1. Identification of the substance/mixture and of the company/undertaking

Product identifier

Trade name: Styrolution® PS GPPS

This safety data sheet pertains to the following products:
Styrolution PS 145D GR2
Styrolution PS 147F GR2
Styrolution PS 147F GR21
Styrolution PS 158K GR2
Styrolution PS 158K GR21
Styrolution PS 168N GR21
Styrolution PS 168N Q534 GR21

Relevant identified uses of the substance or mixture and uses advised against

General use: Polymer
Basic material for chemical industry processing

Details of the supplier of the safety data sheet

Company name: INEOS Styrolution APAC Pte Ltd.
Street/POB-No.: 111 Somerset Road
Postal Code, city: #08-01/02 TripleOne Somerset, SG
Singapore 238164
WWW: www.ineos-styrolution.com
E-mail: INSTY.asia@ineos.com
Telephone: +65 6933 8350
Telefax: +65 6933 8355
Department responsible for information:
Infopoint, Telephone: + 65 (0) 6933 - 8372
E-mail: INSTY.asia@ineos.com

Emergency telephone number

Telephone: +86 512 8090 3042 (Country); + 65 3158 1074 (regional)

2. Hazards identification

Classification of the substance or mixture

GHS classification

This substance is classified as not hazardous.

Label elements

Hazard statements: not applicable

Precautionary statements: not applicable

Other hazards

Dust: Can cause skin, eye and respiratory tract irritation.
In case of dust formation (Fine dust): May form explosible dust-air mixture if dispersed.
The melted product can cause severe burns.

3. Composition/information on ingredients

Substances

Chemical characterisation: Polymer
(C8 H8) *n
Styrene-homopolymer, GPPS, > 96 %

CAS-Number: 9003-53-6

RTECS-Number: WL6475000

Additional information: The product does not contain dangerous substances above limits that need to be mentioned in this section according to applicable legislation.

4. First aid measures

In case of inhalation: Provide fresh air. Put victim at rest and keep warm.

Following skin contact: The melted product can cause severe burns.
Do not remove the product from the skin without medical assistance.
After contact with molten product, cool skin area rapidly with cold water. Consult physician.

After eye contact: Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing.
Consult an eye specialist in the event of irritation.

After swallowing: Do not induce vomiting. Rinse mouth with water.
Drink one or two glasses of water.
Never give an unconscious person anything through the mouth.

Most important symptoms and effects, both acute and delayed

Dust: Skin irritation, eye irritations and redness

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. Firefighting measures

Extinguishing media

Suitable extinguishing media:

Water spray jet, foam.
Only in case of small fires: extinguishing powder, carbon dioxide, Sand, earth.

Extinguishing media which must not be used for safety reasons:

Full water jet

Special hazards arising from the substance or mixture

In case of fire may be liberated: Smoke, styrene-monomer, aldehydes and acids (organic), carbon monoxide and carbon dioxide (CO_2).
In case of dust formation (Fine dust): May form explosible dust-air mixture if dispersed.

Advice for firefighters

Special protective equipment for firefighters:

Wear self-contained breathing apparatus to prevent exposure to poisonous gases that may develop.

Additional information: Cool endangered containers with water jetspray.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Provide adequate ventilation. Wear personal protection equipment. Do not breathe dust.

Environmental precautions

Do not allow to penetrate into soil, waterbodies or drains.

Methods and material for containment and cleaning up

Avoid generation of dust. Remove all sources of ignition.
Collect dry and place in appropriate containers for disposal. Subsequent cleaning.

Additional information: Particular danger of slipping on spilled product on the ground.

7. Handling and storage

Precautions for safe handling

Advices on safe handling: Provide adequate ventilation, and local exhaust as needed. Do not breathe dust.
In the case of the formation of dust: Withdraw by suction.
Molten material: Avoid contact with the substance.

Precautions against fire and explosion:

Take precautionary measures against static discharges. Keep away from sources of ignition. Use grounding equipment. Use explosion-proof equipment and non-sparking tools/utensils. Avoid open flames.
In case of dust formation (Fine dust): May form explosible dust-air mixture if dispersed.

Dust explosion risk: Class St 1

Storage

Requirements for storerooms and containers:

Store in a well-ventilated place. Keep container tightly closed.
Protect against heat /sun rays.

