1. Identification of the substance & the company

Chemical name: Tetrabromobisphenol A, Bis (2,3-dibromopropyl ether)
Synonym(s): SR-720, TBBA-bis(2,3-dibromopropyl ether), TBBPA-DBPE
Chemical formula: C_{21}H_{20}Br_{8}O_{2}
Chemical family: Halogenated bisphenol derivative
Molecular weight: 944
Type of product and use: A flame retardant used in polypropylene, HIPS (high impact polystyrene).
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 crystalline powder which is not hazardous
Potential Health Effects:
- Eye Contact: May cause mild irritation to the eyes
- Skin contact: Not irritant

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>CAS No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrabromobisphenol A, Bis (2,3-dibromopropyl ether)</td>
<td>21850-44-2</td>
<td>93</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.

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
Use extinguishing media appropriate to surrounding fire conditions.

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

Unusual fire and explosion hazards
Dust may form an explosive mixture with air. \([\text{Kst} = 77 \text{ bar.m.s}^{-1}]\)
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 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
Avoid bodily contact.
Keep containers tightly closed.

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>Tetrabromobisphenol A,Bis (2,3-dibromopropyl ether) 21850-44-2</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

Manufacturer's recommendation 5 mg/m³

VENTILATION REQUIREMENTS
Ventilation must be sufficient to maintain atmospheric concentration below recommended exposure limit.

PERSONAL PROTECTIVE EQUIPMENT:
- Respiratory protection: Dust respirator
- Hand protection: Rubber 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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>White crystalline powder</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>113-117°C</td>
</tr>
<tr>
<td>Flash point</td>
<td>None</td>
</tr>
<tr>
<td>Flammable/Explosion limits</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>740°C</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not applicable under standard conditions</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility:</td>
<td></td>
</tr>
<tr>
<td>- Solubility in water</td>
<td>0.144 µg/l (20°C)</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>2.3</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>306°C</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Log Pow - 7.2 (estimated)</td>
</tr>
</tbody>
</table>

## 10. Stability and reactivity

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>Stable under normal conditions.</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>None</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Heating above decomposition temperature</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>HBr</td>
</tr>
<tr>
<td>Hazardous polymerization</td>
<td>Will not occur</td>
</tr>
</tbody>
</table>

## 11. Toxicological information

<table>
<thead>
<tr>
<th>Toxicological property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity:</td>
<td></td>
</tr>
<tr>
<td>- Rat oral LD50</td>
<td>&gt;2000 mg/kg</td>
</tr>
<tr>
<td>- Mouse oral LD50</td>
<td>&gt;20,000 mg/kg</td>
</tr>
<tr>
<td>- Eye irritation (rabbit)</td>
<td>Minimal irritant</td>
</tr>
<tr>
<td>- Dermal irritation (rabbit)</td>
<td>Not irritant</td>
</tr>
<tr>
<td>Dermal sensitization</td>
<td>Not a sensitizer</td>
</tr>
<tr>
<td>Chronic toxicity</td>
<td>Not available</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Mutagenic by the Ames Test (internal study)</td>
</tr>
<tr>
<td></td>
<td>Not mutagenic by the Ames Test (NTP study)</td>
</tr>
<tr>
<td></td>
<td>Not mutagenic in the mouse lymphoma L5178Y test system.</td>
</tr>
<tr>
<td></td>
<td>Negative in the micronucleus study (NTP study in mice)</td>
</tr>
</tbody>
</table>
MATERIAL SAFETY DATA SHEET

Product name: FR-720
Product id: 9536-FR
Supersedes: 29/03/2007
Revision date: 20/04/2011

12. Ecological information

Information on ecological effects: The product was analysed for polybrominated p-Dibenzodioxins and Dibenzofurans contamination. The results show that no polybrominated Dibenzodioxins and Dibenzofurans higher than the limits of quantitation according to the Toxic Substance Control Act (TSCA) 40/CFR 766.27 are present. Also the limits of the german ordinance (Chemikalien-Verbotsverordnung) for polybrominated Dibenzodioxins and Dibenzofurans are fulfilled.

Environmental fate: The adsorption-coefficient log Koc is >>5.63 (OECD 121)

Aquatic toxicity:
- 96 Hour-LC50, Fish: >100 mg/l nominal concentration WAF (Rainbow trout)
- 48 Hour-EC50, Daphnia magna: >100 mg/l nominal concentration WAF
- 72 Hour-EC50, Freshwater algae: > 100 mg/l nominal concentration WAF

Invertebrate toxicity:
- NOEC: >= 810 mg/kg dry sediment (Chironomus riparius, 28 days)
- >=1837mg/kg dry sediment (Hyaiella aztecafor survival and weight, 28 days).
- NOEC=642 mg/kg dry sediment (lenght of survivors)

Biodegradation: Not readily biodegradable

Bioaccumulative potential: No bioaccumulation was detected in earthworms (Eisenia fetida, 21 days)

Reproduction: The No Observed Effect Concentration (NOEC) for reproduction in Eisenia fetida is 512 mg/kg soil after exposure of 28 days

13. Disposal considerations

Waste disposal: 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 Reported in the EPA TSCA Inventory.

Canada Listed in NDSL

EC No. 244-617-5

Japan ENCS no. (4)-212, (4)-214, (4)-218
    ISHL no. (4)-212, (4)-214, (4)-218

Australia Listed in AICS

New Zealand Inventory Listed in NZIoC

China inventory Listed

Korea Listed in ECL (KE-23970)

Philippines Listed in PICCS

16. Other information

This data sheet contains changes from the previous version in section(s)
2, 11, 15

Note:
All sections reformatted in accordance with REACH Annex II revision
MATERIAL SAFETY DATA SHEET

Product name  FR-720
Product id      9536-FR
Revision date  20/04/2011
Supersedes     29/03/2007

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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MATERIAL SAFETY DATA SHEET

Product name: FR-720
Product id: 9536-FR
Revision date: 20/04/2011
Supersedes: 29/03/2007
Revision: 6

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End of safety data sheet