

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name : **DENKA STYROL**
MW-1-301, MW-1-321, HRM-2S-311,HRM-2S-OP, MD-100-301, MF-21-301, MF-21-321

Identification of substance : General Purpose Polystyrene (GPPS)

1.2. Relevant identified uses of the substance or mixture

Use of the substance/mixture : For industrial conversion as a raw material for manufacture of articles or goods. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

1.3. Details of the supplier of the product

Manufacturer:

Denka Singapore Private Limited(DSPL)
Address: 4 Shenton Way, #29-02 SGX Centre 2, Singapore 068807
Phone: +65-6224-1305
Fax: +65-6224-3840
Email: dk010221@denka.co.jp

Supplier 1:

DENKA CORPORATION 780 3rd Avenue 15th Fl New York NY 10017 US
Phone: +1-212-688-8700
Fax: +1-212-688-8727
Email: info@denka.us.com

Supplier 2:

DENKA CHEMICALS GmbH
Kaiserswerther Straße 183, 40474 Düsseldorf, Germany
Phone: +49-(0)211-130990
Email: info@denkagermany.de

1.4. Emergency telephone number

Emergency contact number : +65-6876-6089 (Singapore Seraya Plant)
+1-212-688-8700 (New York US EST 9-17)
+49-(0)211-130990 (CET 9-17)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture according to HCS2012

Classification (GHS-US)

Not classified as hazardous chemical

2.2. Label elements

GHS-US labeling

No labelling required

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Classification of the substance or mixture

Substance

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3.2. Information on ingredients

Chemical Name	Weight %	CAS No.	CLP(GHS) classification
Polystyrene (GPPS)	≈100	9003-53-6	Not classified

REACH Regulation / Registration Number for each substance

Substance	Registration number(DSPL)
Styrene	01-2119457861-32-0070

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Resin dust : Remove person to fresh air and keep at rest in a position comfortable for breathing. When there is breathing difficulty, provide oxygen and get medical attention from properly trained personnel
Decomposition gas is generated from the molten resin of high temperature : Same as above.
Pellets, though rare case : Same as above.
- First-aid measures after skin contact : Rinse with water/shower. If the condensation of the gas generated from the molten hot resin is adhered: Wash with plenty of water and soap. If the molten material adhered: Put a large amount of water on top of the clothing to cool down. If skin irritation occurs: Get medical advice/attention.
- First-aid measures after eye contact : Remove any contact lenses if possible. Rinse immediately with water for several minutes.
- First-aid measures after ingestion : Rinse mouth. Do not induce vomiting. Call a doctor if you feel unwell.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray. Foam. Dry powder. Carbon dioxide. – for smaller fires.
Alcohol-resistant foam – for larger fires.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : Product is not flammable, however if ignited will burn creating smoke of harmful carbon monoxide, carbon dioxide, and nitrogen oxides.
- Explosion hazard : Product is not explosive.
- Reactivity : No data available.

5.3. Advice for firefighters

- Firefighting instructions : Extinguish fire from upwind as much as possible. Evacuate area. Eliminate or move combustion source to a safe place if possible. Use water spray or fog for cooling exposed containers holding combustion source. Exercise caution when fighting any chemical fire. Do not dispose of fire-fighting water in the environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Spills may cause fall. Wear appropriate protective equipment as described in section 8, and do not inhale dust, or gases (at high temperature). Remove ignition sources.

6.1.1. For non-emergency personnel

- Protective equipment : Wear Protective equipment as described in Section 8.
- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Wear suitable protective clothing, gloves and eye or face protection. Wear approved supplied-air respirator, in case of emergency.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- For containment : Contain and collect as any solid. Avoid dust formation.
- Methods for cleaning up : Sweep or shovel spills into appropriate container for disposal. Dispose of material in compliance with local, state, and federal regulations. Remove all ignition sources in area.

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6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Avoid dust generation and accumulation to prevent possibility of dust explosion. When transferring by air, lower the transfer rate, and take measures to prevent ignition by static electricity (such as grounding). Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent accumulation of gas generated from processing resin. Do not breathe dust or gas. Keep away from sources of ignition and do not heat.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store away from heat sources, sources of ignition, high temperatures, humidity and direct sunlight.

Packaging materials : Synthetic fiber bag with resin coating.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 For Inert or Nuisance Dust

OSHA Permissible exposure limit (PEL-TWA) (mg/m ³)	Total Dust: 15 mg/m ³ (50 mppcf)	
ACGIH (2010)TWA - Particulates(Insoluble) Not Otherwise Specified [PNOS]	Respirable dust particulate: 3mg/m ³	Inhalable dust particulate: 10mg/m ³
Japan Society for Occupational Health (JSOH) (2006) Class 3 dust	Inhalant dust: 2mg/m ³	Total Dust: 8mg/m ³

8.1.2 For airborne contaminants

	ACGIH Threshold limit value (TLV, 2017)		OSHA Permissible exposure limit
	Time-weighted average (TLV-TWA)	Short-term exposure limit (TLV-STEL)	Time-weighted average (PEL-TWA)
Styrene	20 ppm [1996]	40 ppm [1996]	100 ppm

The product contains very low levels of residual monomers and process chemicals (styrene and ethylbenzene) that may be produced during thermal processing, along with possible decomposition products. As the identity and levels of these impurities produced depend upon the processing conditions (temperature etc.), it is the responsibility of the user to determine the adequacy of any protection or safety measures.

