Material Safety Data Sheet
Stainless Steel Powder

Edition: 19/10/2020

1.1. Product identifier

Product Name 316 LF -45 µm STD
Item number 096191

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

Relevant identified uses - Powder metallurgical use.

Uses advised against - Use of nickel in articles intended for direct and prolonged contact with the skin where the release of nickel exceed the limit set out in Directives 94/27/EC and 2004/96/EC and REACH regulation 1907/2009 (annex XVII). Use of nickel in nickel-containing food contact materials for which migration into foodstuff would exceed more than 0.1 mg/kg of nickel in accordance with the Council of Europe Guidelines on metals and alloys used as food contact materials. Use of nickel in immersion-type kettles which would release more than 0.05 mg/l of nickel into the water in accordance with the Council of Europe Guidelines on metals and alloys used as food contact materials (2002). Use of nickel in commercially available "do-it-yourself" home electroplating kits.

2) Hazards Identification

2.1 Classification according to Regulation (EC) No 1272/2008

Skin Sensitization - Category 1
Carcinogenicity - Category 2
Specific target organ toxicity (repeated exposure) - Category 1

2.2) Label Elements

Labelling according to Regulation (EC) 1272/2008

Signal word: DANGER
Hazard Statements:

H317 - May cause an allergic skin reaction
H351 - Suspected of causing cancer if inhaled
H372 - Causes damage to organs through prolonged or repeated exposure if inhaled

Contains Nickel Powder.

Precautionary Statements:

P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P280 - Wear eye protection/ face protection
P314 - Get medical advice/attention if you feel unwell
P363 - Wash contaminated clothing before reuse
P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention
P501 - Dispose of contents/ container to an approved waste disposal plant

2.3) Other hazards

The substance does not meet the criteria for PBT or vPvB substance. 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.

3) Composition/Information on Ingredients

3.1) Substances/Mixtures

Chemical Name	EC-No	CAS-No	Content(%)	Classification according to Regulation (EC) No 1272/2008	REACH Registration Number	Substance with an OEL-value
Iron	231-096-4	7439-89-6	>50	-	01-2119462838-24-XXXX	*
Nickel Powder	231-111-4	7440-02-0	10-24,99	STOT RE 1 (H372) Carc. 2 (H351) Skin Sens. 1 (H317) Aquatic chronic 3 (H412)	01-2119438727-29-XXXX	*
Molybdenum	231-107-2	7439-98-7	1-5	-	01-2119472304-43-XXXX	*
Silicon	231-130-8	7440-21-3	>1	-	01-2119480401-47-XXXX	*
Cobalt respirable fraction <0,01	231-158-0	7440-48-4	0.1-0.249	Acute Tox. 4 (H302) Eye Irrit. 2 (H319) Resp. Sens. 1 (H334) Skin Sens. 1	-	*

				(H317) Carc. 1B (H350i) Repr. 2 (H361f) Aquatic Acute 1 (H400) M=10 Aquatic Chronic 1 (H410) M=1		

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

4) First Aid Measures

4.1) Description of first-aid measures

Inhalation	Move to fresh air. If symptoms persist, call a physician.
Skin	Wash off with soap and water. Remove and wash contaminated clothing before re-use. If skin irritation or rash occurs: Get medical advice/attention.
Eye	Remove contact lenses. Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.
Ingestion	Clean mouth with water and drink afterwards plenty of water. If symptoms persist, call a physician.

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

Inhalation	Very prolonged inhalation can possibly cause fibrosis of the lungs and lung cancer. Acute effects upon inhalation are negative impact on lung tissue and mucus membranes in the the respiratory passages with subsequent risk for nosebleed and negative impact on blood pressure and the blood's glucose levels. May cause nose, throat and lung irritation. Main symptoms: Cough and shortness of breath.
Skin	Prolonged contact may cause redness and irritation.
Eye	May cause mechanical irritation and Redness.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

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

Treat symptomatically

5) Fire Fighting

5.1) Extinguishing media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Keep containers and surroundings cool with water spray. Confining and smothering metal fires is preferable rather than applying water. Use: Dry

powder, dry chemical. Extinguishing media which shall not be used for safety reasons Do not use a solid water stream as it may scatter and spread fire.

5.2) Special hazards arising from the substance or mixture

Special 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.

5.3) Advice for firefighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6) Accidental Release Measures

6.1) Personal precautions, protective equipment and emergency procedures
Avoid dust formation. Avoid breathing dust. Remove all sources of ignition. Use personal protection recommended in Section 8.

6.2) Environmental precautions
Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.

6.3) Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4) Reference to other sections
Refer to protective measures listed in section 8 and 13.

