



MSDS Number: 00854
Product Name: Reofos® 35

Effective Date: 03/10/2005
Page: 1 of 7

SECTION I - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Reofos® 35
Manufacturer: Great Lakes Chemical Corporation
Address: P.O. Box 2200 **City:** West Lafayette
State: Indiana **Zip:** 47996-2200
Emergency Telephone Number: 1-800-949-5167
Information Telephone Number: 1-765-497-6100 **Fax:** 1-765-497-6123
Chemtrec Phone: 1-800-424-9300; **Internationally call 703-527-3887**
Effective Date: 03/10/2005 **Supercede Date:** 08/04/2004
MSDS Prepared By: Regulatory Affairs Department/Great Lakes Chemical Corporation
Synonyms: Triaryl phosphates, Isopropylated; Isopropylated triphenyl phosphate
Product Use: Flame retardant fluid
Chemical Name: Mixture
Chemical Family: Phosphate Esters

Additional Information

No information available

SECTION II - COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS No.	%	EXPOSURE LIMITS
Isopropylated triphenyl phosphate	68937417	60 - 100	Y (Hazardous) Not established (OSHA PEL TWA) Not established (OSHA PEL STEL) Not established (OSHA PEL CEIL) Not established (ACGIH TLV TWA) Not established (ACGIH TLV STEL) Not established (ACGIH TLV CEIL)
Triphenyl phosphate	115866	15 - 40	N (Hazardous) 3 mg/m3 (OSHA PEL TWA) Not established (OSHA PEL STEL) Not established (OSHA PEL CEIL) 3 mg/m3, A4 (ACGIH TLV TWA) Not established (ACGIH TLV STEL) Not established (ACGIH TLV CEIL)

*Indented chemicals are components of previous ingredient.

Additional Information

Additional exposure limit for triphenyl phosphate:
NIOSH REL TLV = 3 mg/m3

SECTION III - HAZARDS IDENTIFICATION

Emergency Overview: Clear, colorless liquid
No odor
Mists generated by heat, violent agitation or spraying will irritate skin, eyes, nose, throat and respiratory system.

Relevant Routes of Exposure: Ingestion, inhalation and skin absorption

Signs and Symptoms of Overexposure: General reddening and irritation to the skin and eyes, mucous membrane irritation, upper respiratory tract irritation.

Medical Conditions Generally Aggravated By Exposure: None reported

MATERIAL SAFETY DATA SHEET

MSDS Number: 00854
Product Name: Reofos® 35

Effective Date: 03/10/2005
Page: 2 of 7

SECTION III - HAZARDS IDENTIFICATION

Potential Health Effects: See Section XI for additional information.

Eyes: May cause eye irritation.

Skin: May cause skin irritation.

Prolonged or continuous contact with skin will cause irritation.

Ingestion: May cause nervous system effects.

Inhalation: May cause respiratory tract irritation, mucous membrane irritation and nervous system effects.

Chronic Health Effects: Prolonged or repeated exposure may cause liver, adrenal, thymus, reproductive, developmental and neurological effects based on animal data.

Carcinogenicity:

NTP: No

ACGIH: No

IARC: No

OTHER: No

OSHA: No

Additional Information

No information available

SECTION IV - FIRST AID MEASURES

Eyes: Flush with large volumes of water for at least 15 minutes. Get medical attention.

Skin: Wash with large volumes of soap and water for at least 15 minutes. If irritation develops, get medical attention.

Ingestion: If conscious, give person 1 to 2 glasses of water. Get medical attention immediately.

Inhalation: Remove person to fresh air. Get medical attention.

Antidotes: No information available

Notes to Physicians and/or Protection for First-Aiders:

Product has low acute oral and dermal toxicity and is may be irritating to the eyes and skin. Treatment is controlled removal or exposure followed by symptomatic and supportive care. Human systemic toxicity information is unavailable, but expected to be low. Neurological evaluation of workers, where no differences were demonstrated between triaryl phosphate esters exposed and control populations, support this conclusion. [1]

Additional Information

[1] University of Minnesota - M.J. Reape, PH.D. Theses, March 1982

SECTION V - FIRE FIGHTING MEASURES

Flammable Limits in Air (% by Volume):

Not available

Flash Point:

199 degrees C (390 degrees F) (PMCC)

Autoignition Temperature:

551 degrees C (1025 degrees F)

Extinguishing Media:

All conventional media are suitable.

