MATERIAL SAFETY DATA SHEET

1. Chemical Product and Company Identification

1.1 Product name

TOYOLAC MABS Resin (TOYOLAC 920 555)

1.2 Recommended use of the chemical and restrictions on use

Recommended Use : For household appliances, electronic materials and industrial materials.
Use Restriction : Do not use for an internal implantation.

For use of the product for medical purpose or food containers, please kindly contact us in advance on the specific usage.

1.3 Supplier's detail

Name of Supplier : Toray Plastics (Malaysia) Sdn. Bhd.
Address : 2628 MK.1, SPT., Lorong Perusahaan 4, Prai Free Industrial Zone, 13600 Prai, Penang, Malaysia.
Telephone No. : +60-4-3988-088
Fax No. : +60-4-3908-975, +60-4-3977-264

Sales
Department : Sales & Marketing Department
Manager : General Manager

Technical
Department : Technology Centre
Manager : Technology Centre Manager

1.4 Emergency phone number

+60-4-3988-088

2. Hazards Identification

2.1 GHS classification

Health Hazards:

Acute toxicity (Oral)	: Not classified
Acute toxicity (Dermal)	: Classification not possible
Acute toxicity (Inhalation)	: Classification not possible
Skin corrosion/irritation	: Classification not possible
Serious eye damage / eye irritation	: Classification not possible
Respiratory sensitization	: Classification not possible
Skin sensitization	: Classification not possible
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ / systemic toxicity (Single exposure)	: Not classified
Specific target organ / systemic toxicity (Repeated exposure)	: Not classified
Aspiration hazards	: Classification not possible

Environmental Hazards:

Aquatic environmental hazards	: Not classified
Chronic environmental hazards	: Not classified

2.2 Other hazards which are not covered by GHS

This product may release small amount of volatile gases which may cause irritation to eyes, nose and throat. Use adequate local exhaust ventilation during drying and molding of the product. Sweep up and dispose any spilled product to eliminate slipping hazards. Do not pile up the product too high to avoid any injuries caused by falling of the product.

MATERIAL SAFETY DATA SHEET

3. Composition / Information on Ingredients

Substance / Mixture : Mixture
Chemical Name : Mixture of Methylmethacrylate-Acrylonitrile-Butadiene-Styrene Copolymers and Additives
Synonyms : MABS Resin

	Common chemical name	Chemical formula	CAS No.	ENCS No.	ISHL No.	TSCA	Composition
1	**Methylmethacrylate-Acrylonitrile-Butadiene-Styrene Copolymer (or Mixture of A, B and / or C)**	**–**	**Regd.**	**Regd.**	**Existing**	**Regd.**	**95% or more**
A	Methylmethacrylate-Acrylonitrile-Butadiene-Styrene Copolymer	-[(C5H8O2]j-(C8H8)k-(C3H3N)l-C4H6)m]n-	9010-94-0	6-720 6-274	Existing	Regd.	–
B	Methylmethacrylate-Acrylonitrile-Styrene Copolymer	-[(C5H8O2)k-(C8H8)l-(C3H3N)m]n-	25213-88-1	6-274	Existing	Regd.	–
C	Copolymer of Acrylonitrile, Styrene and other component (other component: 0-10%)	–	Regd.	Regd.	Existing	Regd.	–
2	**Additives**	**–**	**Regd.**	**Regd.**	**Existing**	**Regd.**	**5% or less**

4. First-Aid Measures

4.1 Inhalation

S45–In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S63–In case of accident by inhalation: remove casualty to fresh air and keep at rest.
It is not likely for the resin pellets to be inhaled. In case of inhalation of gases and fumes from melting resin, remove casualty to fresh air. If the casualty has difficulties in breathing or coughing, seek medical assistance immediately.

4.2 Skin contact

S45–In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
Wash skin thoroughly with water and mild soap. In case of contact with melting resin, cool rapidly with water and seek medical assistance immediately. In case of contact with fume condensate from melting resin, wash thoroughly the affected area with water and soap. Seek medical assistance immediately if irritation develops.

