Safety Data Sheet
TPU95A

Compiled according to GB/T 16483, GB/T 17519
Product Reference code:UM00012
Issue date: 2023/11/10 Revision date: 2024/4/24 Version: 2.0

SECTION 1 Chemical product and company identification

Chemical Chinese name	:	TPU95A (蓝色, 红色, 白色, 黑色)
Chemical English name	:	TPU95A (Blue, Red, White, Black)
Name of company	:	UltiMaker
Title	:	Supplier
Address	:	The Netherlands Geldermalsen Watermolenweg 2
Zip code	:	4191 PN
Tel.	:	+31 (0) 88 383 4000 (9 AM - 5 PM CET)
E-mail	:	Product-Compliance@Ultimaker.com
Emergency number	:	+31 (0) 88 383 4000 (during office hours: 9 AM - 5 PM CET)
Recommended use of the chemical	:	3D-Printer filament
Restricted use of the chemical	:	This product must not be used in applications other than those identified above, without first seeking advice of the supplier

SECTION 2 Hazards identification

Emergency overview

Appearance: Filament, Various colours. Non flammable. The product is non-reactive under normal conditions of use, storage and transport

To our knowledge, this product does not present any particular risk, provided it is handled in accordance with good occupational hygiene and safety practice

GHS hazard classification

Other hazards not mentioned above are Not applicable or No data is available.

Label elements

No data available

Physical and chemical hazards

No additional information available

Health hazards

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

Environmental hazards

No additional information available

Other hazards

Risk of thermal burns on contact with molten product

SECTION 3 Composition/information on ingredients

Product form : Mixture.

Ingredient(s)	Concentration or concentration ranges (w/w %)	CAS No.
Thermoplastic polyurethane resin	≤ 100	
Titanium dioxide (Additive for TPU95A Blue)	< 1	13463-67-7
Limestone (Additive for TPU95A Red)	< 0.3	1317-65-3
Silicon dioxide (Additive for TPU95A Blue)	< 0.05	7631-86-9
Carbon black (Additive for TPU95A Black)	< 0.05	1333-86-4
Aluminium oxide (Additive for TPU95A White)	< 0.03	1344-28-1

SECTION 4 First-aid measures

Description of necessary first-aid measures

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

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.

In molten state: Hazardous vapours may be released

First-aid measures after skin contact : In case of contact with molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily.

Burns caused by molten material must be treated clinically.

Wash skin with plenty of water and soap.

Take off contaminated clothing.

First-aid measures after eye contact : Rinse eyes with water as a precaution.

In the event of contact with molten product: Immediately flush eyes thoroughly with water for at least 15 minutes.

Get immediate medical advice/attention.

First-aid measures after ingestion : If you feel unwell, seek medical advice

Most important symptoms/effects

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

Advices for first aid responders

No additional information available

Notes for the doctor

Other medical advice or treatment : Treat symptomatically

SECTION 5 Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire: Water spray, Dry powder, Foam, Carbon dioxide

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

Specific hazards

Hazardous decomposition products in case of fire : Under fire conditions, hazardous fumes will be present: Carbon dioxide, Carbon monoxide, Nitrogen oxides, Hydrogen cyanide, Isocyanates

Explosion hazard : Material can accumulate some static charge during transfer
Prevent build-up of electrostatic charges (e.g, by grounding)

Advice for firefighters and protective measures

Firefighting instructions : No additional information available

Protection during firefighting : Do not attempt to take action without suitable protective equipment
Self-contained breathing apparatus
Complete protective clothing

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

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

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

General measures : No additional information available

Personal Precautions, Protective Equipment and Emergency Procedures : No additional information available

For non-emergency personnel

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

Emergency procedures : None in particular
In molten state: Do not breathe vapours
Ventilate spillage area
Avoid contact with skin, eyes and clothing

For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment

For further information refer to section 8: "Exposure controls/personal protection"

Environmental precautions

Avoid release to the environment

Notify authorities if product enters sewers or public waters

Methods and material for containment and cleaning up

Methods for cleaning	:	No additional information available
Methods and Equipment for Containment and Cleaning up	:	Sweep up and put in a closed container for disposal If melted: allow liquid to solidify before taking it up
For containment	:	No additional information available

