

# Safety data sheet

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BASF 3D Printing Safety data sheet according to UN GHS 4th rev.

Date / Revised: 23.12.2022

Version: 6.1

Product: **Ultrafuse® 316L metal filament**

(ID no. 11123987/SDS\_GEN\_00/EN)

Date of print 09.01.2023

## 1. Identification

### Product identifier

## Ultrafuse® 316L metal filament

Recommended use: 3D Printing

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

Company:

BASF 3D Printing Solutions B.V.  
Eerste Bokslotweg 17  
7821 AT Emmen, Netherlands

Telephone: + 31 591 820 389

E-mail address: sales@basf-3dps.com

### Emergency telephone number

International emergency number:

Telephone: +49 180 2273-112

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## 2. Hazards Identification

### Classification of the substance or mixture

According to UN GHS criteria

Aquatic Chronic 3

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

### Label elements

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Globally Harmonized System (GHS)

Hazard Statement:

H412 Harmful to aquatic life with long lasting effects.

Precautionary Statements (Prevention):

P273 Avoid release to the environment.

Precautionary Statements (Disposal):

P501 Dispose of contents and container to hazardous or special waste collection point.

**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.

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**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

Nickel

Content (W/W):  $\geq 7\%$  -  $< 25\%$   
CAS Number: 7440-02-0  
EC-Number: 231-111-4

Skin Sens. 1  
Carc. 2  
STOT RE 1  
Aquatic Acute 3  
Aquatic Chronic 3  
H317, H351, H372, H402, H412

Iron

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Content (W/W):  $\geq 50\%$  -  $\leq 75\%$  Flam. Sol. 1  
CAS Number: 7439-89-6 Self-heat. 1  
EC-Number: 231-096-4 H228, H251

#### Chromium

Content (W/W):  $\geq 7\%$  -  $< 25\%$   
CAS Number: 7440-47-3 Substance with EU occupational exposure limit  
EC-Number: 231-157-5

#### Molybdenum

Content (W/W):  $\geq 0\%$  -  $< 10\%$   
CAS Number: 7439-98-7  
EC-Number: 231-107-2

#### Ethylenebis(oxyethylene) bis[3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate]

Content (W/W):  $\geq 0\%$  -  $< 0,1\%$  Aquatic Chronic 1  
CAS Number: 36443-68-2 M-factor chronic: 10  
EC-Number: 253-039-2 H410

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

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## 4. First-Aid Measures

### Description of first aid measures

Remove contaminated clothing.

If inhaled:

Remove the affected individual into fresh air and keep the person calm. If symptoms persist, seek medical advice.

On skin contact:

Wash thoroughly with soap and water. If irritation develops, seek medical attention. Burns caused by molten material require hospital treatment.

On contact with eyes:

Wash affected eyes for at least 15 minutes under running water with eyelids held open. If irritation develops, seek medical attention.

On ingestion:

Rinse mouth immediately with water. Immediate medical attention required.

### 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

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

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## 5. Fire-Fighting Measures

### Extinguishing media

Suitable extinguishing media:  
water spray, foam, dry powder

### Special hazards arising from the substance or mixture

carbon oxides

The substances/groups of substances mentioned can be released in case of fire.

### Advice for fire-fighters

Special protective equipment:

Wear a self-contained breathing apparatus.

Further information:

Dust can form an explosive mixture with air. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

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## 6. Accidental Release Measures

Avoid dispersal of dust in the air (e.g. by clearing dusty surfaces with compressed air). Avoid the formation and build-up of dust - danger of dust explosion. Dust in sufficient concentration can result in an explosive mixture in air. Handle to minimize dusting and eliminate open flame and other sources of ignition.

### Personal precautions, protective equipment and emergency procedures

No special precautions necessary.

### Environmental precautions

Discharge into the environment must be avoided.

### Methods and material for containment and cleaning up

For small amounts: Sweep/shovel up.

