

SAFETY DATA SHEET

1. Identification of the substance or mixture and of the supplier

A. GHS product identifier : RSA

B. Recommended use of the chemical and restrictions on use

Recommended use : Monofilament for FFF technology-based 3D printing **Restrictions on use :** Use for recommended use only

C. Supplier

Company name : Sindoh Co. Ltd. (brand name : fabWeaver)

Address : Seongsui-ro 24-gil, Seongdong-gu, Seoul, Republic of Korea

Emergency phone number : +82-1588-5850

Respondent : +82-2-460-1114

Fax : +82-2-466-0205

2. Hazards identification

A. GHS classification of the substance/mixture

Not classified

B. GHS label elements, including precautionary statements

Pictogram and symbol :

Not applicable

Signal word :

Not applicable

Hazard statements :

Not applicable

Precautionary statements

Precaution :

Not applicable

Treatment :

Not applicable

Storage :

Not applicable

Disposal :

Not applicable

C. GHS label elements, including precautionary statements :

Avoid contact with heated or molten product. Contact with heated or molten product may cause burns to skin and eyes.

3. Composition/information on ingredients

Chemical Name	Common Name(Synonyms)	CAS number	EC number	Content (%)
2-Methyl-2-propenoic acid polymer with butyl 2-propenoate, ethenylbenzene	Terpolymer of Methacrylic Acid, Styrene, and Butylacrylate	25036-16-2	607-498-4	100

4. First aid measures

A. Eye contact

- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes.
- Get immediate medical advice/attention.
- If eye irritation persists: Get medical advice/attention.
- Call a POISON CENTER/doctor/etc if you feel unwell.

B. Skin contact

- In case of contact with substance, immediately flush skin with running water for at least 20 minutes.
- Remove and isolate contaminated clothing and shoes.
- Wash contaminated clothing and shoes before reuse.
- Get immediate medical advice/attention.
- Do not remove the product from the affected skin areas without medical assistance.
- Cover with sterile cotton sheeting to protect against infection.
- Seek medical attention.

C. Inhalation

- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Specific medical treatment is urgent.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- Call a POISON CENTER/doctor/etc if you feel unwell.

D. Ingestion

- Do not let him/her eat anything, if unconscious.
- Get immediate medical advice/attention.
- Rinse mouth.

- Induce vomiting immediately and seek medical attention.
- If a person vomits when lying on his back, place him in the recovery position.

E. Indication of immediate medical attention and notes for physician

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. Fire fighting measures

A. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media: Dry sand, dry chemical, alcohol-resistant foam, water spray, regular foam, CO₂
- Unsuitable extinguishing media: High pressure water streams (It might scatter and spread fire.)

B. Specific hazards arising from the chemical

- May be ignited by heat, sparks or flames.
- Fire may produce irritating and/or toxic gases.
- Inhalation of material may be harmful.
- Some liquids produce vapors that may cause dizziness or suffocation.
- Some of these materials may burn, but none ignite readily.
- Some liquids produce vapors that may cause dizziness or suffocation.
- Fine dust dispersed in air may ignite.
- Risk of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust.

C. Special protective equipment and precautions for fire-fighters

- Move containers from fire area if you can do it without risk.
- Some may be transported hot.
- Runoff from fire control or dilution water may cause pollution.
- Contact may cause burns to skin and eyes.
- Dike fire-control water for later disposal; do not scatter the material.
- In case of fire: Use personal protective equipment as required.
- In the event of fire and/or explosion do not breathe fumes.
- Advice to firefighters: Wear self-contained breathing apparatus and full protective clothing.

6. Accidental release measures

A. Personal precautions, protective equipment and emergency procedures

- Eliminate all ignition sources.
- Stop leak if you can do it without risk.
- Please note that materials and conditions to avoid.
- Ventilate the area.
- Do not touch or walk through spilled material.
- Prevent dust cloud.

- In case of fire: Use personal protective equipment as required. Avoid eye contact and dust formation. (see section 8).
- Do not breathe dust/fume/vapours/spray.
- Sweep up to prevent slipping hazard.

B. Environmental precautions and protective procedures

- Prevent entry into waterways, sewers, basements or confined areas.