Prevention measures for secondary accidents

Prevention Measures for Secondary Accidents	:	No additional information available
Other information	:	Dispose of materials or solid residues at an authorized site

SECTION 7 Handling and storage

Handling

Precautions for safe handling	:	Ensure good ventilation of the work station In molten state: Do not breathe vapours Avoid contact with skin, eyes and clothing Wear personal protective equipment
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice Do not eat, drink or smoke when using this product. Always wash hands after handling the product Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.
Local and general ventilation	:	No additional information available

Storage

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
Material used in packaging/containers	:	No additional information available
Storage temperature	:	-20 – 30 °C (Relative air humidity: <50%)
Heat and ignition sources	:	Keep away from heat, sparks and flames Keep out of direct sunlight

SECTION 8 Exposure controls / Personal protection equipment

Occupational exposure limits

Titanium dioxide (Additive for TPU95A Blue) (13463-67-7)	
China - Occupational Exposure Limits	
Local name	二氧化钛粉尘 # Titanium dioxide dust
OEL TWA	8 mg/m³ 总尘
OEL chemical category (CN)	Possibly carcinogenic to humans dust
Catalogue of Occupational Hazard Factors	Category 1 - Dusts
Remark (CN)	G2B（对人可疑致癌 (Possibly carcinogenic to humans)）
Regulatory reference	GBZ 2.1-2019

Limestone (Additive for TPU95A Red) (1317-65-3)	
China - Occupational Exposure Limits	
Local name	石灰石粉尘 # Limestone dust
OEL TWA	8 mg/m³ 总尘 4 mg/m³ 呼尘
Catalogue of Occupational Hazard Factors	Category 1 - Dusts
Regulatory reference	GBZ 2.1-2019

Aluminium oxide (Additive for TPU95A White) (1344-28-1)	
China - Occupational Exposure Limits	
Local name	氧化铝粉尘 # Aluminium oxide dust
OEL TWA	4 mg/m³ (total dust)
Regulatory reference	GBZ 2.1-2019

Carbon black (Additive for TPU95A Black) (1333-86-4)	
China - Occupational Exposure Limits	
Local name	炭黑粉尘 # Carbon black dust
OEL TWA	4 mg/m³ 总尘
Remark (CN)	G2B（对人可疑致癌 (Possibly carcinogenic to humans)）

Carbon black (Additive for TPU95A Black) (1333-86-4)	
Regulatory reference	GBZ 2.1-2019

Exposure limit values for the other components

Biological limit values

No additional information available

Monitoring methods

No additional information available

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 m^3)

Personal protective equipment

Thermal hazard protection : Risk of thermal burns on contact with molten product
Hazardous vapours may be released
In molten state: Wear respiratory protection/heat resistant gloves

Environmental exposure controls : Avoid release to the environment.

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.

Hand protection : None under normal conditions
Use insulated gloves when handling this material hot

Type	Material	Permeation	Thickness (mm)	Penetration	Standard
In molten state:, Chemically resistant protective gloves, Heat-resistant.	Nitrile rubber (NBR).	6 (> 480 minutes).	>0.35		EN 374，EN 407.

Eye protection : None under normal use
In molten state: Wear eye protection

Type	Use	Characteristics	Standard
Safety glasses with side shields.	In molten state.		EN 166.

Skin and body protection : None under normal use
In molten state: Wear suitable protective clothing

Type	Standard
Long sleeved protective clothing.	EN 13688.

Respiratory protection : None under normal use
In molten state: In case of insufficient ventilation, wear suitable respiratory equipment

Device	Filter type	Condition	Standard
Air-Purifying Respirator (APR), disposable.	Type B/P2.		EN 140，EN 14387.

SECTION 9 Physical and chemical properties

Physical state : Solid
Appearance : Filament
Colour : Various colours
Odour : Slight
pH : No data available
Melting point : 220 °C
Freezing point : Not applicable
Boiling point : Not applicable
Flash point : Not applicable
Auto-ignition temperature : > 400 °C
Decomposition temperature : > 230 °C.
Flammability : Non flammable
Vapour pressure : No data available
Relative vapour density at 20°C : No data available
Density : 1.22 g/cm³
Solubility : No data available
Solubility in water : Insoluble
Solubility in organic solvents : Tetrahydrofuran, Dimethylformamide, 1-methyl-2-pyrrolidone (NMP), Dimethyl Sulphoxide, Pyridine: Soluble
Partition coefficient n-octanol/water (Log Pow) : No data available
Viscosity, kinematic : Not applicable
Explosive limits (vol %) : Not applicable
Lower explosive limit (LEL) : No data available
Upper explosive limit (UEL) : No data available
Radioactive : No
Explosive properties : Not explosive
Oxidising properties : Non oxidizing
Particle size distribution : Not applicable

