

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard 29 CFR 1910.1200 (HAZCOM 2012 - GHS)
According to Canada Hazardous Products Regulation (WHMIS 2015)

Product name	FR-1524	
Product id	8353	
Revision date	21/01/2018	Revision: 11
Supersedes	19/09/2016	

1. Identification of the substance & the company

Product identifier	FR-1524
Chemical name	Tetrabromobisphenol A (TBBA)
Synonym(s)	Phenol,4,4'-(1-methylethylidene)bis[2,6-dibromo]; 2,2',6,6 tetrabromo-4,4'-isopropylidenediphenol; 2,2-Bis(3,5-dibromo-4-hydroxyphenyl)propane; 3,3',5,5'-Tetrabromobisphenol A.
Chemical formula	C ₁₅ H ₁₂ Br ₄ O ₂
Chemical family	Brominated bisphenol A
Molecular weight	543.7
Type of product and use	A flame retardant used in the manufacture of epoxides, polycarbonate, ABS and phenolics.
Supplier	ICL-IP America Inc. 622 Emerson Road - Suite 500 St. Louis, Missouri 63141, USA Tel:(314)983-7884 Fax:(314)983-7607 e-mail:msdsinfo@icl-group.com
Emergency Telephone	CHEMTREC : (800) 424-9300 Medical: PROSAR 1-888-875-1685 (24HRS)

2. Hazards identification

GHS classification	Carc. Cat. 2, H351 Suspected of causing cancer Aquatic Acute 1, H400 - Very toxic to aquatic life Aquatic Chronic 1, H410 - Very toxic to aquatic life with long lasting effects
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Symbol(s)



Signal Word	WARNING
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Hazard statements	H351 - Suspected of causing cancer H410 - Very toxic to aquatic life with long lasting effects
Precautionary statements	P280 - Wear protective gloves/protective clothing/eye protection/face protection P202 - Do not handle until all safety precautions have been read and understood P391 - Collect spillage P273 - Avoid release to the environment P308 + P313 - IF exposed or concerned: Get medical advice/attention P405 - Store locked up P501 - Dispose of contents/container in accordance with national and international regulations

3. Composition / information on ingredients

Components	CAS No.	Weight %
Tetrabromobisphenol A	79-94-7	99

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 immediately.
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. Get medical attention immediately.

NOTE: Never give an unconscious person anything to drink

Most important symptoms and effects, acute or delayed

Suspected of causing cancer

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Notes to the physician Treat symptomatically and supportively.
No specific antidote.

5. Fire - fighting measures

Suitable extinguishing media	Material is not combustible. Use extinguishing media appropriate to surrounding fire conditions.
Unusual fire and explosion hazards	Will decompose from ca. 284°C releasing poisonous and corrosive fumes of HBr.
Fire fighting procedure	Cool containers with water spray. In closed stores, provide fire-fighters with self-contained breathing apparatus in positive pressure mode.

6. Accidental release measures

Personal precautions	Wear respirator, chemical safety goggles, rubber gloves and boots.
Methods for cleaning up	Shovel into intact packaging and hold for waste disposal or possible re-use. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete. Avoid access to streams, lakes or ponds.
Environmental precautions	Prevent leaking and spilling into the sewers, drainage systems, or soil. Avoid release to the aquatic environment.

7. Handling and storage

Handling	Avoid bodily contact. Keep containers tightly closed.
Storage	Store in a dry, well-ventilated area away from incompatible materials (see "materials to avoid").

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8. Exposure controls / personal protection

Exposure Limits :

Components	ACGIH-TLV Data	Korea OEL	OSHA (PEL) Data
Tetrabromobisphenol A 79-94-7	Not determined	Not determined	Not determined

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** Half face-piece respirator with particulate filter.
- **Hand protection** Neoprene gloves.
- **Eye protection** Chemical safety goggles
- **Skin and body protection** Wear suitable coveralls to prevent exposure to the skin. TYPE 5, EN ISO 13982-1

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.

9. Physical and chemical properties

Appearance	White crystalline powder
Melting point/range	181°C
Boiling point/range	Not applicable (decomposes)
Flash point	None.
Evaporation rate (ether=1)	Not applicable under standard conditions
Flammable/Explosion limits	Not flammable
Vapor pressure	< 1.19x10E-5 Pa (20°C)
Vapor density	Not applicable under standard conditions
Solubility:	
- Solubility in water	1.26 mg/l (pH =7) @ 25°C 2.34 mg/l (pH=9) @ 25°C
- Solubility in other solvents	Acetone: 240 g/100g at 25°C Methanol: 92 g/100g at 25°C
Partition coefficient (n-octanol/water)	Log Kow : 5.903
Auto-ignition temperature	Not available
Decomposition temperature	ca.284°C
Viscosity	Not applicable

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Specific gravity	2.17
Explosive properties	There are no chemical groups associated with explosive properties present in the molecule
Oxidising properties	The structure indicates non oxidizing properties
Particle size	Mass Median Aerodynamic Diameter (MMAD) of approximately 42 µm

10. Stability and reactivity

Reactivity	No reactive hazards known/expected.
Stability	Stable under normal conditions
Possibility of hazardous reactions	Not expected to occur
Conditions to avoid	Heating above decomposition temperature.
Materials to avoid	Oxidizing agents.
Hazardous decomposition products	HBr.