8. Exposure controls/personal protection

Control parameters

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
9003-53-6	Styrolution® PS GPPS	Singapore: long-term	10 mg/m³
100-42-5	Styrene	Singapore: long-term	213 mg/m³; 50 ppm
		Singapore: short-term	426 mg/m³; 100 ppm

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

Exposure controls

Provide good ventilation in the work area. Additional controls are not normally necessary when handling the polymer.

Thermal extrusion: Provide local exhaust ventilation to ensure that the workplace exposure limit is not exceeded.
Use of respiratory protection may be necessary during maintenance activities.
See also information in chapter 7, section storage.

Personal protection equipment

Occupational exposure controls

Respiratory protection: In case of dust formation:
Use filter type A-P2 according to EN 14387.

Hand protection: Protective gloves according to BS EN ISO 374:1.
Protective gloves made of fabric or leather.
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
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Eye protection: Tightly sealed goggles according to BS EN ISO 16321-1:2022.

Body protection: Wear suitable protective clothing.

General protection and hygiene measures:
Do not breathe vapours. Keep away from sources of ignition.
Wash hands before breaks and after work.

In case of dust formation: Particular danger of slipping on spilled product on the ground.

Environmental exposure controls

Refer to 6.: Section "Environmental precautions".

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance:	Physical state at 20 °C and 101.3 kPa: solid Form: granulate Colour: colourless
Odour:	weak
Odour threshold:	not available
pH:	not applicable
Melting point/freezing point:	105 °C up to 135 °C
Initial boiling point and boiling range:	No data available
Flash point/flash point range:	Not applicable
Evaporation rate:	No data available
Flammability:	No data available

Explosion limits:	LEL (Lower Explosion Limit): not applicable
Vapour pressure:	not applicable
Vapour density:	No data available
Density:	at 20 °C: approx. 1050 kg/m³ (ISO 1183)
Water solubility:	insoluble
Partition coefficient: n-octanol/water:	not relevant
Auto-ignition temperature:	> 427 °C
Thermal decomposition:	> 300 °C

Additional information

Viscosity, dynamic:	not applicable
Explosive properties:	In case of dust formation (Fine dust): May form explosible dust-air mixture if dispersed.
Oxidizing characteristics:	not oxidising
Bulk density:	approx. 600 kg/m³
Drop point/drop range:	79 °C up to 127 °C
Additional information:	Molar mass: 10000 - 300000 g/mol

10. Stability and reactivity

Reactivity: No data available

Chemical stability: Product is stable under normal storage conditions.

Possibility of hazardous reactions:
In case of dust formation (Fine dust): May form explosible dust-air mixture if dispersed.

Conditions to avoid: Avoid open flames.
Avoid dust formation.

Incompatible materials: Strong oxidizing agents, Gasoline, aldehydes, ketone

Hazardous decomposition products:
When greatly overheated, material may release hazardous decomposition products: monomers, hydrocarbons, gases/vapours, cyclic low molecular weight oligomers, carbon monoxide and carbon dioxide.

Thermal decomposition: > 300 °C

11. Toxicological information

Information on toxicological effects

Acute toxicity:
LD50 Rat, oral: > 2000 mg/kg
LD50 Rabbit, dermal: > 2000 mg/kg

Toxicological effects:

Acute toxicity (oral): Based on available data, the classification criteria are not met. Mild acute toxicity

Acute toxicity (dermal): Based on available data, the classification criteria are not met. Mild acute toxicity

Acute toxicity (inhalative): Based on available data, the classification criteria are not met. Mild acute toxicity. May cause irritations.

Skin corrosion/irritation: Lack of data.
Dust: Can cause skin, eye and respiratory tract irritation.
Processing, thermal hazards: Vapours: Can cause skin, eye and respiratory tract irritation.

Serious eye damage/irritation: Lack of data.
Dust: Can cause skin, eye and respiratory tract irritation.
Processing, thermal hazards: Vapours: Can cause skin, eye and respiratory tract irritation.

Sensitisation to the respiratory tract: Lack of data. The chemical structure of the polymer does not suggest a specific alert for such an effect.

Skin sensitisation: Based on available data, the classification criteria are not met. Not sensitising

Germ cell mutagenicity/Genotoxicity: Lack of data. The chemical structure of the polymer does not suggest a specific alert for such an effect.

Carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity: Lack of data. The chemical structure of the polymer does not suggest a specific alert for such an effect.

Effects on or via lactation: Lack of data.

Specific target organ toxicity (single exposure): Lack of data.
Dust: Can cause skin, eye and respiratory tract irritation.
Processing, thermal hazards: Vapours: Can cause skin, eye and respiratory tract irritation.

Specific target organ toxicity (repeated exposure): Lack of data. Chronic toxic effects are not expected. The product has not been tested. The statement is derived from products of similar structure or composition.

Aspiration hazard: Lack of data.

Symptoms

Dust: Skin irritation, eye irritations and redness
The melted product can cause severe burns.

12. Ecological information

Toxicity

Aquatic toxicity: no evidence of aquatic toxicity

Persistence and degradability

Further details: Biodegradation: Product is not readily biodegradable.
Degradation at UV-radiation/sunlight
Environmental half-life period: >=100 days (estimated)

Mobility in soil

Product is not soluble in water.
Substance is heavier than water and sinks.
mobility in soil: low

Additional ecological information

General information: Do not allow to enter into ground-water, surface water or drains.

13. Disposal considerations

Waste treatment methods

Product

Recommendation: With due observance of the regulations laid down by the local authorities, this must be brought to a suitable incineration plant/waste disposal site.

Recommendation: Dispose of waste according to applicable legislation. Non-contaminated packages may be recycled.

14. Transport information

UN number

ADR/RID, IMDG, IATA-DGR:

not applicable

Sea transport (IMDG)

Proper shipping name:: Not restricted

Marine pollutant: no

Air transport (IATA)

Proper shipping name:: Not restricted

Further information

No dangerous good in sense of these transport regulations.

15. Regulatory information

National regulations - Korea

Industrial Safety and Health Act

Styrene: Hazardous Substances Requiring Management: listed
Harmful factors subject to work environment measurement: listed
Harmful factors subject to special health examination: listed

Chemicals Control Act

Styrene: Toxic substances: listed
Permitted Substances: listed

National regulations - Japan

Product:	ENCS: listed; MITI 6-120
	Fire Service Act: Designated flammable goods
Styrene:	ENCS: listed; MITI 3-4
	Chemical Substances Control Law: Priority Assessment Chemical Substances (Article 2, Paragraph 5 of the Law) Former Type 2 Monitoring Chemical Substance (Old Law, Article 2, Paragraph 5)
	Industrial Safety and Health Law: Hazardous substances to be indicated in terms of whose names (Article 57 of the Law, Article 18 of the Enforcement Ordinance, Appendix 9) Hazardous substances to be notified in terms of whose names (Article 57-2 of the Act, Article 18-2 of the Enforcement Ordinance, Appendix 9) Specified Chemical Substances Class 2 Substances, Specified Class 2 Substances (Ordinance on Prevention of Hazards Due to Specified Chemical Substances, Article 2, Paragraph 1, Items 2 and 3) Control concentration specified in the working environment evaluation standards Substances published in Health Disorder Prevention Guidelines (Article 28, Paragraph 3 of the Act)
	Pollutant Release and Transfer Register Law (PRTR): Class 1 Designated Chemical Substances

Further regulations, limitations and legal requirements

No data available

16. Other information

Abbreviations and acronyms:

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
AS/NZS: Australian Standards/New Zealand Standards
CAS: Chemical Abstracts Service
CFR: Code of Federal Regulations
CLP: Classification, Labelling and Packaging
DMEL: Derived minimal effect level
DNEL: Derived no-effect level
EC: European Community
EN: European Standard
ENCS: Inventory of Existing and New Chemical Substances
EQ: Excepted quantities
IATA: International Air Transport Association
IATA-DGR: International Air Transport Association – Dangerous Goods Regulations
IBC Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
IMDG Code: International Maritime Dangerous Goods Code
LD50: Lethal dose 50%
LEL: Lower Explosion Limit
MARPOL: Maritime Pollution: The International Convention for the Prevention of Pollution from Ships
MFSU: Manufacture, formulation, supply and use
OEL: Occupational Exposure Limit Value
OSHA: Occupational Safety and Health Administration
PBT: Persistent, bioaccumulative and toxic
PNEC: Predicted no-effect concentration
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals
RID: Regulations Concerning the International Carriage of Dangerous Goods by Rail
TRGS: Technical Rules for Hazardous Substances
UV: Ultraviolet
vPvB: Very persistent and very bioaccumulative

Reason of change:	Changes in section 1.1: Website
Date of first version:	8/8/2012

Department issuing data sheet

Contact person: see section 1: Department responsible for information

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.