

Safety data sheet

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BASF 3D Printing Safety data sheet

Date / Revised: 12.01.2023

Product: **Ultrafuse® 17-4 PH metal filament**

Version: 3.0

(11134863/SDS_GEN_SG/EN)

Date of print): 02.02.2023

1. Substance/preparation and manufacturer/supplier identification

Product name:

Ultrafuse® 17-4 PH metal filament

Recommended use: 3D Printing

Manufacturer/supplier:

BASF 3D Printing Solutions B.V.

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7821 AT Emmen, Netherlands

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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 thermal and/or chemical treatment the product can release hazardous substances.

Upon mechanical treatment like e.g. cutting, grinding and/or polishing the product can release hazardous substances.

Fine dust produced by abrasion can form explosive mixtures with air.

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): $\geq 3\% - < 5\%$
 CAS Number: 7440-02-0

Skin Sens.: Cat. 1
 Carc.: Cat. 2
 STOT RE: Cat. 1

cobalt

Content (W/W): $> 0\% - < 0.1\%$
 CAS Number: 7440-48-4

Acute Tox.: Cat. 4 (oral)
 Resp. Sens.: Cat. 1
 Skin Sens.: Cat. 1
 Carc.: Cat. 1B (by inhalation)
 Muta.: Cat. 2
 Repr.: Cat. 1B (fertility)
 Aquatic Chronic: Cat. 4
 Repr.: Cat. 2 (unborn child)

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

Content (W/W): $> 0\% - < 0.1\%$
 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. 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 and then drink 200-300 ml of water. Seek medical attention.

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, carbon dioxide

Additional information:

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

Specific hazards:

formaldehyde, 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:

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:

Handle in accordance with good industrial hygiene and safety practice. Avoid dust formation.

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.

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

Additional information: 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. Upon mechanical load the product can release sensitizing substances.

Further information is given in the user guidelines for the product.

Protection against fire and explosion:

The product is not an oxidizer, not self-combustible and not explosive. Avoid dust formation.

Accumulation of fine dust may entail the risk of a dust explosion in the presence of air.

Storage

Segregate from acids.

Suitable materials for containers: High density polyethylene (HDPE), Low density polyethylene (LDPE), Paper/Fibreboard

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

Storage stability:

Protect against moisture.

8. Exposure controls and personal protection

Components with occupational exposure limits

nickel, 7440-02-0;

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

TWA value 1 mg/m³ (OEL (SG))

chromium, 7440-47-3;

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)

copper, 7440-50-8;

TWA value 0.2 mg/m³ (ACGIHTLV), fumes/smoke
Measured as: copper (Cu)
TWA value 1 mg/m³ (ACGIHTLV), Dust and mist
Measured as: copper (Cu)
TWA value 1 mg/m³ (OEL (SG)), Dust and mist
Measured as: copper (Cu)
TWA value 0.2 mg/m³ (OEL (SG)), fumes/smoke

Cobalt, 7440-48-4;

TWA value 0.02 mg/m³ (OEL (SG))
Measured as: cobalt (Co)
TWA value 0.02 mg/m³ (ACGIHTLV), Inhalable fraction
Measured as: cobalt (Co)

The release and quantity of the stated substance is dependent on the processing conditions.

formaldehyde, 50-00-0;

STEL value 0.3 ppm (ACGIHTLV)
TWA value 0.1 ppm (ACGIHTLV)
STEL value 0.37 mg/m³ ; 0.3 ppm (OEL (SG))

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:

Wearing of closed work clothing is recommended. Ensure adequate ventilation. No eating, drinking, smoking or tobacco use at the place of work. 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
Odour threshold:	not applicable, odour not perceivable
pH value:	not applicable, substance/mixture is non-soluble (in water)
Melting point:	not determined
Boiling point:	not applicable
Flash point:	not applicable, the product is a solid
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.
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:	Product is not explosive, however a dust explosion could result from an air / dust mixture.
Fire promoting properties:	not fire-propagating
Vapour pressure:	not determined

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Density:
(20 °C)
not determined

Bulk density:
not determined

Relative vapour density (air):
The product is a non-volatile solid.

Solubility in water: insoluble

Hygroscopy: Non-hygroscopic

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

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

Other Information:

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

10. Stability and Reactivity

Conditions to avoid:

Avoid all sources of ignition: heat, sparks, open flame. Avoid dust formation.

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, inorganic acids, plastics containing halogenated flame retardants

Corrosion to metals: No corrosive effect on metal.

Hazardous reactions:

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

Possible thermal decomposition products:

formaldehyde, carbon monoxide

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

Chemical stability:

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

11. Toxicological Information

Routes of exposure**Assessment of acute toxicity**

Based on available data, the classification criteria are not met. Contact with molten product may cause thermal burns.

Information on: cobalt

Assessment of acute toxicity

Of moderate toxicity after single ingestion. The inhalation of dusts represents a severe acute hazard. Virtually nontoxic after a single skin contact.

Symptoms

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

Irritation

Assessment of irritating effects:
May cause mechanical irritation.

Respiratory/Skin sensitization

Assessment of sensitization:
Based on available data, the classification criteria are not met. Study not necessary due to exposure considerations.

Information on: cobalt

Assessment of sensitization:

May cause sensitization by inhalation. May cause sensitization by skin contact.

Information on: nickel

Assessment of sensitization:

Sensitization after skin contact possible.

Germ cell mutagenicity

Assessment of mutagenicity:

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

Carcinogenicity

Assessment of carcinogenicity:

Based on available data, the classification criteria are not met. Study not necessary due to exposure considerations.

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

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

Developmental toxicity

Assessment of teratogenicity:
Based on available data, the classification criteria are not met.

Information on: cobalt
Assessment of teratogenicity:
Indications of possible developmental toxicity/teratogenicity were seen in animal studies. 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:
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.

Aspiration hazard

not applicable

12. Ecological Information

Ecotoxicity

Assessment of aquatic toxicity:
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product has not been tested. The statement has been derived from the properties of the individual components.

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.

Bioaccumulation potential

Assessment bioaccumulation potential:

The product has not been tested.

Bioaccumulation potential:

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

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 not been tested. The statements on ecotoxicology have been derived from the properties of the individual components.

13. Disposal Considerations

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.

14. Transport Information

Domestic transport:

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

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

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

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