

SAFETY DATA SHEET

According to OSHA Hazard Communication Standard 29 CFR 1910.1200 (GHS)

Product name Fire Resistant, Phosphate Fluid
Product id VP-PUMP
Revision date 06/07/2014 **Revision:** 4
Supersedes 05/03/2014

1. Identification of the substance & the company

Chemical name Butylated triphenyl phosphate ester based mixture
Chemical family Aryl phosphate
Type of product and use Fire-resistant hydraulic fluid
Distributor Ratermann Manufacturing Inc.
601 Pinnacle Place
Livermore, CA 94550
Emergency Telephone Chemtrec (800)424-9300
Medical: PROSAR 1-888-875-1685 (24HRS)

2. Hazards identification

OSHA HAZARDS No OSHA hazards

Labels and other form of warning

Symbol(s)

NFPA Ratings (Scale 0-4) Health = 1, Fire = 1, Reactivity = 0.
HMIS Ratings (Scale 0-4) Health = 1, Fire = 1, Reactivity = 0.

3. Composition / information on ingredients

Components	CAS No.	Weight %
t-Butylphenyl diphenyl phosphate	56803-37-3	30 - 35
Bis(t-butylphenyl)phenyl phosphate	65652-41-7	30 - 35
Tri(t-butylphenyl) phosphate	78-33-1	10 - 15
Triphenyl phosphate	115-86-6	< 25

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.

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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 persists.
Inhalation	In case of mist 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

None known.

Notes to the physician	Treat symptomatically and supportively. No specific antidote.
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5. Fire - fighting measures

Suitable extinguishing media	Material is not combustible. Use extinguishing media appropriate to surrounding fire conditions.
Unusual fire and explosion hazards	When heated to decomposition, may release poisonous and corrosive fumes of carbon dioxide, carbon monoxide and phosphorus oxides. The material is not sensitive to ignition from static discharge.
Fire fighting procedure	Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA). Contain runoff to prevent entry into water or drainage systems.

6. Accidental release measures

Personal precautions	Wear appropriate safety clothing and eye/face protection (see Section 8).
Methods for cleaning up	Soak up with sand or other suitable absorbant and dispose of as solid waste. Collect in suitable and properly labeled containers. Ventilate area and wash spill site after material pickup is complete.
Environmental precautions	Prevent product from entering drains, ditches and rivers.

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7. Handling and storage

Handling	Avoid bodily contact. Keep containers tightly closed.
Storage	Store in a dry, cool, well-ventilated area. away from incompatible materials (see "materials to avoid"). Maximum recommended storage temperature of 65°C (149°F). Store above 4.4°C (40° F) for improved pumping rates. Temperatures between 27 - 37.8°C (80 - 100°F) provide good flow rates.

8. Exposure controls / personal protection

Exposure Limits :

Components	ACGIH-TLV Data	OSHA (PEL) Data
t-Butylphenyl diphenyl phosphate 56803-37-3	Not determined	Not determined
Bis(t-butylphenyl)phenyl phosphate 65652-41-7	Not determined	Not determined
Tri(t-butylphenyl) phosphate 78-33-1	Not determined	Not determined
Triphenyl phosphate 115-86-6	3 mg/m ³	3 mg/m ³

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

Personal protective equipment:

- **Respiratory protection** Not normally required
P-100 Organic Acid Gas Canisters or Cartridges if exposure is not high.
Supplied Air Respirator if high concentration of exposure.
- **Hand protection** Nitrile or latex 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.

9. Physical and chemical properties

Appearance	Yellowish liquid
Odor	Slight
Melting point/range	Not determined
Boiling point/range	>400°C

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Pour point	-17.77°C (0 °F)
Flash point	246°C (475°F) (closed cup)
Flammable/Explosion limits	Not flammable/Not explosive
Vapor pressure	1.08x10 ⁽⁻³⁾ Pa (20°C)
Density	1.13 - 1.17 g/cm ³ (20°C)
Solubility:	
- Solubility in water	< 0.1 g/100 ml
Partition coefficient (n-octanol/water)	Log Kow - 4.85
Auto-ignition temperature	Not self-ignitable
Viscosity	220 SUS @ 38°C (100°F)
Ignition temperature	554.44°C (1030°F)

10. Stability and reactivity

Stability	Stable under normal conditions
Possibility of hazardous reactions	Not expected to occur
Conditions to avoid	Exposure to moisture.
Materials to avoid	Acids alkalies
Hazardous decomposition products	Phosphorus oxides, Carbon dioxide and carbon monoxide

11. Toxicological information

Note: *Toxicological data have not been determined specifically for this product. Information given is based on data on the components and the toxicology of similar products.*

Likely Routes of Exposure Skin
Eye contact
Inhalation
Ingestion

Acute toxicity:

- Rat oral LD50	> 5000 mg/kg
- Rabbit dermal LD50	> 2000 mg/kg
- Rat inhalation LC50	> 0.4 mg/l
- Eye irritation (rabbit)	Not irritant

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- Dermal irritation (rabbit)	Not irritant
Sub-chronic toxicity:	
- NOEL	100 ppm (13 weeks oral rat)
Chronic toxicity	No data available
Mutagenicity	No evidence of genotoxic or mutagenic activity was noted in Ames tests, the mouse lymphoma and chromosome aberration tests.
Carcinogenicity	Not classified by IARC Not included in NTP 12th Report on Carcinogens Not classified as a carcinogen by USA OSHA
Reproductive toxicity	Butylated triphenyl phosphate did not demonstrate reproductive toxicity. In a rat reproduction study, male and female animals received either 50, 250 or 1000 mg/kg/day for several weeks after which they mated. There was no reproductive toxicity observed at any dose level. Diagnostic pathology confirmed no alterations to the reproductive organs. There was no effect on mating index, litter size, survival of the offspring or on any other measured parameter.
Teratogenicity	Not teratogenic when administered orally up to 1000 mg/kg
Neurotoxicity	No signs of acute delayed neurotoxicity when administered orally to hens at 23 g/kg

12. Ecological information

Aquatic toxicity :

- 96 Hour-LC50, Fish	0.8 mg/l (Ictalurus punctatus)
- 96 Hour-EC50, fish	> 2.0 mg/l Rainbow Trout)
- LC50, Crustacea	0.39 mg/l ((Mysid shrimp, 96-hours))
- 48 Hour-EC50, Daphnia magna	202 µg/L

Biodegradation Readily biodegradable

Bioaccumulative potential The wholefish BCF was found to be 1850.

Note: Not considered to be PBT or vPvB

13. Disposal considerations

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Waste disposal	Observe all federal, state and local environmental regulations when disposing of this material
Disposal of Packaging	Dispose of in a safe manner in accordance with local/national regulations.

14. Transportation information

UN No.	3082
DOT	Proper shipping name: Environmentally hazardous substances, liquid , n.o.s (triphenyl phosphate, tert-butylated triphenyl phosphate mixtures containing 10% to 48% triphenyl phosphates) Class: 9 - Miscellaneous Hazardous Material Label: 9 Packing Group: III Not regulated for surface and air transport in non-bulk (<119 gallons) packagings. (contains triphenyl phosphate which is a Marine Pollutant per 49CFR 172.101 Appendix B)
IMDG	Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (triphenyl phosphate, tert-butylated triphenyl phosphate mixtures containing 10% to 48% triphenyl phosphates) Class: 9 - Miscellaneous Dangerous Substances and Articles Label: 9 Mark: MARINE POLLUTANT Packing Group: III
ICAO/IATA	Proper shipping name: Environmentally hazardous substance, liquid , n.o.s (triphenyl phosphate, tert-butylated triphenyl phosphate mixtures containing 10% to 48% triphenyl phosphates) Class: 9 Hazard label(s): Miscellaneous Packing group: III Marking: Environmentally hazardous substance

15. Regulatory information

USA	Reported in the EPA TSCA Inventory.
- SARA 313	This product does not contain a chemical listed at or above de minimis concentrations

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- Massachusetts Right-to-Know Hazardous Substances list	Listed (Triphenyl phosphate)
- New Jersey Right-to-Know Hazardous Substances list	Listed (Triphenyl phosphate)
- Pennsylvania Right-to-Know Hazardous Substances list	Listed (Triphenyl phosphate)
- Rhode Island Right-to-Know Hazardous Substances list	Listed (Triphenyl phosphate)
- California-Prop 65	This product does not contain any ingredient known to the State of California to cause cancer or reproductive toxicity as listed under the State drinking Water and Toxic Enforcement Act of 1986.
- Waste Classifications	This material does not meet RCRA`s characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40CFR 261.33.
Canada	Listed in DSL
-WHMIS hazard class	Non-controlled
EU	Reported in EINECS
Japan	Listed in ENCS
Australia	Listed in AICS
New Zealand Inventory	Listed in NZIoC
China	
- China inventory	Listed in IECSC
Korea	Listed in ECL
Philippines	Listed in PICCS

16. Other information

This data sheet contains changes from the previous version in section(s)
Logo, 2 (US only)

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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 SDS and the English version of it, the English version shall prevail.

End of safety data sheet