SECTION 10 Stability and reactivity

Chemical stability : Stable under normal conditions

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

Possibility of hazardous reactions : No dangerous reactions known under normal conditions of use

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

Incompatible materials : No additional information available

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, Nitrogen oxides, Hydrogen cyanide, Isocyanates

Other properties : No additional information available

SECTION 11 Toxicological information

Acute toxicity

Acute toxicity (oral) : Not classified

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Not classified

TPU95A (Blue, Red, White, Black)	
LD50 oral rat	> 5000 mg/kg

Silicon dioxide (Additive for TPU95A Blue) (7631-86-9)	
LD50 oral rat	> 5000 mg/kg (OECD 401 method)
LD50 dermal rabbit	> 2000 mg/kg
LC50 Inhalation - Rat (Dust/Mist)	> 5.01 mg/l (OECD 436 method)
ATE CN (dermal)	2500 mg/kg bodyweight

Limestone (Additive for TPU95A Red) (1317-65-3)	
LD50 oral rat	> 2000 mg/kg female
LD50 dermal rat	> 2000 mg/kg bodyweight male/female
LC50 Inhalation - Rat (Vapours)	> 3 mg/l/4h
ATE CN (oral)	2500 mg/kg bodyweight

Limestone (Additive for TPU95A Red) (1317-65-3)	
ATE CN (dermal)	2500 mg/kg bodyweight

Aluminium oxide (Additive for TPU95A White) (1344-28-1)	
LD50 oral rat	> 10000 mg/kg (OECD 401 method)
LC50 Inhalation - Rat (Vapours)	> 0.888 mg/l/4h

Skin corrosion/irritation

Skin corrosion/irritation : Not classified

Serious eye damage/eye irritation

Serious eye damage/irritation : Not classified

Respiratory or skin sensitisation

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity

Germ cell mutagenicity : Not classified

Carcinogenicity

Carcinogenicity : Not classified

Silicon dioxide (Additive for TPU95A Blue) (7631-86-9)	
NOAEL (chronic, oral, animal/male, 2 years)	1800 – 3000 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
NOAEL (chronic, oral, animal/female, 2 years)	1800 – 3200 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

Reproductive toxicity

Reproductive toxicity : Not classified

STOT - single exposure

STOT-single exposure : Not classified

STOT - repeated exposure

STOT-repeated exposure : Not classified

Silicon dioxide (Additive for TPU95A Blue) (7631-86-9)	
NOAEL (dermal, rat/rabbit, 90 days)	≥ 10000 mg/kg bodyweight Animal: rabbit

Silicon dioxide (Additive for TPU95A Blue) (7631-86-9)	
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	> 1 mg/mg³ (OECD 413 method)
Additional information	Mineralisation and recipitation of sodium silicate NOEL oral rat 90 days 4000 - <9000 mg/kg bw/day (OECD 408 method)

Limestone (Additive for TPU95A Red) (1317-65-3)	
NOAEL (subchronic, oral, animal/male, 90 days)	1000 mg/kg bw/day

Aluminium oxide (Additive for TPU95A White) (1344-28-1)	
LOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.015 mg/l air Animal: rat, Guideline: OECD Guideline 452 (Chronic Toxicity Studies)

Aspiration hazard

Aspiration hazard : Not classified

TPU95A (Blue, Red, White, Black)	
Viscosity, kinematic	Not applicable
Density	1.22 g/cm³

SECTION 12 Ecological information

Ecotoxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Not classified

Titanium dioxide (Additive for TPU95A Blue) (13463-67-7)	
LC50 fish 1	> 1000 mg/l

Silicon dioxide (Additive for TPU95A Blue) (7631-86-9)	
LC50 fish 1	5000 mg/l (Exposure time: 96 h - Species: Brachydanio rerio (zebra-fish) [static]) Read-across CAS# 1318-02-1
EC50 Daphnia 1	7600 mg/l (Exposure time: 48 h - Species: Ceriodaphnia dubia) Read-across CAS# 1318-02-1
EC50 72h - Algae [1]	440 mg/l (Species: Pseudokirchneriella subcapitata) Read-across CAS# 1318-02-1

