

SAFETY DATA SHEET

Protowhite

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SECTION 1 : IDENTIFICATION

1.1 Product identifier

Product name Protowhite

Recommended use and restrictions on use

Recommended use For use in Phrozen 3D-printers

Restrictions on use Do not use in the situation that easily generate aerosol, steam.

1.2 Name, address and phone of manufacturer , importers or supplier

Manufacturer : Phrozen Tech Co., Ltd.287 Niupu Rd, Xiangshan Dist,
Hsinchu City 30091, TAIWAN(R.O.C)

Phone: +886-3621-0505

1.3 Emergency phone / Fax : +886-3621-0505 / +886-3539-6591

SECTION 2 : HAZARD IDENTIFICATION

2.1 Hazard classification

Acute toxicity: oral Category 4 , Acute toxicity: dermal Category 5,

Skin corrosion/irritation Category 2 , Serious eye damage/eye irritation Category 1 ,

Skin sensitization Category 1 ,

Specific target organ toxicity-repeated exposure Category 2 ,

Hazardous to the aquatic environment, short-term (Acute 2) ,

Hazardous to the aquatic environment chronichazard (Chronic3)

2.2 Signal statement

Corrosion , Exclamation mark , Health hazard



2.3 Pictograms

2.4 Signal word Danger

2.5 Hazard statements

May be harmful in contact with skin.

May cause an allergic skin reaction.

Harmful if swallowed.

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Causes serious eye damage.

May be harmful in contact with skin.

May cause damage to organs through prolonged or repeated exposure.

Harmful to aquatic life with long lasting effects.

Toxic to aquatic life.

2.6 Precautionary statements

Do not breathe dust/fume/gas/mist/vapours/spray.

Wear protective gloves/protective clothing/eye protection/face protection.

Avoid release to the environment.

Contaminated work clothing should not be allowed out of the workplace.

Do not eat, drink or smoke when using this product.

Wash contaminated body parts thoroughly after handling.

IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a POISON CENTER or physician.

IF ON SKIN: Wash with plenty of soap and water.

Rinse mouth

Take off contaminated clothing and wash it before reuse.

Dispose of contents and container to hazardous or special waste collection point.

SECTION 3 : COMPOSITION / INFORMATION ON INGREDIENTS

3.1. Substances

Not relevant (mixture)

3.2. Mixtures

Components	CAS number	Weight %	Classification acc. to GHS
4-Acryloyl morpholine	5117-12-4	50 - 75%	Eye Dam. 1 / H318 Skin Sens. 1 / H317 Acute Tox. 4 /H302 STOT RE 2,/ H373
Polymeric urethane acrylate	52404-33-8	25-50%	Skin Irrit. 2 / H315 Eye Dam. 2/ H319

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Additives1	Trade Secret	3-5 %	Skin Sens. 1B/ H317 Aquatic Acute 2/ H401 Aquatic Chronic 2/H411 STOT SE 3/ H335
Additives2	Trade Secret	1- 5 %	Skin Irrit. 2 / H315 Eye Dam./Irrit. 2 / H319 Skin Sens. 1A / H317 STOT SE 3 / H335 Aquatic Acute 1 / H411 Aquatic Chronic 2 / H400
Additives3	Trade Secret	0.3 - 3%	Repr. 1B / H360FD
Additives4	Trade Secret	< 3 %	Skin Irrit. 2 / H315 Eye Dam. 1 / H318 Skin Sens. 1 / H317

SECTION 4 : FIRST AID MEASURES

4.1 First-aid advice and recommendations for different routes of exposure

4.1.1. Inhalation

Keep patient calm, remove to fresh air, seek medical attention. Immediately administer a corticosteroid from a controlled/metered dose inhaler.

4.1.2. Skin Contact

Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.

4.1.3. Eyes Contact

Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

4.1.4. Ingestion

Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

4.2 Most important symptoms and hazardous effects

None

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4.3 Protection of First-aid personnel

None

4.4 Note for physician

None

SECTION 5 : FIRE-FIGHTING MEASURES

5.1. Applicable extinguishing media

water spray, dry powder, foam

5.2. Specific hazards confronted during fire fighting

Harmful vapours, carbon oxides, nitrogen oxides . Evolution of fumes/fog.

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

5.3. Specific fire-fighting procedure

None

5.4. Specific protective equipments for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

Wear breathing apparatus if exposed to vapours/dust/spray/gases.

6.2. Environmental precautions

Do not discharge into drains/surface waters/groundwater.

Contain contaminated water/firefighting water.

