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Safety data sheet

BASF Safety data sheet according to UN GHS 4th rev.
Date / Revised: 18.06.2019 Version: 1.0
Product: **Ultrafuse 316L**

(ID no. 961249/SDS_GEN_00/EN)
Date of print 19.06.2019

1. Identification

Product identifier

Ultrafuse 316L
Recommended use: 3D Printing

Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY

Telephone: +49 621 60-0

Emergency telephone number

International emergency number:
Telephone: +49 180 2273-112

2. Hazards Identification

Classification of the substance or mixture

According to UN GHS criteria

No need for classification according to GHS criteria for this product.

Label elements

Globally Harmonized System (GHS)

The product does not require a hazard warning label in accordance with GHS criteria. The dangerous ingredients are fixed in a polymer matrix.

Labeling of special preparations (GHS):
Product contains the following components and may cause an allergic skin reaction: Nickel, Cobalt

Other hazards

According to UN GHS criteria

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture. Upon mechanical treatment like e.g. cutting, grinding and/or polishing the product can release hazardous substances. Upon thermal and/or chemical treatment the product can release hazardous substances.

3. Composition/Information on Ingredients

Substances

Not applicable

Mixtures

Chemical nature

polymer blend based on: Alloy, metal powder
encapsulated, in a polymer matrix

Hazardous ingredients (GHS)
According to UN GHS criteria

Chromium

Content (W/W): >= 0 % - < 25 %	Acute Tox. 5 (oral)
CAS Number: 7440-47-3	Aquatic Chronic 4
EC-Number: 231-157-5	H413

Cobalt

Content (W/W): >= 0 % - < 1 %	Acute Tox. 4 (oral)
CAS Number: 7440-48-4	Resp. Sens. 1B
EC-Number: 231-158-0	Skin Sens. 1A
	Carc. 1B (by inhalation)
	Repr. 2 (fertility)
	Aquatic Chronic 4
	H302, H334, H317, H361, H350, H413

Nickel

Content (W/W): >= 0 % - < 20 %	Skin Sens. 1
CAS Number: 7440-02-0	Carc. 2
EC-Number: 231-111-4	STOT RE 1
	Aquatic Acute 3
	Aquatic Chronic 3
	H317, H351, H372, H402, H412

For the classifications not written out in full in this section the full text can be found in section 16.

4. First-Aid Measures

Description of first aid measures

Remove affected person from danger area.

If inhaled:
If formaldehyde vapour is inhaled, remove person to fresh air and keep warm, if necessary summon physician.

On skin contact:
Wash thoroughly with soap and water.

On contact with eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open.

On ingestion:
Rinse mouth and then drink 200-300 ml of water.

Most important symptoms and effects, both acute and delayed

Symptoms: (Further) symptoms and / or effects are not known so far

Hazards: No hazard is expected under intended use and appropriate handling.

Indication of any immediate medical attention and special treatment needed

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
dry powder, water spray, foam, carbon dioxide

Additional information:
Water spray for suppression (heat dissipation) of incipient fires as long as the product has not yet ignited.

Special hazards arising from the substance or mixture
At temperatures of > 200 °C can be emitted: Formaldehyde, harmful vapours

Advice for fire-fighters
Special protective equipment:
Wear a self-contained breathing apparatus.

Further information:
The degree of risk is governed by the burning substance and the fire conditions. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures
Avoid dust formation.

Environmental precautions
Suppress gases/vapours/mists with water spray jet. Wet down dust with water spray jet.

Methods and material for containment and cleaning up
For small amounts: Pick up with suitable appliance and dispose of.
For residues: Pick up with suitable appliance and dispose of.

7. Handling and Storage

Precautions for safe handling
Avoid dust formation. Ensure adequate ventilation.

Upon mechanical load the product can release sensitizing substances.

Protection against fire and explosion:
Accumulation of fine dust may entail the risk of a dust explosion in the presence of air.

Conditions for safe storage, including any incompatibilities
Further information on storage conditions: Keep container dry.

The packed product is not damaged by low temperatures or by frost.
Protect from temperatures above: 165 °C
Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time.