7) Handling/Storage

7.1) Precautions for safe handling

Protective measures
Use sufficient dust extraction. In case of insufficient ventilation, wear suitable respiratory equipment. Persons with a history of skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used. Keep workplace clean from dust. Accumulated dust dispersed in air may cause dust explosion if ignited. Do not handle until all safety precautions have been read and understood.

Advice on general occupational hygiene
Avoid inhalation, ingestion and contact with skin and eyes. General occupational hygiene measures are required to ensure safe handling of the substance. The measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no drinking, eating and smoking at the workplace. Shower and change clothes at end of work shift.

7.2) Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Make sure the product does not come in contact with acids or strong oxidizers. Keep away from open flames, hot surfaces and sources of ignition.

7.3) Specific end uses

No information available.

8) Exposure Controls/Personal Protection

8.2) Exposure controls

Engineering Measures	Use with local exhaust ventilation. If occupational exposure limit value is suspected to be reached or dust levels are high, exposure measurement is recommended.

Protective measures

Eye/Face Protection	Goggles
Skin protection	Wear suitable protective clothing. Protective shoes or boots.
Hand Protection	Wear butyl or nitrile gloves.
Respiratory protection	Suitable mask with particle filter P3 (European Norm 143).
Thermal hazards	the substance does not represent a thermal hazard, thus special consideration is not required.

Environmental Exposure Dust from exhaust ventilation should be separated out in order to avoid release to the natural environment.

9) Physical/Chemical Properties

9.1) Information on basic physical and chemical properties

Physical state	Powder
Appearance	Light grey Fine-grained metal Powder
Odour	Odourless
Odour Threshold	Not applicable
Particle size	No information available

pH: Not applicable- Insoluble in water.
Melting/freezing point:1538°C @ 1013hPa
Boiling point/boiling range: 2861°C @ 1013hPa
Flash Point: Not applicable- Not relevant for inorganic substances.
Evaporation rate: Solid with a melting point >300°C
Flammability (solid, gas): Not flammable- According to Method A10, EU- Regulation 440/2008
Flammability Limits in Air-
Upper flammability or explosive limit: No information available
Lower flammability or explosive limit: No information available
Vapor pressure: Not applicable. Solid with a melting point >300°C
Vapor density: No information available. Solid with a melting point >300°C

Relative density: 7,87g/cm3 @ 20°C
Water Solubility: 0,015 mg/l @ 22°C
Solubility in other solvents: No information available
Partition coefficient: n-octanol/water: Not applicable. Not relevant for inorganic substances.
Autoignition temperature: Not classified. UN test N.4
Decomposition temperature: Will not decompose. Not relevant for inorganic substances.
Viscosity: Not applicable. Solid with a melting point >300°C
Explosive properties: Not explosive. The substance contains no chemical groups associated with explosive properties.
Oxidizing Properties: Not oxidizing The substance is incapable of reacting exothermically with combustible materials on the basis of the chemical structure.

9.2) Other information

VOC Content (%) Not applicable
Bulk Density 2,0-3,0 g/cm^3
Fines fraction No information available
Dust explosion class No information available

10) Stability/Reactivity

10.1) Reactivity

Stable under normal conditions.

10.2) Chemical stability

Stable under normal handling and storage conditions.

10.3) Possibility of hazardous reactions

None under normal use.

10.4) Conditions to Avoid

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.

10.5) Incompatible Materials

Strong oxidizing agents and strong acids.

10.6) Hazardous decomposition products

Burning produces obnoxious and toxic fumes: metal oxides.

11) Toxicological Info

11.1) Information on toxicological effects

General	Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
Acute Toxicity	The substance is not toxic for skin, inhalation or ingestion.
Skin corrosion/ irritation	Not classified according to the criterias of the Globally Harmonized (GHS).

Serious Eye Damage/Eye Irritation	Dust contact with the eyes can lead to mechanical irritation.
Respiratory or skin sensitization	Exposure to airborn concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons.
Germ Cell Mutagenicity	Not classified according to the criterias of the Globally Harmonized System (GHS).
Carcinogenicity	May cause cancer by inhalation. Suspect cancer hazard - risk of cancer depends on duration and level of exposure.
Reproductive Toxicity	There is no data available for this product . Cobalt: repr. Cat. 2.
STOT-single exposure	Not classified according to the criterias of the Globally Harmonized System (GHS)
STOT-repeated exposure	Animal studies (rats) show that repeated dose inhalation of nickel damages the lung. Chronic inflammation, lung fibrosis and accumulation of nickel particles were observed.
Aspiration hazard	Not classified according to the criterias of the Globally Harmonized System (GHS).

