# SAFETY DATA SHEET

**Issue Date** 02-Jan-2020 **Revision Date** 02-Jan-2020 **Version** 1

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

### 1.1. Product identifier

**Product Code** SAC042
***Product Name*** Niobium Hydride Powder (flammable)

**UN/ID no** 3089
**Synonyms** Niobium Hydride Powder (flammable): Columbium Hydride Powder (flammable)

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

**Recommended Use** Alloy product manufacture

**Uses advised against**

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

**Manufacturer**
ATI, 1000 Six PPG Place, Pittsburgh, PA 15222 USA

### 1.4. Emergency telephone number

**Emergency Telephone** Chemtrec: +1-703-741-5970

## Section 2: HAZARDS IDENTIFICATION

This material is classified per Regulation (EC) No 1272/2008.

### 2.1. Classification of the substance or mixture
***Regulation (EC) No 1272/2008***

| | |
|---|---|
| Flammable solids | Category 1 |

### 2.2. Label elements

**Emergency Overview**

**Danger**

**Hazard statements**
H228 - Flammable solid

**Appearance** Powder **Physical state** Solid **Odour** Odourless

**Precautionary Statements - Prevention**

Wear protective gloves/protective clothing/eye protection
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Ground/bond container and receiving equipment
If dust clouds can occur, use explosion-proof electrical/ ventilating/lighting/equipment

**Precautionary Statements - Response**
In case of fire: Use salt (NaCl) for extinction

**2.3 Hazards not otherwise classified (HNOC)**
Not applicable
**Other Information**
.

## Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

**3.1 Substances**

**Synonyms** Niobium Hydride Powder (flammable): Columbium Hydride Powder (flammable).

| Chemical Name | EC No | CAS No | Weight-% |
|---|---|---|---|
| Niobium Hydride | - | 13981-86-7 | > 99 |

## Section 4: FIRST AID MEASURES

**4.1. Description of first aid measures**

**Inhalation** If excessive amounts of smoke, fume, or particulate are inhaled during processing, remove to fresh air and consult a qualified health professional.

**Skin Contact** None under normal use conditions.

**Eye contact** In the case of particles coming in contact with eyes during processing, treat as with any foreign object.

**Ingestion** IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

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

**Symptoms** None anticipated.

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

**Note to doctors** Treat symptomatically.

## Section 5: FIREFIGHTING MEASURES

**5.1. Extinguishing media**

**Suitable extinguishing media**
Isolate large fires and allow to burn out. Smother small fires with salt (NaCl).

**Unsuitable extinguishing media**
Do not spray water on burning metal as an explosion may occur. This explosive characteristic is caused by the hydrogen and steam generated by the reaction of water with the burning material

**5.2. Special hazards arising from the substance or mixture**

Intense heat. Very fine, high surface area material resulting from processing this product may ignite spontaneously at room temperature WARNING: Fine particles of this product may form combustible dust-air mixtures. Keep particles away from all ignition sources including heat, sparks, and flame. Prevent dust accumulations to minimise combustible dust hazard

**Hazardous combustion products** Evolves hydrogen gas when heated above 250°C.

### 5.3. Advice for firefighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

## 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. Follow Emergency Response Guidebook, Guide No. 170.

### 6.2. Environmental precautions

Collect spillage to prevent release to the environment.

### 6.3. Methods and material for containment and cleaning up

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Sweep or shovel material into dry containers using non-sparking tools. Avoid creating uncontrolled dust.

### 6.4. Reference to other sections

See Section 12: ECOLOGICAL INFORMATION.

## Section 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

**Advice on safe handling**
Very fine, high surface area material resulting from grinding, buffing, polishing, or similar processes of this product may ignite spontaneously at room temperature. WARNING: Fine particles of this product may form combustible dust-air mixtures. Keep particles away from all ignition sources including heat, sparks, and flame. Prevent dust accumulations to minimise combustible dust hazard.

**General Hygiene Considerations**
Handle in accordance with good industrial hygiene and safety practice.

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

**Storage Conditions**
Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). For long-term storage, keep sealed in argon-filled steel drums.

