POLYPROPYLENE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>SUBSTANCE OR PRODUCT TRADE NAME</th>
<th>Halene P</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEMICAL CLASSIFICATION</td>
<td>Polyolefin</td>
</tr>
<tr>
<td>COMPANY/UNDERTAKING NAME AND ADDRESS</td>
<td>Haldia Petrochemicals Limited, PO Box No 12, Haldia Plant PO Durgachak, Dist Midnapore West Bengal, India PIN 721 602</td>
</tr>
<tr>
<td>TELEPHONE</td>
<td>091-3224-274384 / 274400</td>
</tr>
<tr>
<td>EMERGENCY TELEPHONE NUMBER</td>
<td>091-3224-275916</td>
</tr>
</tbody>
</table>

2. COMPOSITION AND INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CONTENT (Normal)*</th>
<th>CAS NUMBER</th>
<th>EXPOSURE LIMITS IN AIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polypropylene</td>
<td>99.25 wt%</td>
<td>9003-07-0</td>
<td>10 mg/m³ (inhalable fraction)</td>
</tr>
<tr>
<td>Proprietary additives</td>
<td>&lt;=0.75 wt%</td>
<td>Mixture</td>
<td></td>
</tr>
</tbody>
</table>

* For different grade of PP, minor changes may be there.

3. HAZARD CLASSIFICATION

This material is not hazardous by OHSA hazard communication definition. Dust may form explosive mixtures with air. At process temperature irritating fumes may be produced.

<table>
<thead>
<tr>
<th>EYE</th>
<th>SKIN</th>
<th>INHALATION</th>
<th>INGESTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACUTE</td>
<td>Dust from this product may cause eye irritation</td>
<td>Molten polymer may cause thermal burns</td>
<td>At process temperature-irritating fumes may be produced. Inhalation of process fumes and vapours may cause soreness in the nose and throat and coughing. Exposure to high concentrations of dust may cause slight irritation by mechanical action</td>
</tr>
<tr>
<td>CHRONIC</td>
<td>No known chronic health effects</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NFPA HAZARD SIGNALS

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>FLAMMABILITY</th>
<th>REACTIVITY</th>
<th>SPECIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

HAZCHEMCODE NA

4. FIRST AID MEASURES

<table>
<thead>
<tr>
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<td>Feb 2006</td>
<td>Jun 2014</td>
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</table>
SKIN CONTACT | If molten material contacts the skin, immediately flush with large amounts of water to cool the affected tissues and polymer. Do not attempt to peel the polymer from skin. Obtain immediately emergency medical attention if burn is deep or extensive

EYE CONTACT | Flush eyes thoroughly with water for several minutes and seek medical attention if discomfort persists

INHALATION | If symptoms are experienced, move victim to fresh air. Obtain medical attention if breathing difficulty persists

INGESTION | Adverse health effects due to ingestion are not anticipated

5. FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Flash Point</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO IGNITION TEMP</td>
<td>570 °C</td>
</tr>
<tr>
<td>FLAMMABLE LIMITS IN AIR BY VOL%</td>
<td>LEL%: NA, UEL%: NA</td>
</tr>
<tr>
<td>FIRE EXTINGUISHING AGENTS AND SPECIAL PROCEDURES</td>
<td>Dry chemical, carbon dioxide, and water, chemical foam, or alcohol resistant foam</td>
</tr>
<tr>
<td>UNUSUAL FIRE AND EXPLOSION HAZARDS</td>
<td>Polymer dust particles in the atmosphere are combustible and may be explosive. CO, olefinic and paraffinic compound, trace amount of organic acids, ketones, aldehydes and alcohols may be formed during combustion.</td>
</tr>
<tr>
<td>SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS</td>
<td>Wear an approved positive pressure self-contained breathing apparatus and fire-fighter turnout gear</td>
</tr>
</tbody>
</table>

6. ACCIDENTAL RELEASE MEASURES

| PERSONAL PRECAUTIONS | Avoid generating dust. Potential dust explosion hazard. Use only non-sparking tools. Material creates dangerous slipping hazard on hard surfaces |
| ENVIRONMENTAL PRECAUTIONS | No data available |
| METHOD OF CLEANING | Pick up and retain for recycle or disposal |