4.3 Eye contact

Gently rinse the affected eyes with clean water for at least 15 minutes. If the casualty wears contact lenses, have them removed and continue rinsing. Avoid the casualty from rubbing eyes. Transport casualty to the nearest medical facilities for treatment as soon as possible.

4.4 Ingestion

S45–In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

4.5 Protective measures for a first-aid person

Wear protective gloves when removing melting polymer or high temperature polymer.

5. Fire-Fighting Measures

5.1 Extinguishing media

S43–In case of fire, use water mist, water jet, foam, dry powder or carbon dioxide.

MATERIAL SAFETY DATA SHEET

5.2 Specific hazards under fire

S41–In case of fire and / or explosion, do not breathe in fumes.
Toxic gases such as carbon monoxide, carbon dioxide, nitrogen oxides will form upon combustion of this product. Fires involving this material may produce large amounts of sooty smoke.

5.3 Specific fire-fighting measures

Apply water from a safe distance to cool and protect surrounding area. Move container from fire areas if it can be done without risk. Keep personnel removed from and upwind of fire. Evacuate non-essential personnel to safe area.

5.4 Protection of fire fighters

Fire fighters should wear proper protective equipment.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Sweep up spilled resin pellets on road or floor to avoid slipping.

6.2 Measures for environmental effects

Do not flush into sewer or drain.

6.3 Methods and materials for containment and cleaning up

Sweep up, place in bag and hold for waste disposal.

6.4 Preventive measures for secondary accident

Shut off all sources of ignition. No flares, smoking or flames in area.

7. Handling and Storage

7.1 Handling

Exposure control for handling personnel:

S20–When using do not eat or drink.
S21–When using do not smoke.
S22–Do not breathe dust.
S23–Do not breathe gas / fumes.

Protective measures against fire & explosion:

S33–Take precautionary measures against static charges.

Local ventilation / total air ventilation:

Use adequate local ventilation to remove fumes generated from molten resin during processing with molding machine or extruder. Use total ventilation with ventilation fans if above work are carried out in a building.

Safety measures / incompatibility:

S29–Do not empty into drains.
Avoid rough handling or dropping. Do not breathe the fumes generated during processing of the resin, because it stimulates skin and respiratory organs. Prevent deposition of dust, because a dust explosion may happen with the presence of static electricity or electric spark.

7.2 Storage

Recommendation for storage:

This product is a flammable material. Follow fire defense law and local regulations for storage and handling. Keep the product away from direct sunlight, water leak, moisture and any source of heat and ignition. Store it in a well-ventilated and locked up place.

Incompatible storage condition:

S15–Keep away from heat.

Recommendation on container and packaging materials:

Use unbreakable containers and packaging materials that satisfy the storage condition.

8. Exposure Control / Personal Protection

8.1 Engineering measures

Use adequate local ventilation to remove fumes generated during processing of the resin and to maintain comfortable work environment.

8.2 Adopted value

Japan Society for Occupational Health and ACGIH do not determine the adopted value of powder-dust. Generally, data shown below is known about dusts.

Recommended value of Japan Society for Occupational Health (2008) – Class 3 dust:
The weighted average per hour: inhaled dusts 2 mg/m^3, total dusts 8 mg/m^3

Recommended value of ACGIH (2003) – General dust:
The weighted average per hour: inhaled dust 3 mg/m^3, total dusts 10 mg/m^3

8.3 Personal protective equipment

Respiratory protection:

Wear dust protective mask to avoid from inhaling dust generated during machining, sanding and etc. Wear respirator for organic gases to avoid from inhaling fumes generated during processing of the resin.

Hand protection:

It is desirable to wear protection gloves to avoid direct contact of skin with the resin. Wear heat resistant protection gloves during handling of melting polymer or high temperature polymer.

Eye protection:

Wear protective eye glasses with side shields or chemical safety goggles.