11. Toxicological information

Acute toxicity:

- Rat oral LD50	> 5000 mg/kg
- Rabbit dermal LD50	> 2000 mg/kg
- Rat inhalation LC50	>57000 mg/m ³ /1 hour

Skin corrosion/irritation	Not irritant
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Serious eye damage/ irritation	Not irritant
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Respiratory or skin sensitisation	Not a sensitizer
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Mutagenicity	Not mutagenic by the Ames Test. Not clastogenic in chromosome aberration test with Human lymphocytes.
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Carcinogenicity	IARC Group 2A (animal sufficient evidence, human inadequate evidence). NTP study - Long-Term Carcinogenicity: Toxicology and Carcinogenesis Studies of TBBA (2-YEAR ,oral by gavage) in Wistar Han Rats and B6C3F1 Mice: Female Mice: No Evidence Male Mice: Some Evidence Female Rats: Clear Evidence Male Rats: Equivocal Evidence
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Reproductive toxicity	In a 2-generation reproduction study in rats the NOEL (No Observable Effect Level) for parental toxicity was 100 mg/kg/day. The NOEL for reproduction performance and pup toxicity was 1000 mg/kg/day, the highest dose level evaluated. NOAEL 1000 mg/kg bw/day (rat, oral)
Teratogenicity	Not teratogenic, NOAEL=1000 mg/kg body weight (rat, gavage).
Specific Target Organ Toxicity (STOT) - Single exposure	No effects on specific target organs have been identified
Specific Target Organ Toxicity (STOT) - Repeat exposure	No effects on specific target organs have been identified. NOAEL 1000 mg/kg/day (13 weeks oral, rat) NOAEL =2500 mg/kg (3 weeks, dermal, rabbit)
-NOAEC	>18 mg/l/4 hour (2 weeks, inhalation, rat)
Aspiration hazard	Not expected to occur

12. Ecological information

Information on ecological effects	This product has been analyzed for contamination of polybrominated dibenzo-para-dioxins/dibenzofurans under USA EPA Test Rule section 4 of TSCA. The results, which were accepted by the EPA, show that no polybrominated dibenzo-para-dioxins/dibenzofurans were detected in this product above the level of quantitation (LOQ).
Aquatic toxicity :	
- 96 Hour-LC50, Fish	1.1 mg a.i./L (Rainbow Trout, flow-through)
- 48 hour-LC50, Daphnia magna	>1.8 mg a.i. /L (pH 8.1-8.2)
- 96 Hour - EC50, Algae	NOEC : 5.6 mg/L
Chronic toxicity	The No Observed Effect Concentration (NOEC) in Daphnia magna after exposure of 21 day is 0.38 mg/L
- Marine Invertebrate	17
Mobility	It can be expected that the substance will adsorb strongly to sediment and soil.
Biodegradation	Not readily biodegradable.
Bioaccumulative potential	BCF values ranging from 372 to 1200 suggest that bioconcentration in aquatic organisms is generally moderate to high.

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Note: Not considered to be PBT or vPvB

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. Avoid access to streams, lakes or ponds.
Disposal of Packaging	The bags should be opened and shaken to remove as much of remaining material as possible. After emptying they should be either sent to landfill or for incineration in accordance with local regulations.

14. Transportation information

UN No.	3077
DOT	<p>Proper shipping name: Environmentally hazardous substance, solid, n.o.s (Tetrabromobisphenol A)</p> <p>Class: 9 - Miscellaneous Hazardous Materials</p> <p>Labels: 9</p> <p>Marking: Marine Pollutant</p> <p>Packing Group: III</p> <p>Not regulated for surface and air transport in non-bulk (<119 gallons) packagings.</p>
IMDG	<p>Proper shipping name: Environmentally hazardous substance, solid, n.o.s (Tetrabromobisphenol A)</p> <p>Class: 9 - Miscellaneous Dangerous Substances and Articles</p> <p>Packing Group: III</p> <p>Labels: 9</p> <p>Mark: MARINE POLLUTANT</p>
ICAO/IATA	<p>Proper shipping name: Environmentally hazardous substance, solid, n.o.s (Tetrabromobisphenol A)</p> <p>Class: 9</p> <p>Packing group: III</p> <p>Hazard label(s): Miscellaneous</p> <p>Marking: Environmentally hazardous substance</p>

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15. Regulatory information

USA	Reported in the EPA TSCA Inventory.
- SARA 313	This substance/s is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372
- New Jersey Right-to-Know Hazardous Substances list	Listed
- California-Prop 65	WARNING! This product can expose you to Tetrabromobisphenol A, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov .
Canada	Listed in DSL
EU	Reported in EINECS
Brazil	The product is not subject to any regulatory list
Australia	Listed in AICS
China	
- China inventory	Listed in IECSC
Japan	ENCS no. .4-205 ISHL no. .4-205
Korea	Listed in KECI KE-23971
Mexico	Listed in the National Inventory of Chemical Substances (INSQ)
New Zealand Inventory	Listed in NZIoC
Philippines	Listed in PICCS
Taiwan	Listed (TCSI)
Vietnam	Listed
Thailand	Listed

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16. Other information

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

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, we make no representations as to the completeness or accuracy thereof. Information is supplied to you upon the condition that the persons receiving the information will make their own determination as to its safety and suitability for their purposes prior to use. In no event will we be responsible for damages of any nature whatsoever resulting from the use of or reliance upon the information. In addition, we shall not be liable for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices or from any hazards inherent in the nature of the product.

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End of safety data sheet