



SAFETY DATA SHEET
HIGH IMPACT POLYSTYRENE (HIPS)
REVISION 3, DATE 09 SEP 20

1. IDENTIFICATION

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|----------------------------|--|
| Product Name | High Impact Polystyrene (HIPS) |
| Other Names | H310; H350; H350E; STYRON 470; STYRON 5050 |
| Uses | For industrial conversion as a raw material for manufacture of articles and goods. |
| Chemical Family | No Data Available |
| Chemical Formula | Unspecified |
| Chemical Name | Contains: Styrene, 1,3-butadiene polymer |
| Product Description | Rubber modified polystyrene; Thermoplastic polymer; Vinylbenzene polymer. Additives are encapsulated in the product and are not expected to be released under normal processing conditions or foreseeable emergency. |

Contact Details of the Supplier of this Safety Data Sheet

| Organisation | Location | Telephone |
|-------------------------|--|------------------|
| Redox Ltd | 2 Swettenham Road Minto NSW 2566 Australia | +61-2-97333000 |
| Redox Ltd | 11 Mayo Road Wiri Auckland 2104 New Zealand | +64-9-2506222 |
| Redox Inc. | 3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA | +1-424-675-3200 |
| Redox Chemicals Sdn Bhd | Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia | +60-3-5614-2111 |

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

| Organisation | Location | Telephone |
|----------------------------|-----------------|--|
| Poisons Information Centre | Westmead NSW | 1800-251525 131126 |
| Chemcall | Australia | 1800-127406 +64-4-9179888 |
| Chemcall | Malaysia | +64-4-9179888 |
| Chemcall | New Zealand | 0800-243622 +64-4-9179888 |
| National Poisons Centre | New Zealand | 0800-764766 |
| CHEMTREC | USA & Canada | 1-800-424-9300 CN723420 +1-703-527-3887 |

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)

Not Scheduled



Globally Harmonised System

| | |
|------------------------------|--|
| Hazard Classification | NOT hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) |
| Signal Word | None |

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

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|---------------------------------------|---|
| Dangerous Goods Classification | NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code) |
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3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

| Chemical Entity | Formula | CAS Number | Proportion |
|--|-------------|-------------|------------|
| Styrene, 1,3-butadiene polymer | Unspecified | 9003-55-8 | >94 % |
| Ingredients determined not to be hazardous | Unspecified | Unspecified | Balance % |

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

| | |
|--|---|
| Swallowed | IF SWALLOWED: Rinse mouth. Get medical advice/attention - May cause gastrointestinal blockage. Do not give laxatives. Do not induce vomiting unless directed to do so by medical personnel. |
| Eye | IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention, preferably an ophthalmologist. |
| Skin | IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs, get medical advice/attention. *In case of burns, immediately cool affected skin for as long as possible with cold water. Do not apply ice. Do not remove clothing if adhering to skin. Do NOT attempt to remove the material from skin - Removal could result in severe tissue damage! Removal of solidified molten material from skin requires medical assistance. For severe burns, immediate medical attention is required. |
| Inhaled | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. |
| Advice to Doctor | First Aid responders should pay attention to self-protection and use the recommended protective clothing (see SECTION 8). No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. If burn is present, treat as any thermal burn, after decontamination. If lavage is performed, suggest endotracheal and/or oesophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. |
| Medical Conditions Aggravated by Exposure | No information available. |

5. FIRE FIGHTING MEASURES

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| General Measures | Keep people away. Isolate fire and deny unnecessary entry. If safe to do so, move undamaged containers from fire area. To prevent reignition, cool containers with water spray until well after fire is out. Cool surroundings with water to localise fire zone. |
| Flammability Conditions | May be combustible at high temperatures. May re-ignite after fire is extinguished. |
| Extinguishing Media | Use dry chemical, Carbon dioxide (CO ₂), foam or water spray for extinction - Do not use water jets. *If material is molten, do not apply direct water stream! |
| Fire and Explosion Hazard | Pneumatic conveying and other mechanical handling operations can generate combustible dust. Dust can be ignited by static discharge! |
| Hazardous Products of Combustion | Fire may produce irritating and/or toxic gases, including Carbon oxides, styrene, aliphatic hydrocarbons and dense smoke/soot. |
| Special Fire Fighting Instructions | Contain runoff from fire control or dilution water - Runoff may cause pollution. |
| Personal Protective Equipment | Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection. |
| Flash Point | No Data Available |
| Lower Explosion Limit | No Data Available |
| Upper Explosion Limit | No Data Available |
| Auto Ignition Temperature | No Data Available |
| Hazchem Code | No Data Available |

