

Breakaway

Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
SDS ID: UM00002
Issue date: 12/6/2023 Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Trade name : Breakaway

1.2. Recommended use and restrictions on use

Use of the substance/mixture : 3D-Printer filament
Restrictions on use : This product must not be used in applications other than those identified above, without first seeking advice of the supplier

1.3. Supplier

US Responsible Party

MakerBot Industries, LLC
c/o UltiMaker
55 Water St, Fl 51, New York, NY 10041
Tel +1 347 334 6800
product-compliance@ultimaker.com

Supplier

UltiMaker
Watermolenweg 2
Geldermalsen, 4191 PN - The Netherlands
T +31 (0) 88 383 4000 (9 AM - 5 PM CET)
Product-Compliance@Ultimaker.com

1.4. Emergency telephone number

Emergency number : 1 347 334 6800

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Not classified

2.2. GHS Label elements, including precautionary statements

GHS US labeling

No labeling applicable

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification : Risk of thermal burns on contact with molten product.

2.4. Unknown acute toxicity (GHS US)

Not applicable

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SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	Conc. (% w/w)
Polyurethane (PU)	CAS-No.: 27083-55-2	≥ 50
Polylactic acid	CAS-No.: 26100-51-6	≤ 50
Titanium dioxide	CAS-No.: 13463-67-7	< 1

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice (show the label where possible).

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : No acute and delayed symptoms and effects are observed.
Symptoms/effects after skin contact : Risk of thermal burns on contact with molten product.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

5.2. Specific hazards arising from the chemical

Explosion hazard : Material can accumulate some static charge during transfer. Prevent build-up of electrostatic charges (e.g. by grounding).
Hazardous decomposition products in case of fire : Under fire conditions, hazardous fumes will be present: Carbon dioxide, Carbon monoxide, Hydrocarbons, Hydrogen cyanide.

5.3. Special protective equipment and precautions for fire-fighters

Precautionary measures fire : Do not allow run-off from fire-fighting to enter drains or water courses.

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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment : Wear recommended personal protective equipment. Refer to section 8.2. Remove contaminated clothing and shoes.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

No additional information available

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Sweep up and put in a closed container for disposal. If melted: allow liquid to solidify before taking it up.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For disposal of residues refer to section 13: Disposal considerations" .

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. In molten state: Do not breathe vapors. Avoid contact with skin, eyes and clothing. Wear personal protective equipment.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : To guarantee the quality and properties of the product: Store in a well-ventilated place. Store in original container. Keep container tightly closed to avoid moisture absorption and contamination.

Incompatible materials : Strong oxidizing agents.

Storage temperature : -4 – 86 °F (Relative air humidity: <50%)

Heat-ignition : Keep away from heat, sparks and flames. Keep out of direct sunlight.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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No additional information available

Polyurethane (PU) (27083-55-2)

No additional information available

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Polylactic acid (26100-51-6)	
No additional information available	
Titanium dioxide (13463-67-7)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Titanium dioxide
ACGIH TWA (mg/m ³)	10 mg/m ³
Remark (ACGIH)	TLV® Basis: LRT irr. Notations: A4 (Not classifiable as a Human Carcinogen)
ACGIH chemical category	Not Classifiable as a Human Carcinogen
Regulatory reference	ACGIH 2020
USA - OSHA - Occupational Exposure Limits	
Local name	Titanium dioxide (Total dust)
OSHA PEL (TWA) (mg/m ³)	15 mg/m ³
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - IDLH - Occupational Exposure Limits	
US IDLH (mg/m ³)	5000 mg/m ³
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA) (mg/m ³)	2.4 mg/m ³ (CIB 63-fine) 0.3 mg/m ³ (CIB 63-ultrafine, including engineered nanoscale)

8.2. Appropriate engineering controls

Appropriate engineering controls : Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below specified exposure limits. If user operations generate dust, fumes or mist, use ventilation to keep exposure to airborne particles below the exposure limit. Ventilation conditions (1 printer): Provide a good standard of general ventilation, not less than 2 air changes per hour (assumes a room volume of: 30 m³).

