

# Material Safety Data Sheet

According to OSHA and ANSI

## 1 Identification of the substance/mixture and of the company/undertaking

### Product identifier

**Product name:** Nanocrystalline Fe-Cu-Nb-Si-B powders

**Stock number:** NP200

**CAS Number:**

N/A

**EINECS Number:**

N/A

### Details of the supplier of the safety data sheet

#### Manufacturer/Supplier:

Nanostructuredd & Amorphous Materials, Inc.

16840 Clay Road, Suite #113

Houston, TX 77084, USA

## 2 Hazards identification

### Classification of the substance or mixture

The substance is not classified according to the Globally Harmonized System (GHS).

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC** Not applicable

**Information concerning particular hazards for human and environment:** Not applicable

### Label elements

#### Labelling according to EU guidelines:

Observe the general safety regulations when handling chemicals

#### Classification system

**HMIS ratings (scale 0-4)**

**(Hazardous Materials Identification System)**

HEALTH	1
FIRE	0
REACTIVITY	0

Health (acute effects) = 1

Flammability = 0

Reactivity = 0

#### Other hazards

#### Results of PBT and vPvB assessment PBT:

Not applicable.

**vPvB:** Not applicable.

## 3 Composition/information on ingredients

INFREDIENT NAME	CAS NUMBER	AT. %	INFREDIENT NAME	CAS NUMBER	AT. %
Iron (Fe)	7439-89-6	70-80	Silicon (Si)	7440-21-3	8-15
Copper (Cu)	7440-50-8	0.5-2	Boron (B)	7440-42-8	7-11
Niobium (Nb)	7440-03-1	1-5			

## 4 First aid measures

### Description of 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 medical treatment.

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### 5 Firefighting measures

#### Extinguishing media

#### Suitable extinguishing agents

Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

#### Special hazards arising from the substance or mixture

In case of fire, the following can be released:

Metal oxide fume

#### Advice for firefighters

#### Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

### 6 Accidental release measures

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

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

#### Environmental precautions:

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

**Methods and material for containment and cleaning up:** Pick up mechanically.

#### Reference to other sections

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

#### Precautions for safe handling

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

No special precautions are necessary if used correctly.

**Information about protection against explosions and fires:** No special measures required.

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

#### Storage

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** No information known.

#### Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

### 8 Exposure controls/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.

#### Control parameters

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

**Additional information:** No data

#### Exposure controls

#### 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.

**Breathing equipment:** Use suitable respirator when high concentrations are present.

**Protection of hands:** Impervious gloves

**Eye protection:** Safety glasses

**Body protection:** Protective work clothing.

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### 9 Physical and chemical properties

#### Information on basic physical and chemical properties

##### General Information

##### Appearance:

Form:	Powder
Color:	Black
Odor:	Odorless
Odour threshold:	Not determined.

pH-value: Not applicable.

##### Change in condition

Melting point/Melting range:	900-1200°C (1173-1473 °F)
Boiling point/Boiling range:	Not determined
Sublimation temperature / start:	Not determined

Flash point: Not applicable

Flammability (solid, gaseous) Product is not flammable.

Ignition temperature: Not determined

Decomposition temperature: Not determined

Auto igniting: Not determined.

Danger of explosion: Product does not present an explosion hazard.

##### Explosion limits:

Lower:	Not determined
Upper:	Not determined

Vapor pressure: Not applicable.

Density at 20°C (68 °F):	7.0-7.5 g/cm <sup>3</sup>
Relative density	Not determined.
Vapour density	Not applicable.
Evaporation rate	Not applicable.

##### Solubility in / Miscibility with

Water: Insoluble

Segregation coefficient (n-octanol/water): Not determined.

##### Viscosity:

dynamic:	Not applicable.
kinematic:	Not applicable.

Other information No further relevant information available.

### 10 Stability and reactivity

#### Reactivity

##### Chemical stability

##### Thermal decomposition / conditions to be avoided:

Decomposition will not occur if used and stored according to specifications.

**Possibility of hazardous reactions** No dangerous reactions known

**Incompatible materials:** None known.

**Hazardous decomposition products:** Metal oxide fume

### 11 Toxicological information

#### Information on toxicological effects

##### Acute toxicity:

##### Primary irritant effect:

on the skin: May cause irritation

on the eye: May cause irritation

**Sensitization:** No sensitizing effects known.

##### Subacute to chronic toxicity:

Boron affects the central nervous system. Boron poisoning causes depression of the circulation, persistent vomiting and diarrhea, followed by profound shock and coma. The temperature may become subnormal and a scarletina form rash may cover the entire body. 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.

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### Additional toxicological information:

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

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

## 12 Ecological information

### Toxicity

**Acquatic toxicity:** No further relevant information available.

**Persistence and degradability** No further relevant information available.

### Behavior in environmental systems:

**Bioaccumulative potential** No further relevant information available.

**Mobility in soil** No further relevant information available.

### Additional ecological information:

#### General notes:

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

#### Results of PBT and vPvB assessment

**PBT:** Not applicable.

**vPvB:** Not applicable.

**Other adverse effects** No further relevant information available.

## 13 Disposal considerations

### Waste treatment methods

**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

Not a hazardous material for transportation.

### DOT regulations:

**Hazard class:** None

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

**ADR/RID class:** None

### Maritime transport IMDG:

**IMDG Class:** None

**Marine pollutant:** No

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

**ICAO/IATA Class:** None

**Special precautions for user** Not applicable.

**Transport/Additional information:** Not dangerous according to the above specifications.

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

## 15 Regulatory information

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

### Product related hazard informations:

Observe the general safety regulations when handling chemicals

### 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.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.