6.3. Cleaning methods

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage: sawdust, kieselgur(diatomite), sand, universal binder. Covering of drains.

Place in appropriate containers for disposal. Ventilate affected area.

SECTION 7 : SAFETY HANDLING AND STORAGE

7.1. Handling

Use local and general ventilation. Use only in well-ventilated areas.

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Do not eat, drink and smoke in work areas.

Remove contaminated clothing and protective equipment before entering eating areas. Wash hands after use.

Never keep food or drink in the vicinity of chemicals.

Never place chemicals in containers that are normally used for food or drink.

7.2. Storage

Storage at the area of cool, dry.

Keep away from heat, direct sunlight, rainy and rapid temperature.

Storage temperature between 15°C / 59°F to 35°C / 95°F.

Close the lid tightly when not in use.

SECTION 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Engineering controls :

Provide adequate ventilation to the areas where the product is stored and/or handled.

8.2. Control Parameters

None

8.3. Personal protective equipment

8.3.1 Respiratory protection

Suitable respiratory protection for higher concentrations or long-term effect :

Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e. g. EN 14387 Type A)

8.3.2 Hand protection

Chemical protection gloves are suitable, which are tested according to EN 374.

For example : NBR: acrylonitrile-butadiene rubber / butyl rubber (butyl)

Material thickness : $\geq 0.4\text{mm}$ / $\geq 0.7\text{ mm}$

8.3.3 Eye protection

Use safety goggles. (splash goggles) (e.g. EN 166)

8.3.4 Skin 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).

8.4. Hygiene measures

Do not eat, drink and smoke in work areas.

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Wash thoroughly after handling.

Keep clean of operation area.

Take off polluted clothing as soon as possible after work. The clothing can be re-wear only after washed in clean or discard.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and color	White viscous liquid	Odor	Typical acrylate
Odor threshold	N/A	Melting point	N/A
pH value	6 - 8	Boiling point	>100 °C
Flammable	N/A	Flash point Testing method	>100 °C Close up
Decomposition Temp	N/A		
Natural Temp	N/A	Explosive limit	N/A
Vapor pressure	N/A	Vapor density	N/A
Density	1.0 g /cm ³ at 20 °C	Solubility	N/A
Octanol/water distribution coefficient (log Kow)	N/A	Evaporaion rate	N/A

SECTION 10: STABILITY AND REACTIVITY

10.1. Stability

Stable under normal condition.

10.2. Possible hazardous reation under specific conditions

None

10.3. Must avoid condition

UV-radiation/sunlight.

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10.4. Must avoid substances

Free radical initiators

10.5. Hazardous decomposed product

None

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects

Test data are not available for the complete mixture.

11.1. Exposure paths

None

11.2. Symptoms

None

11.3. Acute toxicity

Components	route	Species	End point	Value
4-Acryloylmorpholine	Oral	Rat	LD50	588 mg/kg
	Dermal	Rat	LD50	> 2,000 mg/kg
Diphenyl(2,4,6-trimethyl benzoyl) phosphine oxide	Ingestion	Rat	LD50	> 5,000 mg/kg
	Dermal	Rat	LD50	> 2,000 mg/kg
(Octahydro-4,7-methano-1H-indenediyl)bis(methylene) diacrylate	Oral	Rat	LD50	> 2,000 mg/kg
	Dermal	Rat	LD50	> 2,000 mg/kg

11.4. Chronic toxicity

None

11.5. Reproductive and/or Developmental Effects

Components	route	Species	End point	Value
Diphenyl(2,4,6-trimethyl benzoyl) phosphine oxide	Ingestion	Rat	NOAEL prematuring into lactation for female	200 mg/kg/day

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SECTION 12: ECOLOGICAL INFORMATION

The product has not been tested. The statement has been derived from the properties of the individual components.

12.1. Ecological toxicity

Aquatic toxicity (acute) of components of the mixture				
Components	End point	Value	Species	Exposure time
Oxybis(methyl-2,1-ethanediyl) diacrylate	LC50	4.64 mg/l	fish	96 h
	EC50	22.3 mg/l	aquatic invertebrates	48 h
(Octahydro-4,7-methano-1H-indenediyl)bis(methylene) diacrylate	LC50	1.65mg/l	fish	96h
	EC50	2.36mg/l	aquatic invertebrates	48h
	EC50	1.6mg/l	algae	72h
4-(1,1-Dimethylethyl)cyclohexyl acrylate	LC50	1.27mg/l	fish	96h
	EC50	1.03mg/l	Crustacea	48h
	EC50	0.539mg/l	Algae	72h
Aquatic toxicity (chronic) of components of the mixture				
Components	End point	Value	Species	Exposure time
Oxybis(methyl-2,1-ethanediyl) diacrylate	EC50	>1,000 mg/l	microorganisms	30 min
Diphenyl(2,4,6-trimethyl benzoyl) phosphine oxide	EC50	>1,000 mg/l	microorganisms	180 min