7. HANDLING AND STORAGE

| HANDLING | Keep away from heat, sparks, open flame, or any ignition source. Use with adequate ventilation. Material can make walking hazardous, potentially causing falls and serious injury. After handling always wash hands thoroughly with soap and water. |
| STORAGE | Store away from excessive heat and away from incompatible substances |

8. EXPOSURE CONTROLS-PERSONAL PROTECTION

| VENTILATION AND ENGINEERING CONTROL | Ventilate area to prevent accumulation of dust and fumes |
| OTHER CONTROL PARAMETERS | Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. |

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9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>APPEARANCE</th>
<th>ODOUR</th>
<th>PHYSICAL STATE</th>
<th>BOILING POINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pellets, powder</td>
<td>Odourless</td>
<td>Solid</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MELTING / FREEZING POINT</th>
<th>SPECIFIC GRAVITY (AT 20°C) (WATER=1)</th>
<th>PH</th>
<th>SOLUBILITY IN WATER (AT 30°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>168-171 °C</td>
<td>0.89-0.91</td>
<td>NA</td>
<td>Insoluble</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VAPOUR PRESSURE (AT 20°C) IN MM Hg</th>
<th>VAPOUR DENSITY (AIR=1)</th>
<th>OTHER INFORMATIONS</th>
<th>VISCOSITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td></td>
<td>NA</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

- CONDITIONS TO AVOID: Avoid contact with strong oxidisers, excessive heat, sparks or open flame.
- MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Material may be softened by some hydrocarbons. Reacts with fluorine gas.
- HAZARDOUS DECOMPOSITION PRODUCTS: Not expected to decompose under normal conditions.
- HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

- ANIMAL TOXICITY DATA
  - ORAL: LD50 IN (rat) mg/kg
  - DERMAL: LD50 (rabbit)μL/kg

- IRRITANCY OF PRODUCT: Dust from this product may cause eye irritation.

- REPRODUCTIVE TOXICITY INFORMATION
  - No adverse effects
  - No adverse effects
  - No adverse effects
  - No adverse effects

12. ECOLOGICAL INFORMATION

- ENVIRONMENTAL STABILITY: This material is expected to be resistant to biodegradation.
- EFFECT OF MATERIAL ON PLANTS OR ECOTOXICITY: Ecotoxicity is expected to be minimal based on
ANIMALS

the low water solubility of polymers.

EFFECT OF CHEMICAL ON AQUATIC LIFE

This material is not volatile & it is insoluble in water. It is not expected to be harmful to fish or bacteria.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40CFR parts 261.3. Additionally; waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>PROPER SHIPPIN G NAME</th>
<th>HAZARD CLASS</th>
<th>IDENTIFICATION NUMBER</th>
<th>PACKING GROUP</th>
<th>LABEL REQUIRED</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Not controlled under DOT</td>
</tr>
<tr>
<td>TDG</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Not controlled under TDG</td>
</tr>
<tr>
<td>IMDG</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Not controlled under IMDG</td>
</tr>
<tr>
<td>ICAO</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Not controlled under ICAO</td>
</tr>
</tbody>
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15. REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>INDIAN REGULATION</th>
<th>Manufacture Import &amp; Storage of hazardous chemical rules. Amended as on 2000</th>
</tr>
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<tbody>
<tr>
<td>TSCA INVENTORY STATUS</td>
<td>X</td>
</tr>
<tr>
<td>WHMIS CLASSIFICATION</td>
<td>-</td>
</tr>
<tr>
<td>CANADIAN INVENTORY STATUS</td>
<td>-</td>
</tr>
<tr>
<td>EINECS INVENTORY STATUS</td>
<td>X</td>
</tr>
<tr>
<td>AUSTRALIAN INVENTORY STATUS</td>
<td>X</td>
</tr>
<tr>
<td>JAPAN INVENTORY STATUS</td>
<td>X</td>
</tr>
</tbody>
</table>

X= All components are included or are otherwise exempt from inclusion on this inventory.

Contact HPL for additional information

16. OTHER INFORMATION

DISCLAIMER

Information contained in this material safety data sheet is believed to be reliable but no representation, guarantee or warranties of any kind are made as to its accuracy, suitability for a particular application or results to be obtained from them. It is up to the user/distributor to ensure that the information contained in the material safety data sheet is relevant to the product manufactured/handled or sold by him as the case may be. HPL makes no warranties, expressed or implied, in respect of the adequacy of this document for any particular purpose.

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