SAFETY DATA SHEET

In Accordance with 3rd revised edition of GHS

Section 1 – Identification

Product Name : 277E
Product Type : Flame retardant
Product Description : Impregnated polystyrene with blowing agent
Chemical Name : Expandable Polystyrene (EPS)
Chemical Formula : \((C_8-H_8)_n\)
Chemical Family : Thermoplastic Polymer
Product Use : Insulating material, packaging material
Manufacturer : Thai ABS Company Limited (Subsidiary of IRPC)
Emergency Call : +66(0) 38 802560
Website : www.irpc.co.th, www.irpcmarket.com

Section 2 – Hazards Identification

Classification according to Regulation (EC) No. 1272/2008 (CLP) and GHS Classification
In use, may form flammable vapor-air mixture.

Pictograms : None
Signal word : None

Hazard Statements
EUH018  In use may form flammable vapor-air mixture

Precautionary Statements
P210 Keep away from heat, sparks, open flame, hot surfaces - No smoking
P233 Keep container tightly closed
P243: Take precautionary measures against static discharge.
P403 + P235: Store in a well-ventilated place. Keep cool.

Section 3 – Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>EC Number</th>
<th>Percent weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polystyrene</td>
<td>9003-53-6</td>
<td>Polymer</td>
<td>94-95</td>
</tr>
<tr>
<td>Pentane</td>
<td>109-66-0</td>
<td>203-692-4</td>
<td>5-6</td>
</tr>
<tr>
<td>Flame Retardant Additives</td>
<td>Proprietary</td>
<td>-</td>
<td>&lt; 1</td>
</tr>
</tbody>
</table>

Section 4 – First-aid Measures

General information : Clothing and shoes must be immediately removed, decontaminated
Skin Exposure : In case of skin contact with hot polymer immediately immerse in or flush with clean, cold water. If irritation develops, seek medical attention.
Eyes Exposure: Flush with water for at least 20 minutes. Seek medical attention if irritation persists.

Inhalation: Remove person to fresh air. Assist in breathing if necessary. Seek medical attention.

Ingestion: Seek medical attention if a significant amount is swallowed.

Section 5 – Fire-fighting Measures

Suitable extinguishing agents: Dry chemicals, foam, water, carbon dioxide and halon. Do not use water jets for large fires.

Hazards during fire-fighting: Carbon monoxide, carbon dioxide.

Protective equipment: Wear self-contained respiratory protective device.

Section 6 – Accidental Release Measures

Personal precautions: Avoid inhalation.

Environmental precautions: Discharge into the environment must be avoided.

Cleanup: STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Sweep/shovel up or spray with water and collect in a suitable container. Allow molten material to solidify before disposal. Avoid production of dust.

Section 7 – Handling and Storage

Handling: Ventilate for 5 min. when opening the container. Appropriate grounding is required. (Prevent against static electricity). Avoid inhalation of vapors.

Storage conditions: Keep separated from incompatible substances. Store in a tightly closed container in a cool (below 27 °C), dry place. Ventilation required.

Section 8 – Exposure Controls / Personal Protection

Exposure limits

<table>
<thead>
<tr>
<th>Component Name</th>
<th>Reference</th>
<th>TWA ppm</th>
<th>TWA mg/m3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentane</td>
<td>OSHA PEL</td>
<td>1000</td>
<td>2950</td>
</tr>
<tr>
<td></td>
<td>ACGIH TLV</td>
<td>600</td>
<td>-</td>
</tr>
</tbody>
</table>

Exposure control: Ventilation, enclosures, or other controls may be needed to keep airborne contaminate below exposure limits.

Personal protective equipment

Respiratory protection: Wear respiratory protection if ventilation is inadequate. Breathing protection device if dust is formed.

Eye protection: Chemical workers goggles recommended.

Protective clothing: Gloves required when handling hot material. In case of fire, wear MSHA/NIOSH approved self-contained breathing apparatus or equivalent and full protective gear.