Specific end use(s)
For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

8. Exposure Controls/Personal Protection

Control parameters

Components with occupational exposure limits

7439-89-6: Iron
7440-02-0: Nickel
7440-47-3: Chromium
7440-48-4: Cobalt
7440-02-0: Nickel

Exposure controls

Personal protective equipment

Respiratory protection:
Breathing protection if gases/vapours are formed. Gas filter for gases/vapours of inorganic compounds (e.g. EN 14387 Type B) Breathing protection if dusts are formed. Particle filter with medium efficiency for solid and liquid particles (e.g. EN 143 or 149, Type P2 or FFP2)

Hand protection:
Wear chemical resistant protective gloves.
Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:
Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
Wearing of closed work clothing is recommended. No eating, drinking, smoking or tobacco use at the place of work. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Form:	fibers, extrudates, pressed
Colour:	grey
Odour:	odourless
Odour threshold:	
	No data available.
pH value:	
	not applicable, not soluble
Melting point:	165 °C

Boiling point:
The product is a non-volatile solid.

Flash point:
not applicable, the product is a solid

Evaporation rate:
not applicable

Flammability: not highly flammable

Lower explosion limit:
For solids not relevant for classification and labelling.

Upper explosion limit:
For solids not relevant for classification and labelling.

Ignition temperature: 440 °C (VDI 2263, sheet 1, 2.6)

Vapour pressure:
negligible, not applicable

Density: 5,4 - 5,8 g/cm3
(20 °C)

Solubility in water: insoluble

Partitioning coefficient n-octanol/water (log Kow):
not applicable for mixtures

Self ignition: not self-igniting

Thermal decomposition: > 200 °C
Thermal decomposition above the indicated temperature is possible.

Viscosity, dynamic:
not applicable, the product is a solid

Viscosity, kinematic:
not applicable, the product is a solid

Explosion hazard: not explosive
Product is not explosive, however a dust explosion could result from an air / dust mixture.

Fire promoting properties: not fire-propagating

Other information

Self heating ability: It is not a substance capable of spontaneous heating.

Radioactivity:
not radioactive for transport purposes

Bulk density: 5 - 6 kg/m3

Hygroscopy: Non-hygroscopic

Solids content: > 90 %

Other Information:
If necessary, information on other physical and chemical parameters is indicated in this section.

10. Stability and Reactivity

Reactivity

Corrosion to metals:	Corrosive effects to metal are not anticipated.	
Reactions with water/air:	Reaction with:	air
	Flammable gases:	no
	Toxic gases:	no
	Corrosive gases:	no
	Smoke or fog:	no
	Peroxides:	no
	Reaction with:	water
	Flammable gases:	no
	Toxic gases:	no
	Corrosive gases:	no
	Smoke or fog:	no
	Peroxides:	no
Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.

Chemical stability
The product is stable if stored and handled as prescribed/indicated.
depolymerizes at elevated temperatures

Possibility of hazardous reactions
Strong exothermic reaction with acids. May decompose violently.
The product is stable if stored and handled as prescribed/indicated.

Conditions to avoid
Avoid all sources of ignition: heat, sparks, open flame. Avoid prolonged exposure to extreme heat.

Incompatible materials

Substances to avoid:
inorganic acids, plastics containing halogenated flame retardants

Hazardous decomposition products

Hazardous decomposition products:
Formaldehyde
At prolonged and/or strong thermal stressing above the decomposition temperature dangerous decomposition products can be formed.

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Virtually nontoxic after a single ingestion.

Information on: Iron
Assessment of acute toxicity:
Virtually nontoxic after a single ingestion. Virtually nontoxic by inhalation. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Irritation

Assessment of irritating effects:
May cause mechanical irritation.

Information on: Iron
Assessment of irritating effects:
Not irritating to the skin. Not irritating to the eyes. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Respiratory/Skin sensitization

Assessment of sensitization:
Study not necessary due to exposure considerations.

Information on: Nickel
Assessment of sensitization:
Sensitization after skin contact possible.

Information on: Cobalt
Assessment of sensitization:
May cause sensitization by inhalation. May cause sensitization by skin contact.

Germ cell mutagenicity

Assessment of mutagenicity:
Based on available Data, the classification criteria are not met.

Information on: Iron
Assessment of mutagenicity:
Most of the results from the available studies show no evidence of a mutagenic effect.

Carcinogenicity

Assessment of carcinogenicity:
Based on available Data, the classification criteria are not met.

Information on: Nickel
Assessment of carcinogenicity:
The results of various animal studies gave no indication of a carcinogenic effect. IARC (International Agency for Research on Cancer) has classified this substance as group 2B (The agent is possibly carcinogenic to humans).

Information on: Cobalt
Assessment of carcinogenicity:
In long-term studies in rats and mice in which the substance was given by inhalation, a carcinogenic effect was observed. IARC (International Agency for Research on Cancer) has classified this substance as group 2B (The agent is possibly carcinogenic to humans).

