MATERIAL SAFETY DATA SHEET

Product name       F-2100
Product id         9243
Revision date      28/02/2013
Supersedes         16/06/2009

1. Identification of the substance & the company

Chemical name      Tetrabromobisphenol A - Tetrabromobisphenol A diglycidyl ether
Chemical formula   (C21H20Br4O4 . C15H12Br4O2) x
Chemical family    Brominated epoxy resin
Molecular weight   20,000
Type of product and use A polymeric flame retardant additive for thermoplastic resin systems.
Company            Bromine Compounds Ltd
                    P.O.Box 13 Tel Aviv 61000, Israel  Tel +972-3-5103388

Emergency telephone number:
- For Europe       ( +31) 115 689000
- For UK and Ireland +44 (0) 1270 502891 (24 Hours)
- For USA          Chemtrec (800) 424-9300
- For Asia - Pacific ALERT-SGS
                    24 hr Toll Free Number  : +800 ALERTSGS (+800-2537-8747)
                    24 hr Singapore Exchange Number : +65 6542-9595
- For Japan        +81-3-6801-8430

2. Hazards identification

Adverse human health effects None known

GHS
Product is not subject to classification according to GHS. No label elements required.

3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>Weight %</th>
<th>Index No.</th>
<th>EC No.</th>
<th>EU Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrabromobisphenol A-Tetrabromobisphenol A</td>
<td>Not Applicable</td>
<td></td>
<td>614-817-0</td>
<td>None</td>
</tr>
<tr>
<td>diglycidyl ether 68928-70-1</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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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.

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

**Inhalation**
In case of inhalation, 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. Get medical attention immediately.

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NOTE: Never give an unconscious person anything to drink.
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**Notes to the physician**
Material with low toxicity
No specific antidote
Treat symptomatically and supportively.

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 fumes of 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 bag and hold for waste disposal or possible re-use. 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. away from incompatible materials (see "materials to avoid").

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>Tetrabromobisphenol</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
<tr>
<td>A-Tetrabromobisphenol A diglycidyl ether 68928-70-1</td>
<td></td>
<td></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 thoroughly after handling and before eating or smoking. Safety shower and eye bath should be provided.
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9. Physical and chemical properties

- **Appearance**: White to off-white powder
- **Boiling point/range**: Not applicable (decomposes)
- **Softening point/range**: 190-200°C
- **Flash point**: >250°C (ASTM D93 PMOC)
- **Flammable/Explosion limits**: Not flammable
- **Auto-ignition temperature**: Not self-ignitable
- **Vapour pressure**: Not applicable under standard conditions
- **Evaporation rate (ether=1)**: Not applicable under standard conditions
- **Vapor density**: Not applicable under standard conditions
- **Solubility**: Insoluble
- **Solubility in water**: Soluble in polar solvents such as dioxane and DMF
- **Solubility in other solvents**: Toluene: <0.2 g/100g at 25°C
- **Solubility in other solvents**: Ethyl benzene: <0.2 g/100g at 23°C
- **Specific gravity**: 1.8
- **Decomposition temperature**: > 339°C

10. Stability and reactivity

- **Stability**: Stable under normal conditions
- **Materials to avoid**: Acid anhydride, strong mineral acid, strong bases and oxidizing agents.
- **Conditions to avoid**: Heating above decomposition temperature.
- **Hazardous decomposition products**: HBr
- **Hazardous polymerization**: Will not occur

11. Toxicological information

- **Note**: The toxicological data presented below are the results of studies conducted on a lower molecular weight oligomer.
- **Acute toxicity**: > 2,000 mg/kg
- **Dermal irritation (rabbit)**: Not irritant
- **Eye irritation (rabbit)**: Not irritant
- **Dermal sensitization**: Not a sensitizer
- **Chronic toxicity**: Not available
- **Mutagenicity**: Not mutagenic by the Ames Test
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

IMDG
Not regulated

ADR/RID
Not regulated

ICAO/IATA
Not regulated

DOT
Not regulated

15. Regulatory information

EU
This product is a polymer. The monomers are reported in EINECS (Nos. 2213460 & 2012369)

USA
Reported in the EPA TSCA Inventory.

Australia
Listed in AICS

Canada
Listed in DSL

CHINA
- China inventory
Listed in IECSC

Japan
ISHL No. (7)-1267, (7)-1288

Japanese METI
ENCS (7)-1267, (7)-1288
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Korea: Listed in ECL (KE-23977)
New Zealand Inventory: Listed in NZIoC
Philippines: Listed in PICCS

16. Other information

This data sheet contains changes from the previous version in section(s)
2, 4, 7, 10

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.

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

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End of safety data sheet