Fire Fighting Instructions:

Wear a self-contained breathing apparatus and protective clothing to prevent skin and eye contact in fire situations.

Unusual Fire and Explosion Hazards:

Under fire conditions, toxic and irritating fumes may be emitted.

Flammability Classification:

Slightly combustible

Known or Anticipated Hazardous

Products of Combustion:

Oxides of phosphorus

Carbon monoxide and carbon dioxide

Additional Information

No information available

MATERIAL SAFETY DATA SHEET

MSDS Number: 00854
Product Name: Reofos® 35

Effective Date: 03/10/2005
Page: 3 of 7

SECTION VI - ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Contain spill.
Wearing appropriate personal protective equipment, collect spill with the aid of an inert absorbent and place in suitable labeled containers for disposal.

Personal Precautions: See Section VIII.

Environmental Precautions: Avoid releasing to the environment.

Additional Information

No information available

SECTION VII - HANDLING AND STORAGE

Handling: Use appropriate personal protection equipment.
Avoid eye, skin and clothing contact.
Do not breathe mist or vapor.
Avoid repeated and prolonged contact.
Use only in a well ventilated area.
Store and handle away from any product involved in food processing.
Avoid the generation of aerosols from spraying, pouring or vigorous agitation whenever possible, particularly if product is heated. If the generation of airborne materials cannot be avoided, exhaust ventilation and/or personal protective equipment as described in section 8 should be used.

Storage: Store in a cool, dry, well-ventilated area away from incompatible materials.
Keep container tightly closed.
Protect containers against damage.

Other Precautions: No information available

Additional Information

No information available

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Control with appropriate exhaust ventilation if misting is expected in occupied areas.

Ventilation Requirements: Use local ventilation to keep levels below established threshold values.
Use mechanical ventilation for general area control.

Personal Protective Equipment:

Eye/Face Protection: Chemical safety goggles or full face shield

Skin Protection: Recommend butyl (heavy duty) or polyethylene (light duty) gloves.
Clothing designed to minimize skin contact
Wear an apron or impervious clothing and rubber boots if splashing is expected.

Respiratory Protection: Wear a NIOSH/MSHA approved organic cartridge respirator in high temperature applications, if misting or vapor occurs, or there is potential for airborne exposures to exceed established threshold values.
Consult the OSHA respiratory protection information located at 29CFR 1910.134 and the American National Standard Institute's Practices of Respiratory Protection Z88.2.
Wear a NIOSH/MSHA approved self-contained breathing apparatus in emergency situations.

Other Protective Clothing or Equipment: Wear an apron or impervious clothing and rubber boots if splashing is expected.

Exposure Guidelines: See Section II.

Work Hygienic Practices: Wash thoroughly after handling.
Wash contaminated clothing before reuse.

Additional Information

No information available

MATERIAL SAFETY DATA SHEET

MSDS Number: 00854
Product Name: Reofos® 35

Effective Date: 03/10/2005
Page: 4 of 7

SECTION IX - PHYSICAL & CHEMICAL PROPERTIES

Appearance:	Clear colorless liquid	Percent Volatile:	Not available
Boiling Point:	220 - 270 degrees C (428 - 518 degrees F) at 4 mmHg	pH Value:	Not available
Bulk Density:	Not available	pH Concentration:	Not available
Color:	Colorless	Physical State:	Liquid
Decomposition Temperature:	Not available	Reactivity in Water:	Not water reactive
Evaporation Rate:	Not available	Saturated Vapor Concentration:	Not available
Freezing Point:	Not available	Softening Point:	Not available
Heat Value:	Not available	Solubility in Water:	Insoluble
Melting Point:	Not available	Specific Gravity or Density (Water=1):	1.170 - 1.180 at 20 degrees C
Molecular/Chemical Formula:	Mixture	Vapor Density:	>1
Molecular Weight:	N/A	Vapor Pressure:	0.026 mmHg @ 150 degrees C
Octanol/Water Partition Coefficient:	Not available	Viscosity:	Not available
Odor:	None	Volatile Organic Compounds:	Not available
Odor Threshold:	Not available	Water/Oil Distribution Coefficient:	Not available
Particle Size:	Not available	Weight Per Gallon:	Not available