12.2. Persistence and degradability

Degradability of components of the mixture				
Components	Process	Degradation rate	Time	Source
(Octahydro-4,7-methano-1H-indenediyl)bis(methylene) diacrylate	aerobic	28%	28d	OECD
Oxybis(methyl-2,1-ethanediyl) diacrylate	DOC removal	90–100 %	28d	OECD
Diphenyl(2,4,6-trimethyl benzoyl) phosphine oxide	oxygen depletion	0 -10%	28 d	OECD

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12.3. Bio-accumulative potential

Components	BCF	Log kow	BOD/COD
Oxybis(methyl-2,1-ethanediyl) diacrylate		0.01 – 0.39 (pH value: 7, 24 °C)	
Diphenyl(2,4,6-trimethyl benzoyl) phosphine oxide	47 – 55	3.1 (pH value: 6.4, 23 °C)	

12.4. Mobility in soil

None

12.5. Other adverse effects

None

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste disposal methods

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

13.2. Sewage disposal method

Do not empty into drains. Avoid release to the environment.

13.3. Contaminated Packaging disposal method

Handle contaminated packages in the same way as the substance itself.

SECTION 14: TRANSPORT INFORMATION

Land transport USDOT	Not classified as dangerous goods under transport regulations.
Sea transport IMDG	Not classified as dangerous goods under transport regulations.
Air transport IATA/ICAO	Not classified as dangerous goods under transport regulations.
Further information	N/A

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Other requirements	N/A
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Additional information for IMDG CODE 3.4.1 :

According to the general provisions 2.10.2.7, if the volume of the product is less than 5L or the mass is less than 5kg when transported, and the packaging complies with the general provisions in 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8, the product is not regarded as dangerous goods transportation.

SECTION 15: REGULATORY INFORMATION

15.1. List of substances subject to authorisation (REACH, Annex XIV) / SVHC- candidate list

None of the ingredients are listed

15.2. Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

None of the ingredients are listed

15.3. Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

None of the ingredients are listed

15.4. Regulation on persistent organic pollutants (POP)

None of the ingredients are listed.

15.5. National inventories

Country	Inventory	Status
AU	AU AICS	all ingredients are listed
CA	DSL	all ingredients are listed
CA	NDSL	all ingredients are listed
CN	IECSC	all ingredients are listed
EU	ECSI	all ingredients are listed
EU	REACH Reg.	all ingredients are listed
JP	CSCL-ENCS	not all ingredients are listed
JP	ISHA-ENCS	not all ingredients are listed
NZ	NZIoC	all ingredients are listed
TR	CICR	all ingredients are listed
TW	TCSI	all ingredients are listed

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US	TSCA	all ingredients are listed
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Legend

AIIC	Australian Inventory of Industrial Chemicals
DSL	Domestic Substances List (DSL)
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
EU	EC Substance Inventory (EINECS, ELINCS, NLP)
EU	REACH registered substances
CSCL-ENCS	List of Existing and New Chemical Substances (CSCL-ENCS)
ISHA-ENCS	Inventory of Existing and New Chemical Substances (ISHA-ENCS)
NZIoC	New Zealand Inventory of Chemicals
CICR	Chemical Inventory and Control Regulation
TCSI	Taiwan Chemical Substance Inventory
TSCA	Toxic Substance Control Act

SECTION 16: OTHER INFORMATION

Reference	US OSHA HCS 29 CFR 1910.1200 / ECHA / OECD
Table formulation unit	Name : Phrozen Tech. Co. Ltd Address / Phone : 287 Niupu Rd, Xiangshan Dist, Hsinchu City 30091, TAIWAN(R.O.C) /+ 886-3-5400076 #323
Table formulator	Job title : Occupational Safety & Health manager Name : Chun-Yao, Kuo
Table formulation Date	2023.11.15
Remarks	In the above described information, the symbol "N/A" means no relevant information currently.

To the best of our knowledge the information contained herein is accurate. However, Phrozen Tech. Co. Ltd. makes no warranty, expressed or implied, regarding the accuracy of these results to be obtained from the use thereof. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. Phrozen Tech. Co. Ltd. assumes no responsibility for injury from the use of the product described herein.

END OF SAFETY DATASHEET