8.2. Exposure controls

Appropriate engineering controls : Dust : Enclosed equipment, Local exhaust.

Gas due to processing : Local ventilation.

Personal protective equipment : Dust/gas mask. Protective goggles. Gloves.



Hand protection : Wear protective gloves made of rubber or cloth. Wear heat resistant gloves when handling molten resin.

Eye protection : In case of dust production: protective goggles.

Skin and body protection : Wear long sleeves and protective boots.

Respiratory protection : Dust respirator. Organic gas mask for resin decomposition gas.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

Appearance : Pellets

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Color	: Transparent
Odor	: Odorless
Odor Threshold	: No data available
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: 70-110°C Estimated Tg.
Freezing point	: No data available
Boiling point	: No data available
Flash point	: 345~360°C (Polystyrene)
Auto-ignition temperature	: 488~496°C
Self ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Density (solid)	: 1000 – 1100 kg/m ³
Solubility	: Water: insoluable
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: Potential combustible dust hazard (fine dust)
Oxidizing properties	: No data available
Explosive limits	: No data available
Heat of combustion	: 4.02 × 10 ⁷ J/kg (9604 kcal/kg)

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No data available.

10.2. Chemical stability

Stable under recommended handling and storage conditions (see section 7).

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Overheating. Do not expose molten resin to the atmosphere.

10.5. Incompatible materials

None known.

10.6. Hazardous decomposition products

Thermal decomposition generates : Carbon oxides (CO, CO₂). Nitrogen oxide. oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Not classified [LD50(rat) >5,000mg/kg (form analogus materials)]
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified

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Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Symptoms/injuries after inhalation	: Dust from this product may cause irritation to the respiratory tract.
Symptoms/injuries after skin contact	: Not irritating to skin.
Symptoms/injuries after eye contact	: Direct contact with the eyes is likely to be irritating.
Symptoms/injuries after ingestion	: Ingestion may cause gastrointestinal irritation.
Chronic symptoms	: No data available.

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

The polymer component is poorly biodegradable.

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

This product is insoluble in water.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Do not discharge to public wastewater systems without permit of pollution control authorities. No discharge to surface waters is allowed without an NPDES permit.

Waste disposal recommendations : Dispose of residues to licensed waste handling facility. Dispose in a safe manner in accordance with local/national regulations. Do not allow the product to be released into the environment.

Packaging : Dispose of contaminated packaging in a safe manner in accordance with local or national regulations. Do not allow the product to be released into the environment.

SECTION 14: Transport information

Product is not classified as hazardous material or dangerous goods according to IMDG and DGR (of IATA / RID / ADR / AND).

14.1. UN number

Not applicable –Not classified for transport

14.2. UN proper shipping name

Not applicable

14.3. Additional information

Other information : Before shipping confirm that there is no breakage, corrosion, or leakage of container. Load containers in a secure way. Avoid rough handling or moisture to prevent breakage of the packing bag. Beware that product spills may be slippery if the pellets are scattered from the torn bag. Collect product spill as soon as possible. When transferring by air, lower the transfer rate and ground to prevent ignition by static electricity.

Overland transport

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

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All components of this product are listed on the TSCA Inventory

SARA Section 311/312 Hazard Classes	Not applicable.
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15.2. International regulations

DENKA STYROL	
TSCA (USA)	Listed
AICS (Australia)	Listed
DSL (Canada)	Listed
IECSC (China)	Listed
ENCS (Japan)	Listed
ISHL (Japan)	Listed
KECI (Korea)	Listed
NZIoC(New Zealand)	Listed
PICCS(Philippines)	Listed
CSNN (Taiwan)	Listed
European Union (EINECS)	Registered (See section 3.2)

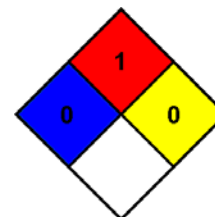
15.3. US State regulations

California Proposition 65 WARNING : This product can expose you to chemicals, which is [are] known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.
Name of the chemicals: styrene, ethylbenzene and isopropylbenzene.

SECTION 16: Other information

Indication of changes : SDS No. PS1-10-001E 15-01, Jul/31/2015 Version: 18-01-U , Revision date: August/29/2018

NFPA health hazard : 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.
NFPA fire hazard : 1 - Must be preheated before ignition can occur.
NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating
Health : 0
Flammability : 1
Physical : 0
Personal Protection :

This information is correct within the knowledge of the writer of the SDS. However, the contents of the information are not absolute and the exhaustiveness of information collection is incomplete. The contents refer to the materials and product, and the cases where the materials are combined with some other materials and processed have not been taken into consideration. Users shall assume the responsibility for the final decision to appropriately use the material and for adapting this information to the user's original handling in a manner to ensure complete and satisfactory utilization. All materials have unknown hazard, and they should be handled with sufficient care. Specific hazard is described in this SDS, which does not ensure the absence of different hazard. Be sure to conduct an advance test before actual use to confirm whether the materials conform to the purpose of use and to confirm the safety as well. The description of the SDS is subject to change without notice according to new knowledge.