Additional Information

No information available

SECTION X - STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of handling and use.
Conditions to Avoid:	None
Incompatibility With Other Materials:	None known
Hazardous Decomposition Products:	Thermal decomposition may produce the following: Oxides of phosphorus Carbon monoxide and carbon dioxide
Hazardous Polymerization:	Will not occur
Conditions to Avoid:	None

Additional Information

No information available

SECTION XI - TOXICOLOGICAL INFORMATION

VALUE (LD50 OR LC50)	ANIMAL	ROUTES	COMPONENTS
>200 mg/L	Rat	Acute Inhalation	Similar Product
>2,000 mg/kg	Rat	Acute Dermal	Similar Product
>5,000 mg/kg	Rat	Acute Oral	Similar Product

Toxicological Information:

Based on a similar material, this material has low acute oral and dermal toxicity. Primary eye and skin irritation studies in rabbits on a similar material did not result in eye or skin irritation. However, eye and skin irritation may be possible. Prolonged or continuous contact with skin will cause irritation. This material may be irritating to the respiratory system and mucous membranes. Breathing or swallowing large quantities may cause neurological effects. Repeated exposure over a prolonged period of time may cause neurological effects.

A reproductive/developmental toxicity screening study (OECD 421) and a combined repeated dose toxicity study with reproductive/developmental screening (OECD 422) were conducted using this material or a chemical that is related to this product. Studies were performed on rats using oral administration of 0, 25, 100, or 400 mg/kg/day. The number of successful

MATERIAL SAFETY DATA SHEET

MSDS Number: 00854
Product Name: Reofos® 35

Effective Date: 03/10/2005
Page: 5 of 7

pregnancies and viable offspring were substantially reduced at the mid and high doses. In addition, reduced weight and/or histopathological effects were noted in the following organs: thymus and male reproductive organs (testes and epididymides) in the high-dose group, liver and/or adrenal effects in at least one sex of the high- and mid-dose groups and female reproductive organs and adrenals of females at all doses. A NOAEL could not be determined for this study.

In an in vitro mammalian chromosome aberration test using human peripheral blood lymphocytes with and without Aroclor-included S9 activation, a similar material was concluded to be negative for the induction of structural and numerical chromosome aberrations.

Other acute and chronic health hazards, as well as target organs, are unknown.

Additional Information

Note: Epidemiology studies completed in 1977 and 1985 of current and former workers at the production facility where natural and synthetic triaryl phosphates are manufactured have not demonstrated any unusual pattern of mortality or disease.

SECTION XII - ECOLOGICAL INFORMATION

Ecological Information: The following ecological information is offered:

Similar product:

LC50 in rainbow trout (96H) = 1.6 (1.2 - 2.2) mg/L

LC50 in fathead minnow (96H) = 10.8 (8.0 - 14.6) mg/L

EC50 in Daphnia magna (48H) = 2.44 (1.93 - 3.08) mg/L

Avoid releasing to the environment.

Additional Information

No information available

SECTION XIII - DISPOSAL CONSIDERATIONS

Disposal Considerations: Dispose of waste at an approved chemical disposal facility in compliance with all current Local, State/Province, Federal/Canadian laws and regulations.

If the product was supplied in a single use container, care should be taken to dispose of the container in a responsible manner and in accordance with applicable regulations.

