MATERIAL SAFETY DATA SHEET

Product Name F-3020
Product id 9532
Revision date 02/11/2009
Supersedes 15/05/2008

1. Identification of the substance & the company

Chemical name Brominated epoxy resin end-capped with tribromophenol
Chemical family Brominated epoxy resin
Molecular weight 2000
Type of product and use A polymeric flame retardant additive.
Supplier ICL-IP America Inc.
622 Emerson Road - Suite 500
St Louis, Missouri 63141, USA
Tel:(314)983-7884   Fax:(314)983-7607

Emergency Telephone Chemtrec (800)424-9300

2. Hazards identification

Emergency overview White to off-white powder
May be a mild irritant to the eyes

3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brominated epoxy resin end-capped tribromophenol</td>
<td>135229-48-0</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

4. First-aid measures

Eye contact Holding the eyelids apart, flush eyes promptly with copious flowing water for at least 20 minutes.
Get medical attention immediately.
MATERIAL SAFETY DATA SHEET

Product Name: F-3020
Product id: 9532
Revision date: 02/11/2009
Supersedes: 15/05/2008
Revision: 7

Skin contact
Remove contaminated clothing. Wash skin thoroughly with mild soap and plenty of water for at least 15 minutes. Wash clothing before re-use. Get medical attention if irritation occurs.

Inhalation
In case of dust inhalation or breathing fumes released from heated material, remove person to fresh air. Keep him quiet and warm. Apply artificial respiration if necessary and get medical attention immediately.

Ingestion
If swallowed, wash mouth thoroughly with plenty of water and give water to drink. Get medical attention immediately.

NOTE: Never give an unconscious person anything to drink.

Notes to the physician
Material with low toxicity. No specific antidote. Treat symptomatically and supportively. In case of ingestion induce vomiting in alert patient.

5. Fire - fighting measures

Suitable extinguishing media
Material is not combustible. Use extinguishing media appropriate to surrounding fire conditions.

Fire fighting procedure
Cool containers with water spray. In closed stores, provide fire-fighters with self-contained breathing apparatus in positive pressure mode.

Unusual fire and explosion hazards
When heated to decomposition, may release poisonous and corrosive fumes of CO, CO2 and HBr.

6. Accidental release measures

Personal precautions
Wear respirator, chemical safety goggles, rubber gloves and boots

Methods for cleaning up
Sweep up, place in a suitable container and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.
7. Handling and storage

Handling
Keep containers tightly closed.
Avoid bodily contact.

Storage
Store in a dry, cool, well-ventilated area

8. Exposure controls / personal protection

Exposure Limits :

<table>
<thead>
<tr>
<th>Components</th>
<th>ACGIH-TLV Data</th>
<th>OSHA (PEL) Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brominated epoxy resin end-capped tribromophenol 135229-48-0</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

Ventilation requirements
Ventilation must be sufficient to maintain TLV-TWA below 3 mg/m³, respirable particles, and 10 mg/m³, inhalable particles (ACGIH recommendation for Particles (Insoluble or poorly soluble) Not Otherwise Specified (PNOS).

Personal protective equipment:
- Respiratory protection Dust respirator
- Hand protection Protective gloves
- Eye protection Chemical safety goggles
- Skin and body protection Body covering clothes and boots

Hygiene measures
Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking.

9. Physical and chemical properties

Appearance
White to off-white powder

Boiling point/range
Not available

Softening point/range
105-120°C

Flash point
None

Flammable/Explosion limits
Not flammable

Auto-ignition temperature
Not applicable

Vapour pressure
Not applicable under standard conditions
# MATERIAL SAFETY DATA SHEET

**Product Name**: F-3020  
**Product id**: 9532  
**Revision date**: 02/11/2009  
**Revision**: 7  
**Supersedes**: 15/05/2008

---

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaporation rate (ether=1)</td>
<td>Not applicable under standard conditions</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not applicable under standard conditions</td>
</tr>
<tr>
<td>Solubility:</td>
<td></td>
</tr>
<tr>
<td>- Solubility in water</td>
<td>Insoluble</td>
</tr>
<tr>
<td>- Solubility in other solvents</td>
<td>n-Octanol: 0.518 g/100ml</td>
</tr>
<tr>
<td></td>
<td>Soluble in chlorobenzene, chloroform, dioxane, acetone, anisole</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.9</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>&gt;360°C</td>
</tr>
</tbody>
</table>

