Safety Data Sheet
Ultrafuse® PLA Tough White

1. Identification

Product identifier used on the label

Ultrafuse® PLA Tough White

Recommended use of the chemical and restriction on use
Recommended use*: 3D Printing
Unsuitable for use: Uses other than recommended

* The “Recommended use” identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
BASF 3D Printing Solutions B.V.
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7821 AT Emmen, Netherlands

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Telephone: +1 289 360-1300

Emergency telephone number
24 Hour Emergency Response Information
CHEMTREC: 1-800-424-9300
BASF HOTLINE: (800) 454-COPE (2673)

Other means of identification
Chemical family: Polymer

2. Hazards Identification

According to Hazardous Products Regulations (HPR) (SOR/2015-17)

Classification of the product

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

Label elements

The product does not require a hazard warning label in accordance with GHS criteria.

Hazards not otherwise classified

The product may cause burns, if handled in the melted state.

Labeling of special preparations (GHS):
This product is not combustible in the form in which it is shipped by the manufacturer, but may form a combustible dust through downstream activities (e.g. grinding, pulverizing) that reduce its particle size. UNDER HOT MELT PROCESSING CONDITIONS, WEAR PERSONAL PROTECTIVE EQUIPMENT TO PREVENT THERMAL BURNS.

3. Composition / Information on Ingredients

According to Hazardous Products Regulations (HPR) (SOR/2015-17)

Titanium dioxide
CAS Number: 13463-67-7
Content (W/W): >= 0.3 - < 1.0%
Synonym: C.I. Pigment White 6

4. First-Aid Measures

Description of 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.

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

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

If swallowed:
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

Information on: Titanium dioxide
Symptoms: Overexposure may cause:, rhinitis, irritation of the mucous membranes, irritates the eyes and respiratory tract, nausea, headache, vomiting, dizziness, diarrhea, abdominal cramps
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Hazards: No hazard is expected under intended use and appropriate handling.

Indication of any immediate medical attention and special treatment needed

Note to physician
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

Special hazards arising from the substance or mixture
Hazards during fire-fighting:
Vapors/fumes may contain traces of combustible substances.

Advice for fire-fighters
Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Dusty conditions may ignite explosively in the presence of an ignition source causing flash fire.

6. Accidental release measures

Further 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
Wear suitable personal protective clothing and equipment. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice.

Environmental precautions
Do not discharge into drains/surface waters/groundwater.

Dispose of in compliance with the environmental protection requirements.

Methods and material for containment and cleaning 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. Nonsparking tools should be used. After decontamination, spill area can be washed with water.

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:
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. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids (2013 Edition) for safe handling.

Conditions for safe storage, including any incompatibilities
Segregate from oxidizing agents.

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

Storage stability:
Protect against moisture.

8. Exposure Controls/Personal Protection

Components with occupational exposure limits

Titanium dioxide	ACGIH, US:	TWA value 2.5 mg/m3 Respirable finescale particles ;
	ACGIH, US:	TWA value 0.2 mg/m3 Respirable nanoscale particles ;
	OSHA Z1:	PEL 15 mg/m3 Total dust ;

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:
Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator.

Hand protection:
Wear gloves to prevent contact during mechanical processing and/or hot melt conditions.

Eye protection:
Safety glasses with side-shields. Wear splash goggles to protect from hot molten substance/product.

Body protection:
Standard work clothes and shoes.

General safety and hygiene measures:
Avoid inhalation of dust. Wear protective clothing to prevent contact during mechanical processing and/or hot melt conditions. Wash soiled clothing immediately.

