

MATERIAL SAFETY DATA SHEET

Product name **FR-245**
Product id 9309-FR
Revision date 30/08/2011 **Revision: 5**
Supersedes 05/12/2007

1. Identification of the substance & the company

Chemical name 2,4,6-Tris(2,4,6-tribromophenoxy)-1,3,5-triazine
Chemical formula $C_{21}H_6Br_9N_3O_3$
Chemical family Brominated aromatic compound
Molecular weight 1067.43
Type of product and use A flame retardant for thermoplastic resins
Supplier Dongguan Baoxu Chemical Technology Ltd
Caijing Business Bldg Dongguan CN 523071
Emergency Telephone +1(213) 632-9361 between 0800-1700 (GMT-8)

2. Hazards identification

Emergency overview *White powder which is not hazardous*

3. Composition / information on ingredients

Components	CAS No.	Weight %
2,4,6-Tris(2,4,6-tribromophenoxy)-1,3,5-triazine	25713-60-4	99.5

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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 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. Treat symptomatically and supportively. No specific antidote.

5. Fire - fighting measures

Suitable extinguishing media	Carbon dioxide, dry chemicals, foam, water spray (fog).
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	FR-245 dust was tested and was found to be not flammable. When heated to decomposition, may release poisonous and corrosive fumes of Carbon Dioxide, Carbon Monoxide, Nitrogen Oxides (NOx) and Hydrogen Bromide.

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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, well-ventilated area

8. Exposure controls / personal protection

Exposure Limits :

Components	ACGIH-TLV Data	OSHA (PEL) Data
2,4,6-Tris(2,4,6-tribromophenoxy)-1,3,5-triazine 25713-60-4	Not determined	Not determined

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

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Hygiene measures Safety shower and eye bath should be provided. 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 powder
Boiling point/range	Not applicable under standard conditions
Melting point/range	228-230°C
Flash point	None
Flammable/Explosion limits	Not flammable
Auto-ignition temperature	>400°C Not self-ignitable
Vapour pressure	1.52x10 ⁽⁻²⁰⁾ Pa (25°C)
Evaporation rate (ether=1)	Not applicable under standard conditions
Vapor density	Not applicable under standard conditions
Solubility:	
- Solubility in water	< 1µg/l (20°C)
- Solubility in other solvents	Chloroform THF Methylene chloride n-octanol: 697 mg/l at 20°C
Specific gravity	2.44
Decomposition temperature	> 385°C
Partition coefficient (n-octanol/water)	Log Pow = 13.6 (calculated)
Explosive properties	Not explosive Does not contain any chemically instable or highly energetic groups that might lead to an explosion.
Oxidising properties	Not oxidising The structure indicates non oxidizing properties
Particle size:	Particle size distribution was between 67% and 51% below 100 micron.

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, carbon monoxide and nitrogen oxides.
Hazardous polymerization	Will not occur

11. Toxicological information

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11. Toxicological information

Acute toxicity:

- Rat oral LD50	>2000 mg/kg (OECD Guideline 401)
- Rabbit dermal LD50	>2000 mg/kg (OECD Guideline 402)
- Eye irritation (rabbit)	Not irritant
- Dermal irritation (rabbit)	Not irritant

Dermal sensitization Not sensitising when tested according to OECD Guideline 406

Sub-chronic toxicity:

- NOEL 1000 mg/kg/day (oral rat)

Chronic toxicity No information available

Mutagenicity

Not mutagenic by the Ames Test (Salmonella & E. coli)
Not clastogenic in chromosome aberration test with Chinese hamster cells.
Not clastogenic in chromosome aberration test with Human lymphocytes.
Not mutagenic in the mouse lymphoma L5178Y test system.

Carcinogenicity

Not classified by IARC
Not included in NTP 11th Report on Carcinogens

Reproductive toxicity

No evidence of adverse effects to reproductive organs was identified during sub-acute and sub-chronic toxicity testing. Given the lack of toxicity and the low level of absorption of FR-245 into the body, is not expected to have adverse effects on reproduction.

Other

Following oral administration to Rats (OECD 417), absorption was very low ($\leq 0.2\%$)

12. Ecological information

Note:

The aquatic toxicity was tested at solubility level

Environmental fate

Respiration inhibition of activated sewage sludge for 3 hour contact IC50 > 100 (Not inhibiting).

Aquatic toxicity :

- 96 Hour-LC50, Fish	>0.013 mg/l (Carp)
- 48 Hour-EC50, Daphnia magna	>0.013 mg/l
- EC50, Freshwater algae	>0.013 mg/l, 96 Hours (growth inhibition)

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Toxicity to micro-organisms	Respiration inhibition of activated sewage sludge for 3 hour contact IC50 > 100 (Not inhibiting).
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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
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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
EU	European List of Notified Chemicals Substances (ELINCS) number 426-040-2
Japanese METI	ENCS:.5-6312
Australia	Not classified as hazardous according to criteria of NOHSC
New Zealand Inventory	Listed in NZIoC
China inventory	Listed in IECSC
Korea	ECL Serial No.: 2000-3-1422

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16. Other information

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

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

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FR-245 is not classified as a dangerous chemical under the criteria of Regulation (EC) No 1272/2008 [CLP] (see § 2). Nevertheless, manufacturers using it should adopt good working practice during processing and avoid any emissions to the environment. It is recommended that FR-245 waste should be sent to incineration or to a controlled landfill.

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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