Identification of the Substance/Preparation and the Company/Undertaking

Product name : Hybrane® S 1200
Application of the substance : Intermediate for organic synthesis
Supplier : Polymer Factory Sweden AB
            Teknikringen 48
            SE-114 28 Stockholm, Sweden
            http://www.polymerfactory.com
Further information obtainable from : Polymer Factory Sweden AB (as above)
Information in case of emergency : (Int.) +46 8 337043 (Emergency Response Center, Sweden)

Composition/Information on Ingredients

Chemical Family : Hyperbranched Polyesteramide
Chemical Name : 2,5-Furandione, dihydro-, Polymer with 1,1’-iminobis[2-propanol]
CAS No. : 362603-93-8

Hazards Identification

Physical /Chemical hazards : Non-toxic, Non-irritant and expected to be non-sensibilising and Non-mutagenic based on studies with analogous compounds
Environmental Hazards : None Expected
Effects of Over-Exposure : None Expected

First Aid Measures

After Inhalation : If irritation persists (nuisance dust), get medical attention
After Skin Contact : If irritation persists (nuisance dust), get medical attention
After Eye Contact : If irritation persists (nuisance dust), get medical attention
After Swallowing : If irritation persists (nuisance dust), get medical attention

Fire Fighting Measures

Suitable Extinguishing Agents : Powder B, Powder A, Water, Foam, Carbon Dioxide (CO₂)
Specific Hazards : Hazardous thermal decomposition and combustion products include Nitrogen Oxides(NO₂), Ammonia (NH₃), Carbon Monoxide (CO), Carbon Dioxide (CO₂)
Fire Fighting Instructions : Use self-contained breathing apparatus and skin protection
Accidental Release Measures

Person-Related Safety Precautions : Use appropriate protection,  
  *see section on “Exposure Control and Personal Protection” below

Environmental Protection : No hazards expected.  
  *see section on “Ecological Information” below

Cleaning and Collecting : Collect spill material in sealable, labeled containers for later Disposal

Handling and Storage

Safe Handling : Normal standard practices of hygiene are applicable
Storage : 1. Store in closed containers  
  2. Keep containers closed when not in use.
Recommended Packaging : Stainless Steel, Metal, Aluminium, Nickel, PP and Glass

Exposure Control & Personal Protection

Personal Protective Equipment
  i) Respiratory Protection : Use dust mask as necessary
  ii) Skin & Body Protection : Not applicable, but handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of the material from eyes, skin and clothing.
  iii) Eye protection : Face shield or safety goggles as necessary
  iv) Other Protection : Eye wash facility and emergency shower

Occupational Exposure Limits : Respiratory limit : 5 mg/m³  
  Inhalation Limit : 10 mg/m³
*Engineering Controls : Use ventilation as necessary

Physical and Chemical Properties

General information
  Molecular Formula : \((\text{C}_6\text{H}_{15}\text{NO}_2\cdot\text{C}_4\text{H}_{2}\text{O}_3)_x\)
  Building Block : Succinic Anhydride
  Branching unit : Diisopropanol Amine
  End groups : Secondary OH
  Molecular Weight : Mn ≈ 1200
  Form (aggregation form) : Solid
  Color : Off-white
  Odor : None
Change in condition

- **Melting Point/Melting Range**: Not determined
- **Boiling Point/Boiling Range**: > 250 °C
- **Fusion Temperature / Range**: Not determined
- **Glass Transition Temperature, Tg**: ca. 40-50 °C

**Solubility at 20 °C**

- **Water**: >600 g/l
- **Ethanol**: >500 g/l
- *Also soluble in aromatic and chlorinated hydrocarbons.

**Octanol/Water Coefficient, LogPo/w**: 0.22

**Flash Point**: Not determined

**Vapour Pressure**: < 1 hPA (20 °C)

**Danger of Explosion**: May cause dust explosion

**Idealize Chemical Structure**

![Chemical Structure](image)

**Stability and Reactivity**

- **Stability**: Thermally stable to 200°C for at least 5 mins
- **Thermal decomposition**: Hazardous thermal decomposition producing toxic nitrogen oxide, carbon monoxide and carbon dioxide
- **Conditions to be avoided**: Unknown
- **Incompatibility**: No incompatibilities known

**Toxicological Information**

- **Acute Toxicity**: ORAL (LD₅₀): >2000 mg/kg [rat]
<table>
<thead>
<tr>
<th>Primary irritant effect</th>
<th>Sensitization</th>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the skin</td>
<td>In rabbit studies, no oedema was observed</td>
<td>None expected based on studies with analogous compounds</td>
</tr>
<tr>
<td>Sensitization</td>
<td>None expected based on studies with analogous compounds</td>
<td></td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Not Determined. None expected based on analogous studies</td>
<td></td>
</tr>
<tr>
<td>Reproductive Toxicity</td>
<td>Not Determined</td>
<td></td>
</tr>
</tbody>
</table>

### Ecological Information

<table>
<thead>
<tr>
<th>Mobility</th>
<th>Persistence and degradability</th>
<th>Bio-accumulation</th>
<th>Ecotoxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low vapour pressure, soluble in water</td>
<td>1. ‘Ready’ biodegradation according to OECD guideline no. 301 (Modified Sturm test), 21% in 28 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. In seawater according to OECD guideline no. 306, 12%</td>
<td>None expected based on studies with analogous compounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This hybrane product was found to be non-toxic for marine algae (<em>Skeletonema costatum</em>; EC50,72hr &gt;100 mg/l) and based on studies with analogous compounds, is expected to be non-toxic for fish (zebra fish).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Disposal Consideration

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Methods of Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal must be made according to official regulations</td>
<td>Dispose by landfill or combustion in an incinerator for chemical waste</td>
</tr>
</tbody>
</table>

### Transport Information

*Non Regulated*

| UN Identification No. | Not Applicable |

### Regulatory Information

*Non-dangerous according to EC classification*

| USA | TSCA listed |

If you require any further information concerning this or any of our other products then please contact us at the address given above or visit our website at [http://www.polymerfactory.com](http://www.polymerfactory.com)