9. Physical and Chemical Properties

Form:	filament
Odour:	odourless
Odour threshold:	not applicable, odour not perceivable
Colour:	white
pH value:	not determined
Melting point:	177 °C
Boiling point:	not determined
Flash point:	not determined
Flammability:	not determined
Lower explosion limit:	For solids not relevant for classification and labelling.
Upper explosion limit:	For solids not relevant for classification and labelling.
Autoignition:	not determined
Vapour pressure:	The product is a non-volatile solid.
Density:	1.22 g/cm3 (20 °C, 1,013 hPa)
Bulk density:	not determined
Vapour density:	The product is a non-volatile solid.
Partitioning coefficient n-octanol/water (log Pow):	not determined
Self-ignition temperature:	not self-igniting
Thermal decomposition:	> 230 °C
Viscosity, dynamic:	not applicable, the product is a solid
Viscosity, kinematic:	not applicable, the product is a solid
Solubility in water:	not determined
Evaporation rate:	The product is a non-volatile solid.

10. Stability and Reactivity

Reactivity

Corrosion to metals:
No corrosive effect on metal.

Oxidizing properties:
Not an oxidizer.

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

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

Conditions to avoid
Temperature: > 230 degrees Celsius

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

Incompatible materials
oxidizing agents, strong bases

Hazardous decomposition products

Decomposition products:
Possible thermal decomposition products: aldehydes, carbon oxides, toxic gases/vapours

Thermal decomposition:
> 230 °C

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Inhalation of particulates may cause respiratory tract irritation. Ingestion may cause gastrointestinal disturbances. Contact with molten product may cause thermal burns. The resin in pelleted form poses a low hazard.

Oral
Type of value: LD50
Species: rat
Value: > 5,000 mg/kg

Inhalation
The inhalation of dusts represents a potential acute hazard.

Dermal
Type of value: LD50
Species: rabbit
Value: > 2,000 mg/kg

Assessment other acute effects
Assessment of STOT single:
Based on available data, the classification criteria are not met.

Irritation / corrosion
Assessment of irritating effects: Not irritating to eyes and skin. May cause mechanical irritation.

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

Aspiration Hazard
not applicable

Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: Based on available data, the classification criteria are not met.

Genetic toxicity
Assessment of mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity
Assessment of carcinogenicity: Contains a compound classified as IARC Group 2B (possibly carcinogenic to humans). Based on available data, the classification criteria are not met.

Information on: Titanium dioxide
Assessment of carcinogenicity: IARC (International Agency for Research on Cancer) has classified this substance as group 2B (The agent is possibly carcinogenic to humans). In long-term studies in rats in which the substance was given by inhalation, a carcinogenic effect was observed. Tumors were only observed in rats after chronic inhalative exposure to high concentrations which caused sustained lung inflammation. In long-term studies in rats and mice in which the substance was given by feed, a carcinogenic effect was not observed. Dermal exposure is not expected to be carcinogenic.

Reproductive toxicity
Assessment of reproduction toxicity: Based on available data, the classification criteria are not met.

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

12. Ecological Information

Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:
At the present state of knowledge, no negative ecological effects are expected.
Based on available data, the classification criteria are not met.

Persistence and degradability

Assessment biodegradation and elimination (H2O)
No data available concerning biodegradation and elimination.

Bioaccumulative potential

Assessment bioaccumulation potential
The product has not been tested.

Mobility in soil

Assessment transport between environmental compartments
Adsorption to solid soil phase is expected.

Additional information

Add. remarks environm. fate & pathway:
Due to the consistency of the product, dispersion into the environment is impossible. Therefore no negative effects on the environment may be anticipated based on the present state of knowledge.

13. Disposal considerations

Waste disposal of substance:
Incinerate in a licensed facility. Do not discharge substance/product into sewer system.

Container disposal:
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

Land transport
TDG

Not classified as a dangerous good under transport regulations

Sea transport
IMDG

Not classified as a dangerous good under transport regulations

Air transport
IATA/ICAO

Not classified as a dangerous good under transport regulations

15. Regulatory Information

Federal Regulations

Registration status:
Chemical DSL, CA released / listed

NFPA Hazard codes:
Health: 1 Fire: 1 Reactivity: 0 Special:

16. Other Information

SDS Prepared by:
BASF 3D Printing NA Product Regulations
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We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in

a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

Any other intended applications should be discussed with the manufacturer.

END OF DATA SHEET