For large amounts: Sweep/shovel up.

Dispose of absorbed material in accordance with regulations. Avoid raising dust.

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## 7. Handling and Storage

### Precautions for safe handling

Avoid inhalation of dusts/mists/vapours. Ensure adequate ventilation. Provide suitable exhaust ventilation at the drying process and in the area surrounding the melt outlet of processing machines. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. Avoid the formation and deposition of dust.

Protection against fire and explosion:

The product is not an oxidizer, not self-combustible and not explosive. Avoid dust formation. Dust in sufficient concentration can result in an explosive mixture in air. Handle to minimize dusting and eliminate open flame and other sources of ignition.

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

Further information on storage conditions: Avoid deposition of dust. Avoid extreme heat.

Storage stability:

Protect against moisture.

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.

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## **8. Exposure Controls/Personal Protection**

### **Control parameters**

Components with occupational exposure limits

50-00-0: Formaldehyde

7439-89-6: Iron

7439-96-5: Manganese

7439-98-7: Molybdenum

7440-47-3: Chromium

7440-02-0: Nickel

### **Exposure controls**

Personal protective equipment

Respiratory protection:

Breathing protection if breathable aerosols/dust are formed. Wear respiratory protection if ventilation is inadequate. Particle filter with medium efficiency for solid and liquid particles (e.g. EN 143 or 149, Type P2 or FFP2)

Hand protection:

Use additional heat protection gloves when handling hot molten masses (EN 407), e.g. of textile or leather.

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

Wear protective clothing to prevent contact during mechanical processing and/or hot melt conditions. Store work clothing separately. Hands and/or face should be washed before breaks and at the end of the shift. When using, do not eat, drink or smoke.

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## 9. Physical and Chemical Properties

### Information on basic physical and chemical properties

Form:	filament
Colour:	grey
Odour:	odourless
Odour threshold:	not applicable, odour not perceivable
pH value:	not applicable, substance/mixture is non-soluble (in water)
Melting point:	165 °C
Boiling point:	not applicable
Flash point:	not applicable, the product is a solid
Evaporation rate:	The product is a non-volatile solid.
Flammability:	Not a flammable solid according to UN transport regulations division 4.1 and GHS chapter 2.7.
Lower explosion limit:	For solids not relevant for classification and labelling.
Upper explosion limit:	For solids not relevant for classification and labelling.
Ignition temperature:	not applicable
Vapour pressure:	not determined
Density:	5,4 - 5,8 g/cm <sup>3</sup> (20 °C)
Relative vapour density (air):	The product is a non-volatile solid.
Solubility in water:	insoluble
Partitioning coefficient n-octanol/water (log Kow):	not applicable for mixtures
Self ignition:	not self-igniting
Thermal decomposition:	No decomposition if stored and handled as prescribed/indicated. Prolonged thermal loading can result in products of degradation being given off.
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

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

Radioactivity:

not radioactive for transport purposes

Bulk density: 5 - 6 kg/m<sup>3</sup>  
 Hygroscopy: Non-hygroscopic  
 Solids content: > 90 %

## 10. Stability and Reactivity

### Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:	No corrosive effect on metal.	
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.

### Possibility of hazardous reactions

No hazardous reactions when stored and handled according to instructions.

### Conditions to avoid

Avoid dust formation. Avoid deposition of dust.

### Incompatible materials

Substances to avoid:  
oxidizing agents

### Hazardous decomposition products

Hazardous decomposition products:

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Prolonged thermal loading can result in products of degradation being given off., monomers, gases/vapours, oxides, hydrocarbons, cyclic low molecular weight oligomers

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## 11. Toxicological Information

### Information on toxicological effects

#### Acute toxicity

Assessment of acute toxicity:

Virtually nontoxic after a single ingestion. Virtually nontoxic by inhalation. Virtually nontoxic after a single skin contact. Contact with molten product may cause thermal burns.