Limestone (Additive for TPU95A Red) (1317-65-3)	
LC50 fish 1	> 100 mg/l
EC50 Daphnia 1	> 100 mg/l
ErC50 (algae)	> 14 mg/l (OECD 201 method)

Aluminium oxide (Additive for TPU95A White) (1344-28-1)	
LC50 fish 1	114.97 mg/l
EC50 72h - Algae [1]	1.05 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)
EC50 72h - Algae [2]	0.2 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)

Persistence and degradability

TPU95A (Blue, Red, White, Black)	
Persistence and degradability	No additional information available.

Titanium dioxide (Additive for TPU95A Blue) (13463-67-7)	
Persistence and degradability	Not rapidly degradable

Thermoplastic polyurethane resin	
Persistence and degradability	Not rapidly degradable

Silicon dioxide (Additive for TPU95A Blue) (7631-86-9)	
Persistence and degradability	Not rapidly degradable

Limestone (Additive for TPU95A Red) (1317-65-3)	
Persistence and degradability	Not rapidly degradable

Aluminium oxide (Additive for TPU95A White) (1344-28-1)	
Persistence and degradability	Not rapidly degradable

Carbon black (Additive for TPU95A Black) (1333-86-4)	
Persistence and degradability	Not rapidly degradable

Bioaccumulative potential

TPU95A (Blue, Red, White, Black)	
Bioaccumulative potential	No bioaccumulation expected

Silicon dioxide (Additive for TPU95A Blue) (7631-86-9)	
Bioaccumulative potential	No bioaccumulation potential

Limestone (Additive for TPU95A Red) (1317-65-3)	
Bioaccumulative potential	No bioaccumulation expected (solid inorganic substance)

Mobility in soil

TPU95A (Blue, Red, White, Black)	
Bioaccumulative potential	No bioaccumulation expected

Silicon dioxide (Additive for TPU95A Blue) (7631-86-9)	
Bioaccumulative potential	No bioaccumulation potential

Limestone (Additive for TPU95A Red) (1317-65-3)	
Bioaccumulative potential	No bioaccumulation expected (solid inorganic substance)

Other adverse effects

Classification procedure (Ozone) : No data available

SECTION 13 Disposal considerations

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Contaminated container and packaging : No additional information available

Additional information : No additional information available

Product/Packaging disposal recommendations : Empty containers should be taken for recycling, recovery or waste in accordance with local regulation

Regional waste regulation : Dispose of in accordance with relevant local regulations

SECTION 14 Transport information

In accordance with JT/T 617 / IMDG / IATA

Overland transport (JT/T 617)	Transport by sea	Air transport
UN number		
Not regulated for transport		
Proper shipping name		
Not regulated	Not regulated	Not regulated
Transport hazard class(es)		
Not regulated	Not regulated	Not regulated
Packing group		
Not regulated	Not regulated	Not regulated
Environmental hazards		
Not regulated	Not regulated	Not regulated
No supplementary information available		

Special transport precautions

Overland transport (JT/T 617)

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

SECTION 15 Regulatory information

New Chemical Substance Environmental Management Registration Measures (MEE Order 12 of 2020)

Inventory of Existing Chemical Substances in China (IECSC) : Contains listed substance(s)

Titanium oxide (CAS-No. 13463-67-7)
Silica (CAS-No. 7631-86-9)
Limestone (CAS-No. 1317-65-3)
Aluminum oxide (CAS-No. 1344-28-1)
Carbon black (CAS-No. 1333-86-4)

Law of the People's Republic of China on the Prevention and Control of Occupational Diseases

Catalogue for Classification of Hazardous Factors of Occupational Diseases : Contains listed substance(s)

Titanium dioxide dust (CAS-No. 13463-67-7)
Limestone
(Additive for TPU95A Red) (CAS-No. 1317-65-3)
Carbon black dust (CAS-No. 1333-86-4)

SECTION 16 Other information

SDS Reason for revision : Not applicable

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
SDS	Safety Data Sheet

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

Indication of changes

Composition/information on ingredients

Safety Data Sheet (SDS), China

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