**Incompatible materials**
Dissolves in hydrofluoric acid.

### 7.3. Specific end use(s)

**Risk Management Methods (RMM)**
The information required is contained in this Safety Data Sheet.

## Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

| Chemical Name | European Union | United Kingdom | France | Spain | Germany |
|---|---|---|---|---|---|
| Niobium Hydride 13981-86-7 | - | - | - | - | - |
| **Chemical Name** | **Italy** | **Portugal** | **Netherlands** | **Finland** | **Denmark** |
| Niobium Hydride 13981-86-7 | - | - | - | - | - |
| **Chemical Name** | **Austria** | **Switzerland** | **Poland** | **Norway** | **Ireland** |
| Niobium Hydride 13981-86-7 | - | - | - | - | - |

**Derived No Effect Level (DNEL)** No DNELs are available for this product

**Predicted No Effect Concentration (PNEC)** No PNECs are available for this product.

### 8.2. Exposure controls

**Engineering Controls** Avoid generation of uncontrolled particles.

**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** Fire/flame resistant/retardant clothing may be appropriate during hot work with the product.

**Respiratory protection** When particulates/fumes/gases are generated and if exposure limits are exceeded or irritation is experienced, proper approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminate concentrations. Respiratory protection must be provided in accordance with current local regulations.

**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** | Powder | **Odour** | Odourless |
| **Colour** | metallic, grey or Silver | **Odour threshold** | Not applicable |

| Property | Values | Remarks • Method |
|---|---|---|
| **pH** | - | Not applicable |
| **Melting point / freezing point** | Evolves hydrogen above 250 °C / 482 °F | |
| **Boiling point / boiling range** | - | |
| **Flash point** | - | |
| **Evaporation rate** | - | Not applicable |
| **Flammability (solid, gas)** | - | Flammable |
| **Flammability Limit in Air** | | |
| **Upper flammability limit:** | | - |
| **Lower flammability limit** | | - |
| **Vapour pressure** | - | Not applicable |
| **Vapour density** | - | Not applicable |
| **Specific Gravity** | 7.68 | |
| **Water solubility** | Insoluble | |
| **Solubility(ies)** | | |
| **Partition coefficient** | - | Not applicable |
| **Autoignition temperature** | - | Not applicable |
| **Decomposition temperature** | 250°C / 482°F | |

| | | |
|---|---|---|
| **Kinematic viscosity** | - | Not applicable |
| **Dynamic viscosity** | - | Not applicable |
| **Explosive properties** | Not applicable | |
| **Oxidising properties** | Not applicable | |

**9.2. Other information**

| | |
|---|---|
| **Softening point** | - |
| **Molecular weight** | 93.92 |
| **VOC Content (%)** | Not applicable |
| **Density** | - |
| **Bulk density** | ~270 lb/ft3 |

## 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 | May be ignited by heat, sparks or flames. |

**10.3. Possibility of hazardous reactions**

**Hazardous polymerisation**
Hazardous polymerisation does not occur.

**Possibility of Hazardous Reactions**
At temperatures above 200°C, this product reacts vigorously with halogen gases and with halocarbons to produce flammable hydrogen gas and toxic oxides of nitrogen or other corrosive gases.

**10.4. Conditions to avoid**

Dust formation and dust accumulation.

**10.5. Incompatible materials**

Dissolves in hydrofluoric acid.

**10.6. Hazardous decomposition products**

Evolves hydrogen gas when heated above 250°C.

## Section 11: TOXICOLOGICAL INFORMATION

**11.1. Information on toxicological effects**

**Product Information**

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| | |
|---|---|
| **Inhalation** | Product not classified. |
| **Eye contact** | Product not classified. |
| **Skin Contact** | Product not classified. |
| **Ingestion** | Product not classified. |

| Chemical Name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|---|---|---|---|
| Niobium Hydride | > 2000 mg/kg bw | - | - |

**Information on toxicological effects**

**Symptoms** None known.

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

**Acute toxicity** Product not classified.

**Skin corrosion/irritation** Product not classified.

**Serious eye damage/eye irritation** Product not classified.

**Sensitisation** Product not classified.

**Germ cell mutagenicity** Product not classified.

**Carcinogenicity** Product not classified.

**Reproductive toxicity** Product not classified.

**STOT - single exposure** Product not classified.

**STOT - repeated exposure** Product not classified.

**Aspiration hazard** Product not classified.

## Section 12: ECOLOGICAL INFORMATION

**12.1. Toxicity**

This product as shipped is not classified for aquatic toxicity

| Chemical Name | Algae/aquatic plants | Fish | Toxicity to microorganisms | Crustacea |
|---|---|---|---|---|
| Niobium Hydride | - | - | The 3 h EC50 of Niobium hydride for activated sludge was greater than 1,000 mg/L. | - |

**12.2. Persistence and degradability**

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**12.3. Bioaccumulative potential**

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**12.4. Mobility in soil**

**12.5. Results of PBT and vPvB assessment**

The PBT and vPvB criteria do not apply to inorganic substances.

