

SAFETY DATA SHEET

Engineering Series Resin - Rigid: PC/GF-like, Black



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SECTION 1 : IDENTIFICATION

1.1 Product identifier

Product name Engineering Series Resin - Rigid: PC/GF-like, Black
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
Emergency phone / Fax +886-3621-0505 / +886-3539-6591

SECTION 2 : HAZARD IDENTIFICATION

2.1. Hazard classification

Skin corrosion/irritation Category 2 , Skin sensitization Category 1
Serious eye damage/eye irritation Category 1 , Reproductive toxicity Category 1B
Specific target organ toxicity single exposure((irritating to respiratory system)Category 3,
Specific target organ toxicity repeated exposure((oral) Category 2
Hazardous to the aquatic environment (acute) Category 2
Hazardous to the aquatic environment (chronic) Category 2

2.2. Signal statement

Corrosion ,Exclamation mark , Health hazard, Environment



2.3. Pictograms

2.4. Signal word

Danger

2.5. Hazard statements

Causes skin irritation
Causes serious eye damage
May cause an allergic skin reaction
May cause respiratory irritation.

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May cause damage to organs through prolonged or repeated oral exposure.

May damage fertility. May damage the unborn child.

Toxic to aquatic life

Toxic to aquatic life with long lasting effects

2.6. Precautionary statements

Obtain special instructions before use.

Avoid release to the environment

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

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

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

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

IF INHALED: Remove person to fresh air and keep comfortable for breathing

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

Immediately call a POISON CENTER/doctor.

Keep container tightly closed. Store locked up.

Use only outdoors or in a well-ventilated area.

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

2.7. Other hazard

None

SECTION 3 : COMPOSITION / INFORMATION ON INGREDIENTS

Substances

Not relevant (mixture)

3.1 Mixtures

Components	CAS number	Weight %	Classification acc. to GHS
(Octahydro-4, 7-methano-1 H-indenediyl)bis methylene) diacrylate	42594-17-2	50-75%	Skin Sens. 1/ H317
2-Propenoic acid, 2-hydroxy ethyl ester, polymer with 1,1'-methylenebis[4-isocyanatocyclohexane] and	68585-11-5	15-25%	Skin Corr./Irrit. 2 /H315 Eye Dam./Irrit. 2 /H319

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2-oxepanone)			
4-(1-Oxo-2-propenyl)-morpholine	5117-12-4	15-20%	Acute Tox. 4 (oral) /H302 Eye Dam./Irrit. 1 /H318 Skin Sens. 1/ H317 STOT RE 2 /H373
Additives 1	Trade Secret	0.3-<3%	Skin Sens. 1/ H317 Aquatic Acute 1/ H401 Aquatic Chronic 1/ H411
Additives 2	Trade Secret	0 - 3%	Skin Corr./Irrit. 2 /H315 Eye Dam./Irrit. 1 /H318 Skin Sens. 1/ H317
Additives 3	Trade Secret	0.3 - <1 %	Skin Sens. 1/ H317 Repr. 2/ H361 Aquatic Acute 2/ H401 Aquatic Chronic 2/ H411
Additives 4	Trade Secret	0.1- 0.2%	Flam. Liq. 3 / H226 Acute Tox. 4 / H332 Acute Tox. 3 /H331. Skin Corr./Irrit. 1A / H317 Eye Dam./Irrit. 1/ H318 STOT SE 3/ H335 Aquatic Acute 1 / H400 Aquatic Chronic 2 / H411

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

4.1.2. Skin Contact

Wash with plenty of soap and water.

4.1.3. Eyes Contact

Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes.

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Remove contact lenses, if present, after first 5 minutes, then continue rinsing.
Immediate medical attention required.

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

4.3. Protection of First-aid personnel

Remove contaminated clothing.

4.4. Note for physician

None

SECTION 5 : FIRE-FIGHTING MEASURES

5.1. Applicable extinguishing media

Water spray, BC-powder, foam

5.2. Specific hazards confronted during fire fighting

Nitrogen oxides (NO_x), Carbon monoxide (CO), Carbon dioxide (CO₂)

5.3. Specific fire-fighting procedure

None

5.4. Specific protective equipments for fire-fighters

Wear self-contained breathing apparatus and chemical-protective clothing. If exposed to fire, keep containers cool by spraying with water. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

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

6.2. Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

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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.