6. ACCIDENTAL RELEASE MEASURES

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|---|---|
| General Response Procedure | Ensure adequate ventilation. ELIMINATE all ignition sources (if dust clouds can occur). Do not touch or walk through spilled material - Spilled material may cause a slipping hazard! Avoid generating dust. Avoid breathing dust and contact with eyes, skin and clothing. |
| Clean Up Procedures | Sweep, shovel or vacuum material into clean and properly labelled containers; move containers from spill area. |
| Containment | Stop leak if you can do it without risk. Prevent dust cloud. Contain spilled material, if possible. |
| Decontamination | No information available. |
| Environmental Precautionary Measures | Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. |
| Evacuation Criteria | Spill or leak area should be isolated immediately. Keep unnecessary and unprotected personnel from entering the area. |
| Personal Precautionary Measures | Use personal protective equipment as required (see SECTION 8). |

7. HANDLING AND STORAGE

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| Handling | Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Minimise dust generation and accumulation. Avoid breathing dust/process fumes and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Pneumatic conveying and other mechanical handling operations can generate combustible dust. Dust can be ignited by static discharge! To reduce the potential for dust explosions, electrically bond and ground containers and equipment before transferring material. Keep away from heat and sources of ignition - No smoking. *When handled in bulk quantities, this product and its associated packaging may present a crushing hazard due to the large masses involved, possibly resulting in severe injury or death! |
| Storage | Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). |
| Container | Keep in the original container. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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|--------------------------------------|---|
| General | <p>No specific exposure standards are available for this product.</p> <p>ADDITIVE: White mineral oil (petroleum):</p> <ul style="list-style-type: none"> - Safe Work Australia Exposure Standard for Oil mist, refined mineral: TWA = 5 mg/m³. - New Zealand Workplace Exposure Standard for Oil mist, mineral: TWA = 5 mg/m³ (Sampled by a method that does not collect vapour); STEL = 10 mg/m³. <p>*Although some of the additives used in this product may have exposure guidelines, these additives are encapsulated in the product and no exposure would be expected under normal handling conditions.</p> |
| Exposure Limits | No Data Available |
| Biological Limits | No information available. |
| Engineering Measures | Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. General ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations. |
| Personal Protection Equipment | <ul style="list-style-type: none"> - Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines, or when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. Recommended: When dust/mists are present use a Particulate filter respirator. When combinations of vapours or dusts/mists are present use an Organic vapour cartridge with a particulate pre-filter (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety glasses with side-shields. If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles, or use a full-face respirator. - Hand protection: Handle with gloves. Recommended: Use gloves to protect from mechanical injury. Use gloves with insulation for thermal protection, when needed. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Clean body-covering clothing. |
| Special Hazards Precautions | Workers should be protected from the possibility of contact with molten resin. |
| Work Hygienic Practices | Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Take off contaminated clothing and wash it before reuse. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. |

9. PHYSICAL AND CHEMICAL PROPERTIES

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|----------------------------------|--|
| Physical State | Solid |
| Appearance | Pellets or granules |
| Odour | Odourless to mild |
| Colour | Natural; Creamy white |
| pH | No Data Available |
| Vapour Pressure | No Data Available |
| Relative Vapour Density | No Data Available |
| Boiling Point | No Data Available |
| Melting Point | >132 °C |
| Freezing Point | No Data Available |
| Solubility | Insoluble in water - Soluble in esters, ketones, aromatic hydrocarbons |
| Specific Gravity | 1.04 - 1.06 (Water = 1) |
| Flash Point | No Data Available |
| Auto Ignition Temp | No Data Available |
| Evaporation Rate | No Data Available |
| Bulk Density | No Data Available |
| Corrosion Rate | No Data Available |
| Decomposition Temperature | approx. 250 °C |
| Density | No Data Available |

| | |
|---|--|
| Specific Heat | No Data Available |
| Molecular Weight | No Data Available |
| Net Propellant Weight | No Data Available |
| Octanol Water Coefficient | No Data Available |
| Particle Size | No Data Available |
| Partition Coefficient | No Data Available |
| Saturated Vapour Concentration | No Data Available |
| Vapour Temperature | No Data Available |
| Viscosity | No Data Available |
| Volatile Percent | Negligible |
| VOC Volume | 0 % |
| Additional Characteristics | No information available. |
| Potential for Dust Explosion | Pneumatic conveying and other mechanical handling operations can generate combustible dust. Dust can be ignited by static discharge! |
| Fast or Intensely Burning Characteristics | No information available. |
| Flame Propagation or Burning Rate of Solid Materials | No information available. |
| Non-Flammables That Could Contribute Unusual Hazards to a Fire | No information available. |
| Properties That May Initiate or Contribute to Fire Intensity | May be combustible at high temperatures. May re-ignite after fire is extinguished. |
| Reactions That Release Gases or Vapours | Fire/decomposition may produce irritating and/or toxic gases, including Carbon oxides, styrene, aliphatic hydrocarbons and dense smoke/soot. |
| Release of Invisible Flammable Vapours and Gases | No information available. |