C. The methods of purification and removal

- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.
- Please note that materials and conditions to avoid.
- Avoid raising dust and ensure adequate ventilation.
- Clean contaminated surface thoroughly.

7. Handling and storage

A. Precautions for safe handling

- Please note that materials and conditions to avoid.
- Please work with reference to engineering controls and personal protective equipment.
- Be careful to high temperature.
- Do not handle until all safety precautions have been read and understood.
- Wash the handling area thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Use carefully in handling/storage.
- Use carefully in handling/storage. Vapor or heated product may cause eye irritation.
- Use only outdoors or in a well-ventilated area.
- Install local exhaust at 3D printer's area is recommended when many printers are operated at once.
- Avoid contact with heated or molten product.
- Use personal protective equipment as required. (see section 8).
- Prevent dust generation.
- Take action to prevent static discharges.

B. Conditions for safe storage

- Store in a closed container.
- Store in cool and dry place.
- Store locked up.
- Keep away from food and drinking water.
- Please note that materials and conditions to avoid.
- Protect from water, moisture and direct sunlight.
- Avoid all sources of ignition.

8. Exposure controls/personal protection

A. Occupational Exposure limits

OSHA regulation : Not applicable

NIOSH regulation : Not applicable

ACGIH regulation : Not applicable

EU regulation : Not applicable

Biological exposure index : Not available

B. Appropriate engineering controls

- Provide local exhaust ventilation system or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

C. Personal protective equipment

Respiratory protection :

- Wear NIOSH or European Standard EN 149 approved full or half face piece (with goggles) respiratory protective equipment when necessary.
- In case exposed to particulate material, the respiratory protective equipments as follow are recommended. ;
- facepiece filtering respirator or air-purifying respirator, high-efficiency particulate air(HEPA) filter media or respirator equipped with powered fan, filter media of use(dust, mist, fume)
- In lack of oxygen(< 19.6%), wear the supplied-air respirator or self-contained breathing apparatus.

Eye protection :

- Wear breathable safety goggles to protect from particulate material causing eye irritation or other disorder.
- An eye wash unit and safety shower station should be available nearby work place.
- Tightly sealed goggles according to EN 166.

Hand protection :

- Wear appropriate protective gloves by considering physical and chemical properties of chemicals.
- Heat protective gloves according to EN 374.

Glove material:

Nitrile rubber – Layer thickness: 0,11 mm. Breakthrough time: > 480 min.

Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

- In case of melting: Impervious heat protective gloves according to EN 407. Glove material: Leather, KevlarR.
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Body protection :

- Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

9. Physical and chemical properties

A. Appearance

Description : Filament (solid), Granulate (solid)

Color : Not available

B. Odor : Weak, characteristic

C. Odor threshold : Not available

D. pH : Not available

E. Melting point/freezing point : Not available

F. Initial boiling point and boiling range : Not available

G. Flash point : Not available

H. Evaporation rate : Not available

I. Flammability (solid, gas) : Not available

J. Upper/lower flammability or explosive limits : Not available

K. Vapor pressure : Not available

L. Solubility (ies) : Not available (Insoluble)

M. Vapor density : Not available

N. Specific gravity : 1.1 g/cc (20 °C)

O. Partition coefficient: n-octanol/water : Not available

P. Auto ignition temperature : Not available

Q. Decomposition temperature : > 290 °C

R. Viscosity : Not applicable

S. Molecular weight : Not applicable

T. Others :

Solubility in 0,5 N NaOH : 50 g/L

Melting Index : 1 - 10 g/10min (200 °C/10 kg)

10. Stability and reactivity

A. Chemical stability and Possibility of hazardous reactions

- Stable at room temperature, normal pressure and normal use.
- Fire will produce irritating, corrosive and/or toxic gases.
- Inhalation of material may be harmful.
- Some liquids produce vapors that may cause dizziness or suffocation.

B. Conditions to avoid

- Ignition sources (heat, sparks or flames)
- Avoid heating for a long time above processing temperatures.

C. Incompatible materials

- Flammable material
- Alkaline, strong acids
- Oxidation substances

D. Hazardous decomposition products

- Irritating and/or toxic gases
- Hydrogen cyanide, Carbon monoxide and Carbon dioxide.

