

SAFETY DATA SHEET

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

Page 1 of 11

SECTION 1 : IDENTIFICATION

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.

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

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

Signal statement : Corrosion ,Exclamation mark , Health hazard, Environment



Pictograms :

Signal word : Danger

Hazard statements :

Causes skin irritation

Causes serious eye damage

May cause an allergic skin reaction

May cause respiratory irritation.

SAFETY DATA SHEET

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

Page 2 of 11

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

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.

Other hazard : None

SECTION 3 : COMPOSITION / INFORMATION ON INGREDIENTS

Mixture

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

SAFETY DATA SHEET

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

Page 3 of 11

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
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide)	75980-60-8	0.3 - <1 %	Skin Sens. 1/ H317 Repr. 2/ H361 Aquatic Acute 2/ H401 Aquatic Chronic 2/ H411
Additives 3	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

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

Inhalation:

Keep patient calm, remove to fresh air, seek medical attention

Skin Contact :

Wash with plenty of soap and water.

Eyes Contact :

Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes.
Remove contact lenses, if present, after first 5 minutes, then continue rinsing.
Immediate medical attention required.

Ingestion :

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

Most important symptoms and hazardous effects : N/A

Protection of First-aid personnel :

Remove contaminated clothing.

SAFETY DATA SHEET

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

Page 4 of 11

Note for physician : N/A

SECTION 5 : FIRE-FIGHTING MEASURES

Applicable extinguishing media : Water spray, BC-powder, foam

Specific hazards confronted during fire fighting :

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

Specific fire-fighting procedure : N/A

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

Personal precautions :

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

Environmental precautions :

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

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

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

Local exhaust ventilation if necessary.

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.

Storage : Storage at the area of cool,dry.

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

SAFETY DATA SHEET

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

Page 5 of 11

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

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

Control Parameters :

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

Personal protective equipment :

Respiratory protection :

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

Hand protection :

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

For example : NBR: acrylonitrile-butadiene rubber

Material thickness : ≥ 0.4 mm

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

Eye protection :

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

Skin protection :

Use clothing that provides complete protection to the skin.

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.

SAFETY DATA SHEET

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

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°C , 1013hPa
Flammable	N/A	Flash point Testing method	> 95 °C close cup
Decomposition Temp	187.89°C 440.22 J/g		
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

Stability : Stable under normal condition. Decomposition Temp :187.89°C 440.22 J/g

Possible hazardous reation under specific conditions : N/A

Must avoid condition : UV-radiation/sunlight.

Must avoid substances : free radical initiators

Hazardous decomposed product : N/A

SAFETY DATA SHEET

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

Page 7 of 11

SECTION 11: TOXICOLOGICAL INFORMATION

Test data are not available for the complete mixture.

Exposure paths : N/A

Symptoms : N/A

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

Chronic toxicity : N/A

Reproductive and/or Developmental Effects :

Components	route	Species	End point	Value
Diphenyl(2,4,6-trimethyl benzoyl) phosphine oxide	Ingestion	Rat	NOAEL pre-mating 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.

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

SAFETY DATA SHEET

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

Page 8 of 11

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

Per sistence 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

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)	-

Mobility in soil : N/A

Other adverse effects : N/A

SECTION 13: DISPOSAL CONSIDERATIONS

Waste disposal methods :

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

Sewage disposal method :

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

Contaminated Packaging disposal method :

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

SECTION 14: TRANSPORT INFORMATION

Land transport ADR/ RID	UN number or ID number: UN3082 UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains DIM
-----------------------------------	--

SAFETY DATA SHEET

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

Page 9 of 11

	<p style="text-align: right;">ETHYLETHYLCYCLOHEXYL ACRYLATE, TRICYCLODECANE DIMETHANOL DIACRYLATE) STABILIZED</p> <p>Transport hazard class(es): 9, EHSM Packing group: III Environmental hazards: yes Special precautions for user: None known</p>
Sea transport IMDG	<p>UN number or ID number: UN 3082 UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains DIMETHYLETHYLCYCLOHEXYL ACRYLATE, TRICYCLODECANE DIMETHANOL DIACRYLATE) STABILIZED</p> <p>Transport hazard class(es): 9, EHSM Packing group: III Environmental hazards: yes Marine pollutant: yes Special precautions for user: None known</p>
Air transport IATA/ICAO	<p>UN number or ID number: UN 3082 UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains DIMETHYLETHYLCYCLOHEXYL ACRYLATE, TRICYCLODECANE DIMETHANOL DIACRYLATE) STABILIZED</p> <p>Transport hazard class(es): 9, EHSM Packing group: III Environmental hazards: yes Special precautions for user: None known</p>
Further information	N/A
Other requirements	N/A

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.

SAFETY DATA SHEET

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

Page 10 of 11

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

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)



SAFETY DATA SHEET

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

Page 11 of 11

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