*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.*

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#### 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.*

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#### Respiratory/Skin sensitization

Assessment of sensitization:

The chemical structure does not suggest a sensitizing effect. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

*Information on: Nickel*

*Assessment of sensitization:*

*Sensitization after skin contact possible.*

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#### 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.*

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#### Carcinogenicity



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**Assessment of carcinogenicity:**

The chemical structure does not suggest a specific alert for such an effect. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

*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).*

Reproductive toxicity

**Assessment of reproduction toxicity:**

| Based on available data, the classification criteria are not met.

Developmental toxicity

**Assessment of teratogenicity:**

| Based on available data, the classification criteria are not met.

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:**

Repeated exposure to the substance by dermal administration leads to effects similar to those found after single exposure. Repeated exposure to the substance by inhalative administration leads to effects similar to those found after single exposure. Repeated exposure to the substance by oral administration leads to effects similar to those found after single exposure. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

*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.*

Aspiration hazard

| not applicable

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## 12. Ecological Information

### Toxicity

Assessment of aquatic toxicity:

Harmful to aquatic life with long lasting effects.

The product has not been tested. The statement has been derived from the properties of the individual components.

*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.*

*Information on: Ethylenebis(oxyethylene) bis[3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate]*

*Assessment of aquatic toxicity:*

*There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.*

### Persistence and degradability

Assessment biodegradation and elimination (H<sub>2</sub>O):

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 (H<sub>2</sub>O):*

*Not applicable for inorganic substances.*

*Information on: Ethylenebis(oxyethylene) bis[3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate]*

*Assessment biodegradation and elimination (H<sub>2</sub>O):*

*Not readily biodegradable (by OECD criteria). The product can be virtually eliminated from water by abiotic processes e.g. adsorption onto activated sludge.*

### Bioaccumulative potential

Assessment bioaccumulation potential:

The product has not been tested.

Bioaccumulation potential:

Because of the product's consistency and low water solubility, bioavailability is improbable.

*Information on: Chromium*

*Assessment bioaccumulation potential:*

*Does not significantly accumulate in organisms.*

*Information on: Ethylenebis(oxyethylene) bis[3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate]*

*Assessment bioaccumulation potential:*

*Significant accumulation in organisms is not to be expected.*

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### **Mobility in soil**

Assessment transport between environmental compartments:

Adsorption in soil: Adsorption to solid soil phase is possible.

### **Results of PBT and vPvB assessment**

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not contain a substance fulfilling the PBT (persistent/bioaccumulative/toxic) criteria.

### **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 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.

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## **13. Disposal Considerations**

### **Waste treatment methods**

Dispose of in accordance with national, state and local regulations.

Contact specialized companies about recycling.

Contaminated packaging:

Dispose of in accordance with national, state and local regulations.

Contaminated packaging should be emptied as far as possible and disposed of in the same manner as the substance/product.

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## **14. Transport Information**

### **Land transport**

ADR

UN number or ID number: Not classified as a dangerous good under transport regulations  
Not applicable

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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

UN number or ID 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

UN number or ID 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

UN number or ID 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

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UN number or ID 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

### Maritime transport in bulk according to IMO instruments

Maritime transport in bulk is not intended.

## 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

| Any other intended applications should be discussed with the manufacturer.

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

Aquatic Chronic	Hazardous to the aquatic environment - chronic
Skin Sens.	Skin sensitization
Carc.	Carcinogenicity
STOT RE	Specific target organ toxicity — repeated exposure
Aquatic Acute	Hazardous to the aquatic environment - acute
Flam. Sol.	Flammable solids
Self-heat.	Self-heating substances and mixtures
H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure.
H402	Harmful to aquatic life.
H412	Harmful to aquatic life with long lasting effects.
H228	Flammable solid.
H251	Self-heating; may catch fire.
H410	Very toxic 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.

Vertical lines in the left hand margin indicate an amendment from the previous version.