11. Toxicological information

A. Information of Health Hazardous

Acute toxicity

Oral : Not available

Dermal : Not available

Inhalation : Not available

Skin corrosion/ irritation : Not expected to be irritating.

Serious eye damage/ irritation : Not expected to be irritating.

Respiratory sensitization : Not available

Skin sensitization : Not expected to be a skin sensitizer.

Carcinogenicity : Not available

- IARC, ACGIH, OSHA, NTP, EU CLP: Not listed

Mutagenicity : Not available

Reproductive toxicity : Not available

Specific target organ toxicity (single exposure) : Not available

Specific target organ toxicity (repeat exposure) : Not available

Aspiration Hazard : Not available

12. Ecological information

A. Ecological toxicity

- **Acute toxicity** : Not available

Fish : Not available

Crustacean : Not available

Algae : Not available

- **Chronic toxicity** : Not available

Fish : Not available

Crustacean : Not available

Algae : Not available

B. Persistence and degradability

Persistence : The product is likely to persist in the environment.

Degradability : Not available

C. Bioaccumulative potential

Bioaccumulation : Not available

Biodegradation : The product is not readily biodegradable.

D. Mobility in soil : Not available

E. Other hazardous effect : Not available

F. Hazardous to the ozone layer : Not applicable

13. Disposal considerations

A. Disposal method :

- Waste must be disposed of in accordance with federal, state and local environmental control regulations.

B. Disposal precaution :

- Dispose of contents/container in accordance with relevant regulation.

14. Transport information

A. UN Number : Not applicable

B. UN Proper shipping name : Not applicable

C. Transport Hazard class : Not applicable

D. Packing group : Not applicable

E. Environmental hazards : No

F. Special precautions

in case of fire : Not applicable

in case of leakage : Not applicable

15. Regulatory information

U.S.A Regulatory information

A. U.S.A Inventory (TSCA) : Present (ACTIVE)

B. U.S.A management information (OSHA Regulation) : Not regulated

C. U.S.A management information (CERCLA Regulation) : Not regulated

D. U.S.A management information (EPCRA 302 Regulation) : Not regulated

E. U.S.A management information (EPCRA 304 Regulation) : Not regulated

F. U.S.A management information (EPCRA 313 Regulation) : Not regulated

EU Regulatory information

A. Authorisations and/or restrictions on use:

- **Authorisations**: Not regulated

- **Restrictions on use**: Not regulated

B. Other EU regulations:

- SVHC list : Not regulated

- Harmonized classification – Annex VI of Regulation (EC) No 1272/2008 (CLP Regulation): Not available

Other regulations:

Substance of Rotterdam Convention : Not regulated

Substance of Stockholm Convention : Not regulated

Substance of Montreal Protocol : Not regulated

16. Other information

A. Information source and references :

Safety Data sheet provided by BellandTechnology AG

UN Recommendations on the transport of dangerous goods 17th;

https://www.unece.org/trans/danger/publi/unrec/rev20/20files_e.html

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans;

<http://monographs.iarc.fr>

National Toxicology Program;

<https://ntp.niehs.nih.gov/whatwestudy/assessments/cancer/roc/index.html>

TOMES-LOLI®; <http://www.rightanswerknowledge.com/loginRA.asp>

Korea Occupational Health & Safety Agency; <http://www.kosha.or.kr>

National Chemicals Information System; <http://ncis.nier.go.kr/main.do>

Ministry of Public Safety and Security-Korea dangerous material inventory management system; <http://hazmat.mpss.kfi.or.kr/index.do>

Waste Control Act enforcement regulation attached [1]

B. Issuing date : February 24, 2022

C. Revision number and date

revision number : Rev.(00)

date of the latest revision : February 24, 2022

D. Others :

- The content is based on the latest information and knowledge that we currently possess.
- This SDS was authored to aid buyer, processor or any other third person who handles the chemical of subject in the SDS; additionally, it does not warrant suitability of the chemical for special purposes or the commercial use of statements that approves the use of it in combination with other chemicals as well as technical or legal liabilities.
- The content of the SDS may vary depending on the country or the region and may not coincide with the actual regulations. Therefore, the buyer or the processor of the chemical is responsible for observing responsible government's or the region's regulations.