**12.6. Other adverse effects**

## 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** Disposal should be in accordance with applicable regional, national and local laws and regulations.

## Section 14: TRANSPORT INFORMATION

**IMDG**

| | |
|---|---|
| **14.1 UN/ID no** | 3089 |
| **14.2 Proper shipping name** | Metal powder, flammable, n.o.s. (Niobium Hydride) |
| **14.3 Hazard Class** | 4.1 |
| **14.4 Packing Group** | II |
| **14.5 Marine pollutant** | Not applicable |
| **14.6 Special Provisions** | IB8, IP2, IP4, T3, TP33 |
| **14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code** | Not applicable |

**RID**

| | |
|---|---|
| **14.1 UN/ID no** | 3089 |
| **14.2 Proper shipping name** | Metal powder, flammable, n.o.s. (Niobium Hydride) |
| **14.3 Hazard Class** | 4.1 |
| **14.4 Packing Group** | II |
| **14.5 Environmental hazard** | Not applicable |
| **14.6 Special Provisions** | IB8, IP2, IP4, T3, TP33 |

**ADR**

| | |
|---|---|
| **14.1 UN/ID no** | 3089 |
| **14.2 Proper shipping name** | Metal powder, flammable, n.o.s. (Niobium Hydride) |
| **14.3 Hazard Class** | 4.1 |
| **14.4 Packing Group** | II |
| **14.5 Environmental hazard** | Not applicable |
| **14.6 Special Provisions** | IB8, IP2, IP4, T3, TP33 |

**ICAO (air)**

| | |
|---|---|
| **14.1 UN/ID no** | 3089 |
| **14.2 Proper shipping name** | Metal powders, flammable, n.o.s. (Niobium Hydride) |
| **14.3 Hazard Class** | 4.1 |
| **14.4 Packing Group** | II |
| **14.5 Environmental hazard** | Not applicable |
| **14.6 Special Provisions** | IB8, IP2, IP4, T3, TP33 |

**IATA**

| | |
|---|---|
| **14.1 UN/ID no** | 3089 |
| **14.2 Proper shipping name** | Metal powders, flammable, n.o.s. (Niobium Hydride) |
| **14.3 Hazard Class** | 4.1 |
| **14.4 Packing Group** | II |
| **Description** | Not applicable |
| **14.5 Environmental hazard** | Not applicable |
| **14.6 Special Provisions** | IB8, IP2, IP4, T3, TP33 170 |
| | **ERG Code** |

## Section 15: REGULATORY INFORMATION

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

| Chemical Name | **French RG number** | **Title** |
|---|---|---|
| Niobium Hydride<br>13981-86-7 | - | - |

**European Union**

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

**Authorisations and/or restrictions on use:**
This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV). This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

**International Inventories**

| | |
|---|---|
| **DSL/NDSL** | Complies |
| **EINECS/ELINCS** | Complies |
| **ENCS** | Not Listed |
| **IECSC** | Not Listed |
| **KECL** | Complies |
| **PICCS** | Not Listed |
| **AICS** | Not Listed |

**Legend:**
**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
**ENCS** - Japan Existing and New Chemical Substances
**IECSC** - China Inventory of Existing Chemical Substances
**KECL** - Korean Existing and Evaluated Chemical Substances
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances
**AICS** - Australian Inventory of Chemical Substances

**15.2. Chemical safety assessment**

No chemical safety assessment has been performed for this product.

## Section 16: OTHER INFORMATION

| | |
|---|---|
| **Issue Date** | 02-Jan-2020 |
| **Revision Date** | 02-Jan-2020 |
| **Revision Note** | Updated to comply with GHS. |

**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**

**Additional information available from:** Safety data sheets and labels available at ATImetals.com