### 10. Stability and reactivity

**Stability**: Stable under normal conditions  
**Materials to avoid**: None known  
**Conditions to avoid**: Heating above decomposition temperature  
**Hazardous decomposition products**: Hydrogen bromide, carbon dioxide and carbon monoxide  
**Hazardous polymerization**: Not relevant

### 11. Toxicological information

**Acute toxicity:**  
- Rat oral LD50: >2000 mg/kg  
- Eye irritation (rabbit): Minimal irritant  
- Dermal irritation (rabbit): Not irritant  
**Dermal sensitization**: Not a sensitizer

**Chronic toxicity**: No information available  
**Mutagenicity**: Not mutagenic by the Ames Test  
**Carcinogenicity**: Not classified by IARC  
Not included in NTP 11th Report on Carcinogens

### 12. Ecological information

**Information on ecological effects**: No information available
# 13. Disposal considerations

**Waste disposal**
Treat the solid waste and packaging waste via an incinerator equipped with an adequate gas cleaning system or send to a controlled landfill. Observe all federal, state and local environmental regulations when disposing of this material.

# 14. Transportation information

**DOT**
Not regulated

**IMO**
Not regulated

**ICAO/IATA**
Not regulated

# 15. Regulatory information

**USA**
Not reported in the EPA TSCA Inventory
Marketed under PMN exemption rule (for polymers) 40 CFR sec. 723.250

**- SARA 313**
Not listed

**Canada**
Listed in DSL

**EU**
This product is a polymer. The monomers of the polymer are reported in EINECS.

**Japanese METI**
7-2266

**Australia**
Listed in AICS

**New Zealand Inventory**
Listed in NZIoC

**China inventory**
Listed

**Korea**
Listed
16. Other information

This data sheet contains changes from the previous version in section(s)
15

Health, Safety & Environment Policy
We will strive to ensure that our operations and products meet the needs of the present global community without compromising the ability of future generations to meet their needs
We accept that the success of our business is dependent on the supply of products and services that will benefit society whilst ensuring human safety and protection of the environment and natural resources
Within the framework of our commitment to the Responsible Care program, we will provide a healthy and safe work environment for employees and will responsibly manage our products at all stages of their life cycle in order to protect human health and the environment whilst maintaining high production standards of operation

TO MEET THIS COMMITMENT WE WILL:
Comply with or exceed applicable national and international regulatory requirements and other requirements to which we subscribe
Communicate openly and actively encourage dialogue with employees, customers and community concerning our products and operations
Implement documented management systems consistent with and for promotion of the Responsible Care ethics
Develop and supply products that can be manufactured, transported, used and disposed of safely whilst best meeting the needs of our customers
Regularly assess, continually improve and responsibly manage health, safety and environmental risks associated with products and processes throughout their life-cycles
Share knowledge and expertise with others and seek to learn from and incorporate improved practices into our own operations
Educate and train employees, contractors and customers to improve their HSE performance
Communicate up-to-date information to enable our workers, customers and other interested parties to handle our products in a safe and environmentally responsible manner
Endeavor to work with customers, suppliers, distributors and contractors to foster the safe use, transport and disposal of our chemicals
Support Product Stewardship programs in cooperation with customers, distributors and transporters

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, Bromine Compounds Ltd. makes no representations as to the completeness or accuracy thereof.
Information is supplied upon the condition that the persons receiving same will make their own determination as to its safety and suitability for their purposes prior to use.
In no event will Bromine Compounds Ltd. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information.

NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE, ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH THE INFORMATION REFERS.
MATERIAL SAFETY DATA SHEET

Product Name: F-3020
Product id: 9532
Revision date: 02/11/2009
Supersedes: 15/05/2008

Revision: 7

In an event of discrepancy between the contents of this MSDS and the English version of it, the English version shall prevail.

Prepared By: HSE Division in ISRAEL
telephone: +972-8-6297830
telefax: +972-8-6297832
www.icl-ip.com
e-mail: msdsinfo@icl-ip.com

End of safety data sheet