8.3. Individual protection measures/Personal protective equipment

Hand protection:				
None under normal conditions. Use insulated gloves when handling this material hot				
Type	Material	Permeation	Thickness (mm)	Penetration
In molten state: Chemically resistant protective gloves, Heat-resistant	Nitrile rubber (NBR)	6 (> 480 minutes)	>0.35	

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Eye protection:		
Type	Use	Characteristics
Safety glasses with side shields	In molten state	
Skin and body protection:		
None under normal use. In molten state: Wear suitable protective clothing		
Type		
Long sleeved protective clothing		
Respiratory protection:		
None under normal use. In molten state: In case of insufficient ventilation, wear suitable respiratory equipment		
Device	Filter type	Condition
Air-Purifying Respirator (APR), disposable	Type B/P2	

Thermal hazard protection:

Risk of thermal burns on contact with molten product. Hazardous vapors may be released. In molten state: Use respiratory protection/heat resistant gloves.

Other information:

Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product. Wash hands immediately after handling the product. Take off contaminated clothing and wash before reuse.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Filament.
Color	: White
Odor	: Slight
Odor threshold	: No data available
pH	: No data available
Melting point	: 374 °F
Freezing point	: No data available
Boiling point	: No data available
Flash point	: Not applicable
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Non flammable.
Vapor pressure	: No data available
Relative vapor density at 20°C	: No data available
Particle size distribution	: Not applicable
Relative density	: No data available
Density	: 1.2 g/cm ³
Solubility	: Water: Insoluble
Partition coefficient n-octanol/water (Log Pow)	: No data available

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Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: Not explosive.
Oxidizing properties	: Non oxidizing material.

9.2. Other information

SADT : 280 °C (536 °F)

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7). To avoid thermal decomposition, do not overheat.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under fire conditions, hazardous fumes will be present: Carbon dioxide, Carbon monoxide, Hydrocarbons, Hydrogen cyanide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: The filament product itself (mixture) is not carcinogenic

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Titanium dioxide (13463-67-7)	
IARC group	2B - Possibly carcinogenic to humans, only for airborne, unbound particles of respirable size
In OSHA Hazard Communication Carcinogen list	Yes

Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified
Viscosity, kinematic	: No data available
Symptoms/effects	: No acute and delayed symptoms and effects are observed.
Symptoms/effects after skin contact	: Risk of thermal burns on contact with molten product.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.
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Titanium dioxide (13463-67-7)	
LC50 fish 1	> 1000 mg/l

12.2. Persistence and degradability

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Persistence and degradability	No additional information available.
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12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Regional waste regulation	: Dispose of in accordance with relevant local regulations.
Product/Packaging disposal recommendations	: Empty containers should be taken for recycling, recovery or waste in accordance with local regulation.

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SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

DOT	TDG	IMDG	IATA
14.1. UN number			
Not regulated for transport			
14.2. Proper Shipping Name			
Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)			
Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group			
Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information available			

14.6. Special precautions for user

DOT

No data available

TDG

No data available

IMDG

No data available

IATA

No data available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

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15.2. International regulations

Titanium dioxide (13463-67-7)

Listed on IARC (International Agency for Research on Cancer)

15.3. US State regulations

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U.S. - California - Proposition 65 - Other information	For products containing Titanium Dioxide: California Proposition 65 lists Titanium Dioxide (airborne, unbound particles of respirable size) as a substance known to the state California to cause cancer. Some Ultimaker filaments contain low concentrations of Titanium Dioxide, which is homogeneously bound in the polymer matrix. Given the Titanium Dioxide is bound and concentrations are low, the risk of exposure to 'airborne, unbound particles of respirable size' during printing is considered negligible. In case 3D-prints undergo post-processing that causes dust formation, UltiMaker recommends to re-assess whether those activities may lead to significant exposure under those particular conditions and apply appropriate measures when necessary. Appropriate measures in such cases may include additional ventilation, air extraction or (face) masks, depending on the level of potential exposure.
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Titanium dioxide (13463-67-7)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)	Maximum allowable dose level (MADL)
Yes	No	No	No		

SECTION 16: Other information

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Training advice : Ensure staff are informed of and trained on the nature of exposure and basic actions to minimise exposure.

Abbreviations and acronyms

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS	Chemical Abstract Service number
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
vPvB	Very Persistent and Very Bioaccumulative
PBT	Persistent Bioaccumulative Toxic

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Abbreviations and acronyms	
SDS	Safety Data Sheet

Indication of changes:
Not applicable.

SDS US (GHS HazCom 2012) - RHDHV

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.