Obtain special instructions before use. |
| P202 | Do not handle until all safety precautions have been read and understood. |
| P210 | Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking. |
| P235 + P410 | Keep cool. Protect from sunlight. |
| P240 | Ground/bond container and receiving equipment. |
| P241 | Use explosion-proof electrical/ ventilating/ lighting/ equipment. |
| P260 | Do not breathe dust/ fume/ gas/ mist/ vapors/ spray. |
| P264 | Wash skin thoroughly after handling. |
| P270 | Do not eat, drink or smoke when using this product. |
| P272 | Contaminated work clothing must not be allowed out of the workplace. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/ protective clothing/ eye protection/ face protection. |

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P363 Wash contaminated clothing before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

P407 Maintain air gap between stacks/ pallets.

P420 Store away from other materials.

P501 Dispose of contents/ container to an approved waste disposal plant.

- **2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none**

- **3 Composition/Data on components:**

- **Chemical characterization:**

Component	CAS#	%	EINECS Number
Iron	7439-89-6	74-77	231-096-4
Nickel	7440-02-0	21.5-24.5	231-111-4

- **4 First aid measures**

- **After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

- **After skin contact**

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

- **After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

- **After swallowing**

Seek immediate medical advice.

Information for doctor

- **The following symptoms may occur:**

Nausea

Cramp

Gastric or intestinal disorders.

- **5 Fire fighting measures**

- **Suitable extinguishing agents** Extinguishing powder. Do not use water.

- **For safety reasons unsuitable extinguishing agents**

Water

Carbon dioxide

Halogenated extinguisher

- **Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

- **6 Accidental release measures**

- **Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

- **Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

- **Measures for cleaning/collecting:**

Ensure adequate ventilation.

Keep away from ignition sources.

- **Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

- **7 Handling and storage**

- **Handling**

- **Information for safe handling:**

- Handle under dry argon.

- Keep container tightly sealed.

- Store in cool, dry place in tightly closed containers.

- Ensure good ventilation at the workplace.

- Avoid contact with skin and eyes.

- Avoid formation of dust and aerosols.

- Further processing of solid materials may result in the formation of combustible dusts.

- The potential for combustible dust formation should be taken into consideration before additional processing occurs.

- **Information about protection against explosions and fires:**

- Keep ignition sources away.

- Protect against electrostatic charges.

- Fumes can combine with air to form an explosive mixture.

- **Hygiene measures**

- Handle in accordance with good industrial hygiene and safety practice.

- Wash hands before breaks and at the end of workday.

- For precautions see section 2.2.

- **Storage**

- **Requirements to be met by storerooms and receptacles:**

- Store in a cool location.

- **Information about storage in one common storage facility:**

- Do not store together with oxidizing and acidic materials.

- Store away from halogens.

- Store away from air.

- Store away from water/moisture.

- **Further information about storage conditions:**

- Store under dry inert gas.

- Keep container tightly sealed.

- Store in cool, dry conditions in well sealed containers.

- **8 Exposure controls and personal protection**

- **Additional information about design of technical systems:**

- Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:
Not required.

- **Additional information:** No data

- **Personal protective equipment**
- **General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

- **Breathing equipment:**

Use suitable respirator when high concentrations are present.

- **Protection of hands:** Impervious gloves
- **Eye protection:** Safety glasses
- **Body protection:** Protective work clothing.

- **9 Physical and chemical properties:**

- **General Information**

- **Form:** Powder
- **Color:** Black
- **Odor:** Odorless

	<u>Value/Range</u>	<u>Unit</u>	<u>Method</u>
• Change in condition			
• Melting point/Melting range:	1536	°C	
• Boiling point/Boiling range:	3000	°C	
• Sublimation temperature / start:	Not determined		
• Flash point:	21 °C		
• Flammability (solid, gaseous)	Highly flammable.		
• Ignition temperature:	Not determined		
• Decomposition temperature:	Not determined		
• Explosion limits:			
• Lower:	Not determined		
• Upper:	Not determined		
• Vapor pressure:	at 1787 °C	1.33	hPa

- **Density:** at 20 °C 7.87 g/cm³
- **Solubility in / Miscibility with**
- **Water:** Insoluble

- **10 Stability and reactivity**

- **Thermal decomposition / conditions to be avoided:**
Decomposition will not occur if used and stored according to specifications.
- **Materials to be avoided:**
Acids
Water/moisture
Oxidizing agents
Air
Halogens
- **Dangerous reactions** Reacts with strong oxidizing agents
- **Dangerous products of decomposition:** Metal oxide fume

- **11 Toxicological information**

- **Acute toxicity:**
LD/LC50 values that are relevant for classification:
Oral: LD50: 20000 mg/kg (gpg)
LD50: 30000 mg/kg (rat)
LDLo: 20 mg/kg (rbt)
- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Other information (about experimental toxicology):**
Tumorigenic effects have been observed on tests with laboratory animals.
- **Subacute to chronic toxicity:**
Iron compounds may cause vomiting, diarrhea, pink urine, black stool, and liver damage. May cause damage to the kidneys. Irritating to the respiratory tract, they may cause pulmonary fibrosis if dusts are inhaled.
- **Additional toxicological information:**
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

- **12 Ecological information:**

- **General notes:**

- Do not allow material to be released to the environment without proper governmental permits.

- **13 Disposal considerations**

- **Product:**

- **Recommendation**

- Consult state, local or national regulations to ensure proper disposal.

- **Uncleaned packagings:**

- **Recommendation:**

- Disposal must be made according to official regulations.

- **14 Transport information**

- **DOT regulations:**

- **Hazard class:** 4.1

- **Identification number:** UN3089

- **Packing group:** III

- **Proper shipping name (technical name):**

- Metal powders, flammable, n.o.s., iron powder

- **Land transport ADR/RID (cross-border)**

- **ADR/RID class:** 4.1 Flammable solids

- **Item:** 13c

- **Danger code (Kemler):** 40

- **UN-Number:** 3089

- **Description of goods:** Metal powders, flammable, n.o.s., iron powder

- **Maritime transport IMDG:**

- **IMDG Class:** 4.1

- **UN Number:** 3089

- **Packaging group:** III

- **Proper shipping name:** Metal powders, flammable, n.o.s., iron powder

- **Air transport ICAO-TI and IATA-DGR:**

- **ICAO/IATA Class:** 4.1

- **UN/ID Number:** 3089

- **Packaging group:** III

- **Proper shipping name:** Metal powders, flammable, n.o.s., iron powder

- **15 Regulations**

- **Product related hazard informations:**
- **Hazard symbols:**
Xi Irritant F Highly flammable
- **Risk phrases:**
11 Highly flammable.
36/37 Irritating to eyes and respiratory system.
- **Safety phrases:**
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- **National regulations**
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
- **Information about limitation of use:**
For use only by technically qualified individuals.

- **16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.