10. STABILITY AND REACTIVITY

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|---|--|
| General Information | Exposure to elevated temperatures can cause product to decompose. Processing may release fumes and other decomposition products. At temperatures exceeding melt temperatures, polymer fragments can be released. |
| Chemical Stability | Stable under recommended storage conditions. |
| Conditions to Avoid | Avoid generating dust. Avoid temperatures above 300 °C. Keep away from heat and sources of ignition. |
| Materials to Avoid | Incompatible/reactive with strong oxidising agents. |
| Hazardous Decomposition Products | Fire may produce irritating and/or toxic gases, including Carbon oxides, styrene, aliphatic hydrocarbons and dense smoke/soot. Decomposition products depend upon temperature, air supply and the presence of other materials. |
| Hazardous Polymerisation | Hazardous polymerisation will not occur |

11. TOXICOLOGICAL INFORMATION

| | |
|----------------------------|---|
| General Information | <p>Information on possible routes of exposure:</p> <ul style="list-style-type: none"> - Ingestion: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. May cause choking or gastrointestinal blockage if swallowed. - Eye contact: Solid or dust may cause irritation or corneal injury due to mechanical action. Elevated temperatures may generate vapour levels sufficient to cause eye irritation; Effects may include discomfort and redness. - Skin contact: No adverse effects anticipated by skin absorption. Prolonged contact is essentially non-irritating to skin. Mechanical injury only. Contact with molten substance may cause severe burns. - Inhalation: Dust may cause irritation to upper respiratory tract (nose and throat). Vapours released during thermal |
|----------------------------|---|

processing may cause respiratory irritation.

Chronic effects: Additives are encapsulated in the product and are not expected to be released under normal processing conditions or foreseeable emergency.

Acute**Ingestion**

Acute toxicity (Oral):

- LD50, Rat: >5,000 mg/kg [Typical for this family of materials (estimated)].

Other

Acute toxicity (Dermal):

- LD50, Rabbit: >2,000 mg/kg [Typical for this family of materials (estimated)].

Carcinogen Category

None

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Not expected to be acutely toxic, but material in pellet or bead form may mechanically cause adverse effects if ingested by waterfowl or aquatic life.

Persistence/Degradability

This water-insoluble polymeric solid is expected to be inert in the environment. Surface photodegradation is expected with exposure to sunlight. No appreciable biodegradation is expected.

Mobility

In the terrestrial environment, material is expected to remain in the soil. In the aquatic environment, material will sink and remain in the sediment.

Environmental Fate

Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.

Bioaccumulation Potential

No bioconcentration is expected because of the relatively high molecular weight (MW greater than 1000).

Environmental Impact

No Data Available

13. DISPOSAL CONSIDERATIONS**General Information**

After suitable treatment (cleaning, grinding, etc), the preparation can be safely re-used, as is or mixed with fresh material, when this is compatible with the intended final application. Residues should be disposed of as required by local/regional/national regulations.

Special Precautions for Land Fill

Landfilling should be avoided as far as possible. If unavoidable, use approved landfill sites. Incineration must be done under approved conditions, possibly with energy recovery and only at suitable facilities equipped with a scrubber for the treatment of fumes before their release into the atmosphere.

14. TRANSPORT INFORMATION**Land Transport (Australia)**

ADG Code

Proper Shipping Name

High Impact Polystyrene (HIPS)

Class

No Data Available

Subsidiary Risk(s)

No Data Available

No Data Available

UN Number

No Data Available

Hazchem

No Data Available

Pack Group

No Data Available

Special Provision

No Data Available

Comments

NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)

ADR Code

| | |
|-----------------------------|--|
| Proper Shipping Name | High Impact Polystyrene (HIPS) |
| Class | No Data Available |
| Subsidiary Risk(s) | No Data Available |
| | No Data Available |
| UN Number | No Data Available |
| Hazchem | No Data Available |
| Pack Group | No Data Available |
| Special Provision | No Data Available |
| Comments | NON-DANGEROUS GOODS: Not regulated for LAND transport. |

Land Transport (New Zealand)

NZS5433

| | |
|-----------------------------|--|
| Proper Shipping Name | High Impact Polystyrene (HIPS) |
| Class | No Data Available |
| Subsidiary Risk(s) | No Data Available |
| | No Data Available |
| UN Number | No Data Available |
| Hazchem | No Data Available |
| Pack Group | No Data Available |
| Special Provision | No Data Available |
| Comments | NON-DANGEROUS GOODS: Not regulated for LAND transport. |