Chemical Name	**LD50 Oral**	**LD50 Dermal**	**LC50 Inhalation**
Iron	7500 mg/kg bw (Rat)	-	-
Nickel Powder	9000 mg/kg (Rat)	-	-
Molybdenum	>2000 mg/kg (Rat)	-	-
Silicon	3160 mg/kg (Rat)	-	-
Cobalt respirable	550mg/kg bw	-	10mg/L (Rat) 1h

12) Ecological Information

12.1) Toxicity

Ecotoxicity effects

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Nickel Powder	EC50 72 h = 0.18 mg/L (Pseudokirchneriella subcapitata) EC50 96 h 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata)	LC50 96 h > 100 mg/L (Brachydanio rerio -) LC50 96 h = 1.3 mg/L (Cyprinus carpio - semi-static) LC50 96 h = 10.4 mg/L (Cyprinus carpio - static) EC50 48 h > 100 mg/L (Daphnia magna) EC50 48 h = 1 mg/L (Daphn	-	EC50 48 h > 100 mg/L (Daphnia magna) EC50 48 h = 1 mg/L (Daphnia magna Static)
Cobalt respirable fraction <0,01	EC50 72h > 100mg/L (Desmodesmus subspicatus)	EC50 96h > 100mg/L NOEC 96h >= 100mg/L Danio rerio HAMILTON BUCHANAN	-	EC50 48h > 100mg/L NOEC 48h >= 100mg/L Daphnia magna STRAUS

	OECD 201	OECD 203		OECD 202

12.2) Persistence and degradability
The methods for determining the biological degradability are not applicable to inorganic substances.

12.3) Bioaccumulative potential
Iron and its compounds are essential compounds. Iron is an essential trace element, well-regulated in all living organisms. The available evidence shows the absence of iron biomagnification across the trophic chain both in the aquatic and terrestrial food chains. The existing information suggests not only that iron does not biomagnify, but rather that it tends to exhibit biodilution. Nickel does not tend to bioaccumulate or biomagnify in aquatic or terrestrial systems.

12.4) Mobility in soil Iron and its compounds are found in the form of hydroxides in the environment. They are stabilized in the form of oxides in the long term.

12.5) Results of PBT and vPvB assessment
As iron is not bio-available, owing to its extreme insolubility in water, it is not systematically available or bio-accumulative, and hence it does not fulfil either of the PBT or vPvB criteria for classification.

12.6) Other adverse effects
None anticipated.

13) Disposal Consideration

13.1) Waste treatment methods

Product disposal
This product shall be taken care of as hazardous waste according to directive 2008/98/EC and national or regional provisions

Packaging disposal
According to directive 94/62/EC on packaging and packaging waste carefully emptied packaging can be incinerated. Contaminated packaging shall be taken care of as hazardous waste according to directive 94/62/EC and national or regional provisions.

Other information Waste codes should be assigned by the user based on the application for which the product was used.

14) Transport Information

14.1) UN Number
Not applicable

14.2) UN proper shipping name
Not applicable

14.3) Transport hazard class(es)

Not applicable

14.4) Packaging group
Not applicable

14.5) Environmental hazards
Not classified

14.6) Special precautions for users
Not applicable

1**4.7 Transport in bulk according to MARPOL 73/78 and the IBC Code**
Not applicable

15) Regulatory Information

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

Authorisations
Not required.

Restrictions on use
See section 1.2 Uses advised against.

Other EU regulations
The product is a SEVESO substance, but not an ozone depleting substance and not a persistent organic pollutant.

National regulations
No information available.

15.2) Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for the basepowder.

International Inventories
All of the components in the product are on the following Inventory lists:

TSCA	Complies
EINECS/ELINCS	Complies
DSL/NDSL	Complies
PICCS	Complies
ENCS	–
IECSC	Complies
AICS	Complies
KECL	Complies

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
PICCS - Philippines Inventory of Chemicals and Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
AICS - Australian Inventory of Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances

16) Other Information

Full text of H-Statements referred to under sections 2 and 3
H317 - May cause an allergic skin reaction
H351 - Suspected of causing cancer if inhaled
H372 - Causes damage to organs through prolonged or repeated exposure if inhaled
H412 - Harmful to aquatic life with long lasting effects

Abbreviations
EC50: median effective concentration
LC50: median lethal concentration.
LD50: median lethal dose.
NOEC: no observable effect concentration
OEL: occupational exposure limit
PBT: Persistent, bioaccumulative, and toxic chemicals
PNEC: Predicted no effect concentration (PNEC)
STEL: short-term exposure limit
TWA: Time weighted average
vPvB: very persistent, very bioaccumulative chemical
NGV: Level threshold

Method for classification: Bridging principles.

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006
Classification according to Directive 67/548/EEC
Classification according to Regulation (EC) No 1272/2008

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