

Safety data sheet

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BASF 3D Printing Safety data sheet
Date / Revised: 13.09.2022
Product: **Ultrafuse ® 316L metal filament**

Version: 5.0

(11123987/SDS_GEN_SG/EN)

Date of print): 09.01.2023

1. Substance/preparation and manufacturer/supplier identification

Product name:
Ultrafuse ® 316L metal filament

Recommended use: 3D Printing

Manufacturer/supplier:

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

Contact address:

BASF SEA Pte Ltd
7 Temasek Boulevard,
#35-01 Suntec Tower One, 038987
SINGAPORE
Telephone: +65 6 337-0330
Telefax number: +65 6 334-0330
E-mail address: carlos.mandia@basf.com

Emergency information:

Singapore Emergency Toll-Free Number:
Telephone: 1800-723-1361
International emergency number:
Telephone: +49 180 2273-112

2. Hazard identification

Classification of the substance and mixture:
Hazardous to the aquatic environment - chronic: Cat.3

Label elements and precautionary statement:

Hazard Statement:

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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 which do not result in classification:

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

Chemical nature

Substance nature: mixture

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

Hazardous ingredients

Nickel

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

Skin Sens.: Cat. 1
Carc.: Cat. 2
STOT RE: Cat. 1
Aquatic Acute: Cat. 3
Aquatic Chronic: Cat. 3

iron

Content (W/W): $\geq 50\%$ - $\leq 75\%$
CAS Number: 7439-89-6

Flam. Sol.: Cat. 1
Self-heat.: Cat. 1

chromium

Content (W/W): $\geq 7\%$ - $< 25\%$
CAS Number: 7440-47-3

molybdenum

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

| ethylene bis(oxyethylene)bis(3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate)

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Content (W/W): $\geq 0\%$ - $< 0.1\%$
CAS Number: 36443-68-2

Aquatic Chronic: Cat. 1
M-factor chronic: 10

4. First-Aid Measures

General advice:

Remove contaminated clothing.

If inhaled:

Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. If symptoms persist, seek medical advice.

On skin contact:

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

On contact with eyes:

In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. If irritation develops, seek medical attention.

On ingestion:

Keep patient calm, remove to fresh air. Immediate medical attention required.

Note to physician:

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

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

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

5. Fire-Fighting Measures

Suitable extinguishing media:

water spray, foam, dry powder

Specific hazards:

carbon oxides

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

Special protective equipment:

Wear a self-contained breathing apparatus.

Further information:

Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. Accidental Release Measures

Personal precautions:

No special precautions necessary.

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Environmental precautions:
Discharge into the environment must be avoided.

Methods for cleaning up or taking up:
For small amounts: Sweep/shovel up.
For large amounts: Sweep/shovel up. Vacuum up spilled product.
Reclaim for processing if possible. Ensure adequate ventilation. Avoid raising dust.

Additional information: 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.

7. Handling and Storage

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.

Storage

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.

8. Exposure controls and personal protection

Components with occupational exposure limits

molybdenum, 7439-98-7;

TWA value 10 mg/m³ (OEL (SG))

Measured as: molybdenum (Mo)

TWA value 3 mg/m³ (ACGIHTLV), Respirable particles

TWA value 10 mg/m³ (ACGIHTLV), Inhalable particles

chromium, 7440-47-3;

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TWA value 0.5 mg/m³ (OEL (SG))
Measured as: Chromium (Cr)
TWA value 0.5 mg/m³ (ACGIHTLV), Inhalable fraction
Measured as: Cr (0)

Nickel, 7440-02-0;

TWA value 1.5 mg/m³ (ACGIHTLV), Inhalable fraction
TWA value 1 mg/m³ (OEL (SG))

Engineering Controls

Advice on system design:

It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment.

Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

Use only appropriately classified electrical equipment and powered industrial trucks.

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.

9. Physical and Chemical Properties

Form:	filament
Colour:	grey
Odour:	odourless

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Odour threshold:	not applicable
pH value:	not applicable, substance/mixture is non-soluble (in water)
Melting point:	165 °C
Boiling point:	not applicable
Flash point:	not applicable
Evaporation rate:	The product is a non-volatile solid.
Flammability (solid/gas):	Not a flammable solid according to UN transport regulations division 4.1 and GHS chapter 2.7. Based on the structure or composition there is no indication of flammability
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
Thermal decomposition:	No decomposition if stored and handled as prescribed/indicated. Prolonged thermal loading can result in products of degradation being given off.
Self ignition:	not self-igniting
Self heating ability:	It is not a substance capable of spontaneous heating.
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
Radioactivity:	not radioactive for transport purposes
Vapour pressure:	not applicable
Density:	5.4 - 5.8 g/cm ³ (20 °C)
Bulk density:	5 - 6 kg/m ³

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Relative vapour density (air):
not applicable

Solubility in water: insoluble
Hygroscopy: Non-hygroscopic
Partitioning coefficient n-octanol/water (log Pow):
not applicable

Viscosity, dynamic:
not applicable

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

Solids content: > 90 %

10. Stability and Reactivity

Conditions to avoid:
Avoid dust formation. Avoid deposition of dust.

Thermal decomposition: No decomposition if stored and handled as prescribed/indicated. Prolonged thermal loading can result in products of degradation being given off.

Substances to avoid:
oxidizing agents

Corrosion to metals: No corrosive effect on metal.

Hazardous reactions:
No hazardous reactions when stored and handled according to instructions.

Thermal decomposition products:
Prolonged thermal loading can result in products of degradation being given off.

Chemical stability:
The product is stable if stored and handled as prescribed/indicated.

11. Toxicological Information

Routes of exposure

Assessment of acute toxicity

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.

Symptoms

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

Irritation

Assessment of irritating effects:
May cause mechanical irritation.

Experimental/calculated data:
Skin corrosion/irritation: May cause mechanical irritation.

Serious eye damage/irritation: 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:
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.

Germ cell mutagenicity

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

Carcinogenicity

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

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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:**

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.

Developmental toxicity**Assessment of teratogenicity:**

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.

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

No aspiration hazard expected.

Other relevant toxicity information

The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

12. Ecological Information

Ecotoxicity

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: ethylene bis(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.

Mobility

Assessment transport between environmental compartments:

Adsorption to solid soil phase is possible.

Persistence and degradability

Information on: chromium

Assessment biodegradation and elimination (H₂O):

Not applicable for inorganic substances.

Information on: ethylene bis(oxyethylene)bis(3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate)

Bioaccumulation 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:

Does not significantly accumulate in organisms.

Information on: ethylene bis(oxyethylene)bis(3-(5-tert-butyl-4-hydroxy-m-tolyl)propionate)

Assessment bioaccumulation potential:

Significant accumulation in organisms is not to be expected.

Other adverse effects

The product contains:

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

Additional information

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.

13. Disposal Considerations

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

Contaminated packaging:

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

14. Transport Information

Domestic transport:

	Not classified as a dangerous good under transport regulations
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

Sea transport

IMDG

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

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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

15. Regulatory Information

Other regulations

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

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

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.