Land Transport (United States of America)

US DOT

| | |
|-----------------------------|--|
| Proper Shipping Name | High Impact Polystyrene (HIPS) |
| Class | No Data Available |
| Subsidiary Risk(s) | No Data Available |
| | No Data Available |
| UN Number | No Data Available |
| Hazchem | No Data Available |
| Pack Group | No Data Available |
| Special Provision | No Data Available |
| Comments | NON-DANGEROUS GOODS: Not regulated for LAND transport. |

Sea Transport

IMDG Code

| | |
|-----------------------------|--------------------------------|
| Proper Shipping Name | High Impact Polystyrene (HIPS) |
| Class | No Data Available |
| Subsidiary Risk(s) | No Data Available |
| UN Number | No Data Available |
| Hazchem | No Data Available |
| Pack Group | No Data Available |
| Special Provision | No Data Available |
| EMS | No Data Available |
| Marine Pollutant | No |

SAFETY DATA SHEET HIGH IMPACT POLYSTYRENE (HIPS) REVISION 3, DATE 09 SEP 20

Comments NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport

IATA DGR

| | |
|-----------------------------|---|
| Proper Shipping Name | High Impact Polystyrene (HIPS) |
| Class | No Data Available |
| Subsidiary Risk(s) | No Data Available |
| UN Number | No Data Available |
| Hazchem | No Data Available |
| Pack Group | No Data Available |
| Special Provision | No Data Available |
| Comments | NON-DANGEROUS GOODS: Not regulated for AIR transport. |

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

| | |
|---------------------------------------|---|
| Dangerous Goods Classification | NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code) |
|---------------------------------------|---|

15. REGULATORY INFORMATION

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|----------------------------|-------------------|
| General Information | No Data Available |
|----------------------------|-------------------|

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|--------------------------------|---------------|
| Poisons Schedule (Aust) | Not Scheduled |
|--------------------------------|---------------|

National/Regional Inventories

| | |
|---|----------------|
| Australia (AIC) | Listed |
| Canada (DSL) | Not Determined |
| Canada (NDSL) | Not Determined |
| China (IECSC) | Listed |
| Europe (EINECS) | Not Determined |
| Europe (REACH) | Not Determined |
| Japan (ENCS/METI) | Listed |
| Korea (KECI) | Listed |
| Malaysia (EHS Register) | Not Determined |
| New Zealand (NZIoC) | Not Determined |
| Philippines (PICCS) | Not Determined |
| Switzerland (Giftliste 1) | Not Determined |
| Switzerland (Inventory of Notified Substances) | Not Determined |

Taiwan (NCSR)

Not Determined

USA (TSCA)

Not Determined

16. OTHER INFORMATION

| | |
|-----------------------|--|
| Related Product Codes | POLYST0470, POLYST0475, POLYST1706, POLYST1709, POLYST1746, POLYST1747, POLYST1748, POLYST1749, POLYST1750, POLYST1751, POLYST1770, POLYST1771, POLYST5050, POLYST5055, POLYST7710, POLYST7711, POLYST7715, POLYST7718, POLYST7720 |
| Revision | 3 |
| Revision Date | 09 Sep 2020 |
| Key/Legend | <p>< Less Than > Greater Than</p> <p>AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm² Square Centimetres CO₂ Carbon Dioxide COD Chemical Oxygen Demand deg C (°C) Degrees Celcius EPA (New Zealand) Environmental Protection Authority of New Zealand deg F (°F) Degrees Farenheit g Grams g/cm³ Grams per Cubic Centimetre g/l Grams per Litre HSNO Hazardous Substance and New Organism IDLH Immediately Dangerous to Life and Health immiscible Liquids are insoluable in each other. inHg Inch of Mercury inH₂O Inch of Water K Kelvin kg Kilogram kg/m³ Kilograms per Cubic Metre lb Pound LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours. LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals. ltr or L Litre m³ Cubic Metre mbar Millibar mg Milligram mg/24H Milligrams per 24 Hours mg/kg Milligrams per Kilogram mg/m³ Milligrams per Cubic Metre Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present. mm Millimetre mmH₂O Millimetres of Water mPa.s Millipascals per Second N/A Not Applicable NIOSH National Institute for Occupational Safety and Health NOHSC National Occupational Heath and Safety Commission OECD Organisation for Economic Co-operation and Development Oz Ounce PEL Permissible Exposure Limit Pa Pascal ppb Parts per Billion ppm Parts per Million ppm/2h Parts per Million per 2 Hours ppm/6h Parts per Million per 6 Hours</p> |

SAFETY DATA SHEET HIGH IMPACT POLYSTYRENE (HIPS) REVISION 3, DATE 09 SEP 20

psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight