MATERIAL SAFETY DATA SHEET

PHOSFLEX 41P

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME
PHOSFLEX 41P

CHEMICAL NAME
Propylated triphenyl phosphate

SYNONYM
None Available

CHEMICAL FORMULA
Mixture

CAS #
MIXTURE

CHEMICAL FAMILY
Aryl phosphate

MANUFACTURERS NAME
Supresta LLC

PRODUCT/TECHNICAL INFORMATION
1-914-269-5900

ADDRESS
420 Saw Mill River Road
Ardsley, NY 10502

MEDICAL/HANDLING EMERGENCY
PROSAR 1-888-875-1685

COUNTRY
USA

TRANSPORTATION EMERGENCY
CHEMTREC 1-800-424-9300

PRODUCT USE
Flame-retardant plasticizer

REVISION DATE
2/04/2005

ISSUE DATE
3/10/1995

REVISION NO.
012

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE DESCRIPTION	PERCENT	CAS#
Triphenyl phosphate	13.000- 19.000	115-86-6
Propylated triphenyl phosphate mixture	81.000- 87.000	68937-41-7

SECTION 3. HAZARDS IDENTIFICATION

Appearance & Odor
Clear, colorless, odorless liquid

STATEMENT OF HAZARDS

May cause mild skin irritation.
Inhalation of vapor or mist may cause respiratory tract irritation.
Triphenyl phosphate may cause cholinesterase inhibition at levels above the exposure limits.
May cause reproductive toxicity.

Fire & Explosion Hazards
This product is not defined as flammable or combustible. It is self-extinguishing once the source of ignition is removed. The material is not sensitive to static discharge or physical impact. It may decompose under fire conditions.

Primary Route of Exposure
Skin contact and inhalation are the primary routes of exposure to this product.

Inhalation Acute Exposure
Inhalation of vapors or mists may cause respiratory tract irritation. Triphenyl phosphate, a component of this product, may cause cholinesterase inhibition (see Section 4, "Note to Physician," for signs and symptoms of these effects).

SECTION 3. HAZARDS IDENTIFICATION (CONTINUED)

Skin Contact - ACUTE
Skin contact may cause mild irritation.

Eye contact - ACUTE
Eye contact is not expected to cause irritation.

Ingestion - ACUTE
Ingestion may cause irritation of the gastrointestinal system and diarrhea. Ingestion of triphenyl phosphate, a component of this product, may cause cholinesterase inhibition. See Section 4, "Note to Physician," for signs and symptoms of these effects.

CARCINOGENICITY

IARC	....NO	OSHA	....NO
NTP	....NO	ACGIH	....NO

SECTION 4. FIRST AID MEASURES

Inhalation First Aid
If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Skin Contact - First Aid
Remove contaminated clothing and equipment. Thoroughly wash all affected areas with soap and plenty of water. Get medical attention if irritation persists. Wash contaminated clothing before reuse. Thoroughly clean or destroy contaminated shoes.

Eye Contact - First Aid
Immediately flush eyes with plenty of running water. If victim is wearing contact lenses, remove them. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids with water. Get medical attention if irritation occurs and persists.

Ingestion - First Aid
Get medical attention by calling a physician or a poison control center immediately. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, keep head below hips to reduce the risk of aspiration. Never give anything by mouth to an unconscious person.

Medical conditions aggravated
Persons with pre-existing neuromuscular disorders may be at an increased risk from exposure to this material.

Note to Physician
This product is an organophosphorus mixture containing triphenyl phosphate. Triphenyl phosphate has been reported to be a weak cholinesterase inhibitor in humans. Symptoms of cholinesterase inhibition may include: headache, nausea, sweating, numbness and tingling of the hands and feet, salivation, muscle twitching, tremors, incoordination, blurred vision, tears, abdominal cramps, diarrhea, and chest discomfort. In cases of cholinesterase inhibition, atropine by injection is antidotal. Pralidoxime chloride (2-PAM; Protopam chloride) is also antidotal when administered early and in conjunction with atropine.

SECTION 5. FIRE FIGHTING MEASURES

FLASH POINT
435.00 F 223.88 C

FLASH METHOD
Pensky-Martens Closed Cup

AUTO IGNITION TEMPERATURE
N/D F N/D C

UPPER EXPLOSION LIMIT
N/D

LOWER EXPLOSION LIMIT
N/D

Extinguishing Media
Use water fog or spray, dry chemical, foam or carbon dioxide extinguishing agents.

Fire Fighting Procedures
As in any fire, prevent human exposure to fire, smoke, fumes or products of combustion. Evacuate non-essential personnel from the fire area. Firefighters should wear full-face, self-contained breathing apparatus and impervious protective clothing. If possible, move containers from the fire area. If not leaking, keep fire exposed containers cool with a water fog or spray to prevent rupture due to excessive heat. High pressure water may spread product from broken containers increasing contamination or fire hazard.

Dike fire control water for later disposal. Do not allow contaminated water to enter waterways.

Fire & Explosion Hazards
This product is not defined as flammable or combustible. It is self-extinguishing once the source of ignition is removed. The material is not sensitive to static discharge or physical impact. It may decompose under fire conditions.

Other Fire + Explosion Hazards
No other fire or explosion hazards of this product are known.

Hazardous Products/Combustion
Decomposition of this product under fire conditions can produce carbon monoxide, phosphorus oxides, and organic decomposition products.

NFPA HEALTH RATING
1

NFPA FLAMMABILITY RATING
1

NFPA REACTIVITY RATING
0

NFPA OTHER
ND

SECTION 6. ACCIDENTAL RELEASE MEASURES

Cleanup
Isolate spill area and restrict nonessential personnel. All personnel involved in spill cleanup should follow appropriate industrial hygiene practices (see Section 8). Stop source of spill if possible without being injured. Dike area to prevent spill from spreading. Soak up liquid with a suitable absorbent such as clay, sawdust, or kitty litter. Sweep up absorbed material and place in a chemical waste container for disposal. CAUTION! Spill area may be slippery. Cover spill area with a slurry of powdered household detergent and water. Use stiff brush to work slurry into cracks and crevices. Allow to stand for 2-3 minutes, then flush with water. Dike wash water for later disposal. Do not allow contaminated water to enter waterways or sewers.

SECTION 7. HANDLING AND STORAGE

Handling
Wear protective clothing including chemical goggles and rubber gloves when handling this product to avoid eye and skin contact. Handle in a well-ventilated area. Avoid inhalation of vapor or mist. Wash thoroughly after handling.

Containers should be located in an area where they can be rotated regularly (first in, first out) and visually inspected for dents and bulging on a weekly basis. If bulged drums are found, they should be vented in an open area by removing the two-inch bung very slowly. The two-inch bung should not be removed completely until there is no sound of pressure being released. The bung can then be removed, but this should be done slowly and with care.

Emptied container may retain product residues. Follow all warnings and precautions even after container is emptied.

Storage
Store away from foodstuffs and animal feed. Containers should be stored in a cool, dry, well ventilated area away from flammable or oxidizing materials and sources of heat or flame. Exercise due caution to prevent damage to or leakage from the container.

Prolonged storage at elevated temperatures under wet alkaline or acidic conditions should be avoided to assure product integrity. Care should be taken to prevent moisture condensation in the container. Carbon steel is the preferred material of construction for storage containers. The product is normally shipped in unlined tank cars, trucks and drums.

MAXIMUM STORAGE TEMPERATURE
149.00 F 65.00 C
Higher in absence air/moisture

General Comments
At temperatures below 4.4 C (40 F), the viscosity characteristics are such that improved pumping rates may be achieved by warming. Temperatures from 27-37.8 C (80-100 F) provide good rates of flow.

This product can be stored and transported in equipment constructed of mild steel.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory protection
Use a NIOSH-approved organic vapor/acid gas respirator (OVAG) with dust, mist, and fume filters to reduce potential for inhalation exposure if use conditions generate vapor, mist, or aerosol and adequate ventilation (e.g., outdoor or well-ventilated area) is not available. Where exposure potential necessitates a higher level of protection, use a NIOSH-approved, positive-pressure, pressure demand, air-supplied respirator. When using respirator cartridges or canisters, they must be changed frequently (following each use or at the end of the workshift) to assure breakthrough exposure does not occur.

Skin Protection
Skin contact with the liquid or its aerosol should be prevented through the use of suitable protective clothing, gloves, and footwear selected with regard for use condition exposure potential. Combination neoprene over natural latex gloves are recommended.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (CONTINUED)

Eye Protection
Eye contact with the liquid or its aerosol should be prevented through the use of chemical safety goggles or a face shield selected with regard for use condition exposure potential.

Ventilation protection
At elevated processing temperatures or in the event that use conditions generate airborne vapor, aerosol, or mist, the material should be handled in a well-ventilated area. Where adequate ventilation is not available, respiratory protection should be used.

Other Protection
Safety showers, with quick opening valves which stay open, and eye wash fountains, or other means of washing the eyes with a gentle flow of cool to tepid tap water, should be readily available in all areas where this material is handled or stored. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather. Long sleeved clothing may be used to minimize skin contact.

APPLICABLE EXPOSURE LIMITS
Other than any exposure limits which may be displayed in Section 8, there are no other known exposure limits applicable to this product or its components.