Ventilation: Provide adequate ventilation when processing material at elevated temperatures.
Section 9 – Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Bead Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor and Appearance</td>
<td>Bead with characteristic odor.</td>
</tr>
<tr>
<td>Softening Point</td>
<td>&gt; 100 °C</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.04 (Water =1)</td>
</tr>
<tr>
<td>Percent Volatile (Vol %)</td>
<td>Nil</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Solubility (Qualitative)</td>
<td>Soluble in non-polar solvents</td>
</tr>
</tbody>
</table>

Section 10 – Stability and Reactivity

<table>
<thead>
<tr>
<th>Stability</th>
<th>Stable in ambient temperature.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition to Avoid</td>
<td>Heat, flames, sparks and other sources of ignition.</td>
</tr>
<tr>
<td>Material to Avoid</td>
<td>Avoid solvents and oxidizing agents.</td>
</tr>
<tr>
<td>Dangerous decomposition</td>
<td>Carbon monoxide, carbon dioxide, styrene.</td>
</tr>
</tbody>
</table>

Section 11 – Toxicological Information

Acute Toxicity

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Route</th>
<th>Species</th>
<th>Acute Toxic Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentane</td>
<td>Oral</td>
<td>Rat</td>
<td>LD50 5480 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Inhalation</td>
<td>Rat</td>
<td>LC50 285 gm/m²/4Hr</td>
</tr>
</tbody>
</table>

Irritating/corrosive effects

- **Eye Irritation**: Prolonged contact can cause eye irritation
- **Skin Irritation**: Prolonged contact can cause skin irritation
- **Respiratory Irritation**: May cause allergic respiratory response.
- **Ingestion Irritation**: Swallowing larger amounts may cause injury

Section 12 – Ecological Information

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>No relevant studies identified.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
<td>The product is not easily biodegradable.</td>
</tr>
<tr>
<td>Bio-accumulative potential</td>
<td>Insoluble in water. Not expected to be bio-accumulative.</td>
</tr>
<tr>
<td>Mobility in soil</td>
<td>No relevant studies identified.</td>
</tr>
<tr>
<td>Other adverse effects</td>
<td>Not expected to pose a significant ecological hazard.</td>
</tr>
</tbody>
</table>

Section 13 – Disposal Considerations

Transfer to an approved disposal area in accordance with national, state and local regulations. Recycling uncontaminated packaging recommended. Package must be recycled in compliance with national legislation and environmental regulations.
### Section 14 – Transport Information

<table>
<thead>
<tr>
<th>Regulatory information</th>
<th>UN number</th>
<th>Classes</th>
<th>Packing group</th>
<th>Label</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT</td>
<td>2211</td>
<td>9</td>
<td>III</td>
<td>![Label]</td>
<td>POLYMERIC BEADS, EXPANDABLE, evolving flammable vapor</td>
</tr>
<tr>
<td>ADR / RID</td>
<td>2211</td>
<td>9</td>
<td>III</td>
<td>![Label]</td>
<td>POLYMERIC BEADS, EXPANDABLE, evolving flammable vapor</td>
</tr>
<tr>
<td>IMDG CODE</td>
<td>2211</td>
<td>9</td>
<td>III</td>
<td>![Label]</td>
<td>POLYMERIC BEADS, EXPANDABLE, evolving flammable vapor</td>
</tr>
<tr>
<td>ICAO / IATA</td>
<td>2211</td>
<td>9</td>
<td>III</td>
<td>![Label]</td>
<td>POLYMERIC BEADS, EXPANDABLE, evolving flammable vapor</td>
</tr>
</tbody>
</table>

### Section 15 – Regulatory Information

**US Toxic Substances Control Act**
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 29 CFR 1910.1200.

**HMSI-USA**
Health – 1, Flammability – 2, Reactivity – 0

**National Fire Protection Association - USA**
Health – 1, Flammability – 2, Reactivity – 0

**European Inventory of Existing Commercial Chemical Substances (EINECS)**
The components of this product are on the EINECS inventory or are exempt from inventory requirements.

The product is not classified as dangerous for supply according to the Regulation (EC) No 1272/2008 and the EC directive 67/548/EEC and 1999/45/EC.

**Canada – WHMIS**
Pentane has a WHMIS classification of B2.

### Section 16 – Other Information

**DOT** : Department of Transportation

**ADR** : European agreement concerning the international carriage of dangerous goods by road.

**RID** : Regulations concerning the international carriage of dangerous goods by rail.

**IMDG – CODE** : International maritime dangerous goods code
ICAO : International Civil Aviation Organization
IATA : International air transport association
GHS : Globally Harmonized System of Classification and Labeling of Chemicals
OSHA : Occupational Safety and Health Administration
HMIS : Hazardous Materials Identification System
ACGIH : American Conference of Industrial Hygienists
WHMIS : Workplace Hazardous Materials Information System

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