Additional Information

No information available

SECTION XIV - TRANSPORT INFORMATION

U.S. DOT

Proper Shipping Name:	Environmentally hazardous substances, liquid, n.o.s. (Contains Triaryl phosphates, isopropylated and Triphenyl phosphate)	ID Number:	UN3082
Hazard Class:	9	Labels:	Miscellaneous, Marine Pollutant
Packing Group:	III	Packaging Exceptions:	155
Special Provisions:	8, IB3, T4, TP1, TP29	Bulk Packaging:	241
Non-Bulk Packaging:	203	Air Cargo Limit:	None
Passenger Air/Rail Limit:	None	Other Stowage:	N/A
Vessel Stowage:	A		
Reportable Quantity:	N/A		

AIR - ICAO OR IATA

Proper Shipping Name:	Environmentally hazardous substance, liquid, n.o.s. (Contains Triaryl phosphates, isopropylated and Triphenyl phosphate)	ID Number:	UN3082
Hazard Class:	9	Packing Group:	III
Subsidiary Risk:	None		

MATERIAL SAFETY DATA SHEET

MSDS Number: 00854
Product Name: Reofos® 35

Effective Date: 03/10/2005
Page: 6 of 7

SECTION XIV - TRANSPORT INFORMATION

Hazard Labels:	Miscellaneous, Marine pollutant	Packing Instructions:	914; LQ Y914
Air Passenger Limit Per Package:	LQ 30kg G	Packing Instruction - Cargo:	914
Air Cargo Limit Per Package:	No limit	Special Provisions Code:	A97

WATER - IMDG

Proper Shipping Name:	Environmentally hazardous substance, liquid, n.o.s. (Contains Triaryl phosphates, isopropylated and Triphenyl phosphate)		
Hazard Class:	9	ID Number:	UN3082
Packing Group:	III	Subsidiary Risk:	N/A
Medical First Aid Guide Code:	NA		

Additional Information

Marine Pollutant

EmS No.- F-A, S-F

SECTION XV - REGULATORY INFORMATION

U.S. Federal Regulations:

The components of this product are either on the TSCA Inventory or exempt (i.e. impurities, a polymer complying with the exemption rule at 40 CFR 723.250) from the Inventory.

State Regulations:

Triphenyl phosphate:

Massachusetts Substance List

New Jersey Right To Know Hazardous Substance List (1% reporting limit)

Pennsylvania Hazardous Substance List (1% reporting limit)

International Regulations:

Canada - DSL

EU - EINECS

Australia - AICS

Korea - ECL

Japan - ENCS

Philippines - PICCS

China - List I

Canadian Disclosure List (1%) - Triphenyl phosphate

Canadian WHMIS Hazard Class and Division = D.2.b.

SARA Hazards:

Acute:	Yes	Chronic:	Yes
Reactive:	No	Fire:	No
Pressure:	No		

Additional Information

The above regulatory information represents only selected regulations and is not meant to be a complete list.

SECTION XVI - OTHER INFORMATION

NFPA Codes:

Health:	2	Flammability:	1
Reactivity:	0	Other:	N

HMIS Codes:

Health:	1*	Flammability:	1
Reactivity:	0	Protection:	X

Label Statements: Not available

Other Information: Abbreviations:

(L) = Loose bulk density in g/ml

MATERIAL SAFETY DATA SHEET

MSDS Number: 00854
Product Name: Reofos[®] 35

Effective Date: 03/10/2005
Page: 7 of 7

SECTION XVI - OTHER INFORMATION

LOEC = Lowest observed effect concentration
MATC = Maximum acceptable toxicant concentration
NA = Not available
N/A = Not applicable
NL = Not limited
NOAEL = No observable adverse effect level
NOEC = No observed effect concentration
NOEL = No observable effect level
NR = Not rated
(P) = Packed bulk density in g/ml
PNOR = Particulates Not Otherwise Regulated
PNOS = Particulates Not Otherwise Specified
REL = Recommended exposure limit
TS = Trade secret

Additional Information

Information on this form is furnished solely for the purpose of compliance with OSHA's Hazard Communication Standard, 29CFR 1910.1200 and The Canadian Environmental Protection Act, Canada Gazette Part II, Vol. 122, No. 2 and shall not be used for any other purpose.

Revision Information:

Section III - Chronic health effects
Section XI - Toxicological information