EXPOSURE LIMITS/REGULATORY INFORMATION (IN MG/M3)

SUBSTANCE DESCRIPTION	REG. AGCY	PEL	TLV	TWA	STEL	CEIL
Triphenyl phosphate						
	OSHA	3.0000	N/D	N/D	N/D	N/D
	ACGIH	N/D	3.0000	N/D	N/D	N/D
	NIOSH	N/D	N/D	3.0000	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D
Propylated triphenyl phosphate mixture						
	OSHA	N/D	N/D	N/D	N/D	N/D
	ACGIH	N/D	N/D	N/D	N/D	N/D
	NIOSH	N/D	N/D	N/D	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D

LEGEND:

EXPOSURE LIMIT DESCRIPTIONS
CEIL Ceiling Exposure Limit
PEL Permissible Exposure Limit
STEL Short Term Exposure Limit
TLV Threshold Limit Value
TWA Time Weighted Average
N/D = Not Determined

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

VAPOR PRESSURE (mm Hg)
N/D

VAPOR DENSITY (Air = 1.0)
N/D

EVAPORATION RATE
N/D

VOLATILE %
N/D

BOILING POINT
N/D F N/D C

ODOR THRESHOLD (ppm)
N/D

SPECIFIC GRAVITY
1.16 @ 20/20 C (68/68 F)

BULK DENSITY
. Not Applicable

SOLUBILITY IN WATER
N/D

SOLUBILITY IN OTHER SOLVENTS
Not Determined

COEFFICIENT OF OIL/WATER
N/D

POUR POINT
-5.00 F -20.55 C

MELTING POINT
N/D F N/D C

pH FACTOR
N/D

CLOUD POINT
N/D F N/D C

FLASH POINT
435.00 F 223.88 C

FLASH METHOD
Pensky-Martens Closed Cup

UPPER EXPLOSION LIMIT
N/D

LOWER EXPLOSION LIMIT
N/D

AUTO IGNITION TEMPERATURE
N/D F N/D C

Other
Viscosity @ 25 C (77 F) = 100 cps.

SECTION 10. STABILITY AND REACTIVITY

Stability
This product is stable at ambient temperatures and atmospheric pressure. It is not self-reactive and is not sensitive to static discharge or physical impact.

Incompatibilities
This product is incompatible with strong oxidizers, strong acids and strong alkalis. It hydrolyzes slowly at ambient temperatures in acidic or alkaline aqueous solutions.

Polymerization
Hazardous polymerization is not expected to occur.

Decomposition
Under wet acidic or alkaline conditions this product hydrolyzes slowly and nonviolently.

Vapors may decompose at elevated temperatures to release harmful materials.

Conditions to Avoid
Prolonged storage at elevated temperatures (above 65.6 C; 150 F) should be avoided.
Avoid contact with strong acids, strong bases, and strong oxidizers.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicological - Inhalation
The acute inhalation LC50 in both male and female rats is greater than 5.2 mg/l (4-hour exposure). No mortalities were observed at this dose level. Inhalation of this product may cause respiratory tract irritation.

Inhalation Chronic Exposure
Chronic inhalation exposure effects for this product are not known.

Toxicological - Dermal
Practically non-toxic; the acute dermal LD50 (rabbit) for this material is greater than 2000 mg/kg.

This material was found to be a mild skin irritant in rabbits following a 24-hour exposure.

Skin Contact - CHRONIC
Chronic dermal exposure effects for this product are not known. However, prolonged and/or repeated contact may cause irritation.

Toxicological - Eye
This product did not produce irritation when tested in rabbit eyes.

Toxicological - Ingestion
Slightly toxic; the acute oral LD50 (rat) is 2530-5000 mg/kg.

Ingestion - CHRONIC
May cause reproductive toxicity.

CARCINOGENICITY/MUTAGENICITY
The product was examined for mutagenic activity in a series of in vitro microbial assays employing Salmonella indicator organisms with and without metabolic activation. Mutagenic activity was not demonstrated in any of the assays conducted.

The product was examined in a forward mutation assay in mouse lymphoma cells with and without metabolic activation. Weak mutagenic activity was demonstrated in the assay with metabolic activation. The product was not mutagenic without metabolic activation.

The product was examined in the in vitro cytogenic assay with and without metabolic activation. It did not induce increases in the frequency of chromosome abberations with and without metabolic activation.

The product was examined in an in vitro malignant transformation test utilizing BALB/3T3 cells. It induced a significant increase of morphologic transformations in the assay.

REPRODUCTIVE EFFECTS
In a reproductive toxicity study, rats received daily oral doses of 25, 100 or 400 mg/kg for two weeks. The animals were mated and their reproductive organs were microscopically examined. Decreased fertility was observed in the mid and high dose animals. Adverse effects on the reproductive organs were observed at all dose levels. The results of this study indicate that isopropylated triphenylphosphate is a reproductive toxin.