Reproductive toxicity

Assessment of reproduction toxicity:
No reliable data are available concerning reproduction toxicity.

Information on: Cobalt
Assessment of reproduction toxicity:
The results of animal studies suggest a fertility impairing effect.

Developmental toxicity

Assessment of teratogenicity:
No reliable data was available concerning teratogenicity.

Information on: Cobalt
Assessment of teratogenicity:
Tests underway; results are still not available.

Specific target organ toxicity (single exposure)

Remarks: Based on available Data, the classification criteria are not met.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:
Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

Information on: Nickel
Assessment of repeated dose toxicity:
The substance may cause damage to the lung after repeated inhalation.

Information on: Manganese

Assessment of repeated dose toxicity:
The substance may cause damage to the central nervous system after repeated inhalation of high doses.

Information on: Cobalt
Assessment of repeated dose toxicity:
The substance may cause increase in lung mass and lung tissue changes after repeated inhalation.

Aspiration hazard

Not relevant.

Other relevant toxicity information

The product has not been tested. The statement has been derived from the properties of the individual components. The product has been assessed on the basis of the components' available data. To some extent data gaps exist for individual components. According to our present knowledge and experience dangers which are not covered by the current labeling are not to be expected.

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

12. Ecological Information

Toxicity

Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Information on: Chromium
Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms.
No toxic effects occur within the range of solubility.

Persistence and degradability

Assessment biodegradation and elimination (H2O):
The product is not very soluble in water and can thus be removed from water mechanically in suitable effluent treatment plants.

Information on: Chromium
Assessment biodegradation and elimination (H2O):
Not applicable for inorganic substances.

Bioaccumulative potential

Bioaccumulation potential:
The product has not been tested. Because of the product's consistency and low water solubility, bioavailability is improbable.

Information on: Chromium
Assessment bioaccumulation potential:
May be accumulated in organisms.

Mobility in soil

Assessment transport between environmental compartments:
Adsorption in soil: Adsorption to solid soil phase is possible.

Other adverse effects

The product does not contain substances that are listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

Additional information

The product contains:
The product contains the heavy metals listed in Section 3 and/or Section 8, which are fixed in a polymer matrix.

Add. remarks environm. fate & pathway:
The product has not been tested. The statements on environmental fate and pathway have been derived from the properties of the individual components.

Other ecotoxicological advice:
The product has not been tested. The statements on ecotoxicology have been derived from the properties of the individual components.

The product has been assessed on the basis of the components' available data. To some extent data gaps exist for individual components. According to our present knowledge and experience dangers which are not covered by the current labeling are not to be expected.

13. Disposal Considerations

Waste treatment methods

Check for possible recycling.
Must be disposed of by special means, e.g. suitable dumping after chemical/physical pretreatment (consolidation).
The local regulations on waste-water treatment must be followed.

Contaminated packaging:
Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.
Uncleaned empties should be disposed of in the same manner as the contents.

14. Transport Information

Land transport

ADR

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

RID

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

Inland waterway transport
ADN

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user:	None known

Transport in inland waterway vessel
Not evaluated

Sea transport

IMDG

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

Air transport

IATA/ICAO

	Not classified as a dangerous good under transport regulations
UN number:	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

Transport in bulk according to Annex II of MARPOL and the IBC Code

Regulation:	Not evaluated
Shipment approved:	Not evaluated
Pollution name:	Not evaluated
Pollution category:	Not evaluated
Ship Type:	Not evaluated

15. Regulatory Information

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

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

16. Other Information

Full text of classifications, hazard symbols and hazard statements, if mentioned in section 2 or 3:
Acute Tox. Acute toxicity

Aquatic Chronic	Hazardous to the aquatic environment - chronic
Resp. Sens.	Respiratory sensitization
Skin Sens.	Skin sensitization
Carc.	Carcinogenicity
Repr.	Reproductive toxicity
STOT RE	Specific target organ toxicity — repeated exposure
Aquatic Acute	Hazardous to the aquatic environment - acute
H413	May cause long lasting harmful effects to aquatic life.
H302	Harmful if swallowed.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H361	Suspected of damaging fertility.
H350	May cause cancer by inhalation.
H351	Suspected of causing cancer by inhalation.
H372	Causes damage to organs (Lung) through prolonged or repeated exposure (inhalation).
H402	Harmful to aquatic life.
H412	Harmful to aquatic life with long lasting effects.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.