Skin and body protection:

It is desirable to wear long sleeve clothing so as not to touch skin directly. Wear protection clothing of heat-resistance when handling melting polymer.

8.4 Safety and health measures

Wash hands before break time and after work. Do not eat, drink or smoke during when handling this product.

MATERIAL SAFETY DATA SHEET

9. Physical and Chemical Properties

Appearance	: Pellet shaped solid
Color	: Colorless
Odor	: None
pH	: N/A
Boiling point	: N/A
Boiling range (Mixture)	: N/A
Melting point	: This product softens gradually over a broad temperature range (130–150°C)
Decomposition temperature	: N/A
Flash point	: N/A
Ignition temperature	: About 405°C
Explosion limit (Upper)	: N/A
Explosion limit (Lower)	: 60g/m^3 (particle size < 0.2mm)
Relative density	: 1.06-1.12
Vapor pressure	: N/A
Vapor density	: N/A
Solubility	: Insoluble in water. Partly soluble in organic solvent.
Octanol / water partition coefficient	: N/A

10. Stability and Reactivity

10.1 Stability

This product is considered a stable material under normal and anticipated storage and handling conditions.

10.2 Possibility of hazardous reactions

This product is considered a stable material under normal and anticipated storage and handling conditions.

10.3 Conditions to avoid

Direct sunlight, fire, sources of heat etc.

10.4 Incompatible materials

None

10.5 Decomposition products

Black smoke, carbon monoxide, carbon dioxide, nitrogen oxides and etc maybe generated in the case combustion of this product.

11. Toxicological Information

Acute toxicity	: Not classified
Skin corrosion / irritation	: Classification not possible. (N/A)
Serious eye damage / eye irritation	: Classification not possible. (N/A)
Respiratory or skin sensitization	: Classification not possible. (N/A)
Germ cell mutagenicity	: Not classified
Carcinogenic effects	: Not classified
Toxicity for reproduction	: Not classified
Specific target organ / systemic toxicity (Single exposure)	: Not classified
Specific target organ / systemic toxicity (Repeated exposure)	: Not classified
Aspiration hazards	: Classification not possible. (N/A)

This product is classified into the above classifications based on judgment theory of a mixture.

MATERIAL SAFETY DATA SHEET

12. Ecological Information

Ecological toxicity	:	Classification not possible. (N/A)
Biodegradability	:	Classification not possible. (N/A)
Bioaccumulation	:	Classification not possible. (N/A)
Mobility in soil	:	Classification not possible. (N/A)

Other adverse effects:

Hazardous to the aquatic environment (Acute)	:	Not classified
Hazardous to the aquatic environment (Chronic)	:	Not classified

This product is classified into the above classifications based on judgment theory of a mixture.

13. Disposal Consideration

Dump the waste matters following law, rules and regulations.

14. Transport Information

UN No. / Packaging group	:	N/A
Marine pollutant	:	N/A
Regulation in Japan	:	N/A

Specific safety measures and conditions on transport:

Avoid wetting or rough handling so that the packaging will not be damaged. In case the bags are damaged and the pellets are scattered, pay attention so that no one will slip and fall. All of the spilled product should be collected immediately and placed in proper labeled container for dispose or recovery. Take precautionary measures against static discharges when using pneumatic transportation.

15. Regulatory Information

Other regulatory information:

We are not able to check up the regulatory information in regard to the substances in your country or region. Therefore, we request this matter would be filled by your responsibility. Regulatory information with regard to this product in your country or in your region should be examined by your own responsibility. Ensure this product in compliance with federal requirements and ensure conformity to local regulations.

16. Other Information / References

Other information:

The information relates to this specific material. It may not be valid for this material, if used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his own particular use. The information herein is given in good faith, but no warranty, express or implied, is made. Please consult us for further information. To the best of our knowledge, the information contained herein is accurate. However, we assume any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of user. All materials may present unknown hazards and should be used in caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It is advised to make their won tests to determine the safety and suitability of each such product or combination for their own purposes.