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

components	TWA	STEL	CEILING	BEI s
acrylic acid	2mg / m ³	45mg / m ³	-	-

8.3. Personal protective equipment

8.3.1. Respiratory protection

For high concentrations or prolonged exposure organic compound gas/vapor filter
eg EN 14387 Type A, boiling point >65 °C.

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8.3.2. Hand protection

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

For example : NBR: acrylonitrile-butadiene rubber

Material thickness : $\geq 0.6\text{mm}$

Breakthrough times of the glove material : > 480 minutes (permeation: level 6)

8.3.3. Eye protection

Tightly fitting safety goggles (splash goggles) (e.g. EN 166)

8.3.4. Skin protection

Use clothing that provides complete protection to the skin.

8.4. Hygiene measures

Under no circumstances should the product come into contact with the skin of pregnant women or be inhaled by them.

Do not eat, drink and smoke in work areas.

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

Apperance and color	Black viscous liquid	Odor	Typical acrylate
Odor threshold	N/A	Melting point	N/A
pH value	N/A	Boiling point	$> 150^{\circ}\text{C}$, 1013hPa
Flammable	N/A	Flash point	$> 95^{\circ}\text{C}$
Decomposition Temp	187.89 $^{\circ}\text{C}$ 440.22 J/g	Testing method	close cup
Natural Temp :	N/A	Explosive limit	N/A
Vapor pressure	N/A	Vapor density	N/A
Density	1.0 g/cm ³ at 20 $^{\circ}\text{C}$	Solubility	N/A

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Octanol/water distribution coefficient (log Kow)	N/A	Evaporation rate	N/A
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SECTION 10: STABILITY AND REACTIVITY

10.1. Stability

Stable under normal condition.

Decomposition Temp :187.89°C 440.22 J/g

10.2. Possible hazardous reaction under specific conditions

None

10.3. Must avoid condition

UV-radiation/sunlight.

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-(1-Oxo-2-propenyl)-morpholine)	Oral	Rat	LD50	588 mg/kg
Diphenyl(2,4,6-trimethyl benzoyl) phosphine oxide	Oral	Rat	LD50	> 5,000 mg/kg
	Dermal	Rat	LD50	> 2,000 mg/kg

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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	oral	Rat	NOAEL premating into lactation for female	200 mg/kg/day

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
Diphenyl(2,4,6-trimethyl benzoyl)phosphine oxide	LC50	1.4 mg/l	fish	96 h
	EC50	3.53 mg/l	aquatic invertebrates	48 h
	ErC50	>2.01mg/l	algae	72h
(4-(1-Oxo-2-propenyl)-morpholine)	LC50	>220mg/l	fish	96 h
	EC50	230mg/l	aquatic invertebrates	48 h
	ErC50	>120mg/l	algae	72h
Aquatic toxicity (chronic) of components of the mixture				
Components	End point	Value	Species	Exposure time
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
Diphenyl(2,4,6-trimethyl benzoyl) phosphine oxide	oxygen depletion	0-10%	28d	ECHA

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12.3. Bio-accumulative potential

Components	BCF	Log kow	BOD/COD
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
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

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

None of the ingredients are listed

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

None of the ingredients are listed

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

None of the ingredients are listed

Regulation on persistent organic pollutants (POP)

None of the ingredients are listed.

National inventories

Country	Inventory	Status
AU	AU AICS	not all ingredients are listed
CA	DSL	not all ingredients are listed
CA	NDSL	not all ingredients are listed
CN	IECSC	not all ingredients are listed
EU	ECSI	not all ingredients are listed
EU	REACH Reg.	not all ingredients are listed
JP	CSCL-ENCS	not all ingredients are listed
JP	ISHA-ENCS	not all ingredients are listed
NZ	NZIoC	not all ingredients are listed
TR	CICR	not all ingredients are listed
TW	TCSI	not all ingredients are listed
US	TSCA	not 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
Table formulation unit	Name : Phrozen Tech. Co. Ltd
	Address / Phone : 287 Niupu Rd, Xiangshan Dist, Hsinchu City 30091, TAIWAN(R.O.C) /+ 886-3621-0505
Table formulator	Job title : Occupational Safety & Health manager Name : Chun-Yao, Kuo
Table formulation Date	2023.10.24
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