NEUROTOXICITY
This product was administered orally to hens at a dose of 2000 mg/kg. A significant inhibition of neurotoxic esterase was seen although there were no observed signs of toxicity. In another study, this product administered orally to hens caused a significant inhibition of plasma cholinesterase at doses of

SECTION 11. TOXICOLOGICAL INFORMATION (CONTINUED)

183 mg/kg and above and a significant inhibition of neurotoxic esterase at doses of 370 mg/kg and above. Single doses up to 11.7 g/kg of this product administered to hens 3 weeks apart did not produce delayed neurotoxicity.

Other Toxicological Effects
No other toxic effects for this product are known.

Target Organs
Overexposure to this product may affect the skin, respiratory tract, and the central and peripheral nervous system.

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION
Ecotoxicological data are not available for this product. The following data are available for triphenyl phosphate (a product component):
96-hour LC50 Rainbow trout = 0.36 mg/l (literature)
48-hour LC50 Daphnia magna = 1.0 mg/l (literature)

DISTRIBUTION
Triaryl phosphate esters, including triphenyl phosphate, exhibit low aqueous solubility, have moderate potential for bioconcentration, and readily undergo biodegradation.

CHEMICAL FATE
This material is readily biodegradable.
Hydrolysis rates for triphenyl phosphate, a product component, are:
at pH 9.5: half-life: 0.23 days
at pH 8.2: half-life: 7.5 days

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal
Material that cannot be used or chemically reprocessed should be disposed of in accordance with all applicable regulations.
Product containers designed for single use should be thoroughly emptied before disposal.
NOTE! State and local regulations may be more stringent than federal.

This product, if unused, does not meet the EPA's RCRA criteria as either a listed or a characteristic hazardous waste. Generators of wastes are required to evaluate their materials for compliance with RCRA and local disposal procedures and regulations.

CONTAINER DISPOSAL
Emptied containers may retain residues of this material. Follow all warnings and precautions even after the container is emptied.

Containers should be drained of residual material before disposal. Emptied containers should be disposed of in accordance with all applicable laws and regulations.

SECTION 14. TRANSPORT INFORMATION

SHIPPING DESCRIPTION
FOLLOWING SHIPMENTS ARE NOT REGULATED FOR TRANSPORT:
Surface transport within North America (U.S.A., Canada, Mexico) in packages of 119 gallons or less (non-bulk). Air transport within North America (U.S.A., Canada, Mexico).

FOLLOWING SHIPMENTS ARE REGULATED FOR TRANSPORT (SHIPPING DESCRIPTION FOLLOWS):
Bulk surface shipments within North America (> 119 gallons).
Water transport within North America (U.S.A., Canada, Mexico).
Export shipments (excluding non-bulk shipments to Canada and Mexico and shipments via air transport to Canada and Mexico).

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Contains triphenyl phosphate, Triaryl phosphates, isopropylated)
9, UN3082, PG III
NORTH AMERICAN EMERGENCY RESPONSE GUIDE NO. 171

REQUIRED LABELS
PRIMARY LABEL: Class 9
SUBSIDIARY RISK LABEL: Marine pollutant

ENVIRON. HAZARDOUS SUBSTANCE
This product contains triphenyl phosphate and isopropylated triaryl phosphates which are Marine Pollutants per 49 CFR, 172.101, Appendix B.

SECTION 15. REGULATORY INFORMATION

Component Triphenyl phosphate is subject to the following

Enviromental List

DSL	Domestic Substance List-Canada
MA. LIST	Massachusetts Substance List
NJ R-T-K	New Jersey R-T-K Hazard. Sub.
PA. LIST	Penn. Hazardous Substance List
TSCA	Toxic Subst. Cont. Act -listed

Component Propylated triphenyl phosphate mixture is subject to the followi

Enviromental List

DSL	Domestic Substance List-Canada
TSCA	Toxic Subst. Cont. Act -listed

OTHER REGULATORY INFORMATION
No other regulatory information is available on this product.

WHMIS HAZARD CLASS
NOT CONTROLLED

HAZARD RATING SOURCE
HMIS

SECTION 15. REGULATORY INFORMATION (CONTINUED)

HEALTH
1

REACTIVITY
0

FLAMMABILITY
1

OTHER

SECTION 16. OTHER INFORMATION

OTHER INFORMATION
PHOSFLEX is a registered trademark of Supresta LLC.

Revisions made in Section(s) 3, 11.

CREATED BY
Product Safety 914-269-5900

KEY TO ABBREVIATIONS:

EQ=EQual
AP=APproximately
LT=Less Than
TR=TRace
GT=Greater Than
ND=No Data available