

SAFETY DATA SHEET

according to the OSHA
Hazard Communication Standard

Version 8.14
Revision Date 07/14/2026
Print Date 07/15/2026

SECTION 1. IDENTIFICATION

1.1 Product identifiers

Product name : EPA 8270 Organophosphorus Pesticides Mix

Product Number : 48469

Brand : Supelco

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

Restrictions on use : Not Available

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765

Fax : +1 800 325-5052

1.4 Emergency telephone number

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-
527-3887 CHEMTREC (International) 24
Hours/day; 7 Days/week

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Hazards for the product as supplied

Flammable liquids : Category 2

Acute toxicity (Oral) : Category 3

Acute toxicity (Inhalation) : Category 2

Acute toxicity (Dermal)	: Category 3
Skin irritation	: Category 2
Eye irritation	: Category 2A
Reproductive toxicity	: Category 2
Specific target organ toxicity - single exposure	: Category 3 (Central nervous system)
Specific target organ toxicity - repeated exposure (Inhalation)	: Category 1 (Nervous system)
Aspiration hazard	: Category 1
Short-term (acute) aquatic hazard	: Category 1
Long-term (chronic) aquatic hazard	: Category 1

Other hazards

None known.

GHS label elements

Hazard pictograms	:	    
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Signal word	:	Danger
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Hazard statements	:	H225 Highly flammable liquid and vapour. H301 + H311 Toxic if swallowed or in contact with skin. H304 May be fatal if swallowed and enters airways. H315 Causes skin irritation. H319 Causes serious eye irritation. H330 Fatal if inhaled. H336 May cause drowsiness or dizziness. H361 Suspected of damaging fertility or the unborn child. H372 Causes damage to organs (Nervous system) through prolonged or repeated exposure if inhaled. H410 Very toxic to aquatic life with long lasting effects.
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Precautionary statements	:	Prevention: P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood.
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P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284 Wear respiratory protection.

Response:

P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P331 Do NOT induce vomiting.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391 Collect spillage.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture
CAS-No. : Not Assigned

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
n-Hexane	110-54-3*	$\geq 70 - < 90$	-
acetone	67-64-1*	$\geq 10 - < 20$	-
O,O-Diethyl O-pyrazin-2-yl phosphorothioate	297-97-2*	$\geq 0.1 - < 1$	-
Parathion - methyl	298-00-0*	$\geq 0.1 - < 1$	-
Phorate	298-02-2*	$\geq 0.1 - < 1$	-
Disulfoton	298-04-4*	$\geq 0.1 - < 1$	-
Famophos	52-85-7*	$\geq 0.1 - < 1$	-
Parathion	56-38-2*	$\geq 0.1 - < 1$	-
Dimethoate	60-51-5*	$\geq 0.1 - < 1$	-
O,O,O-triethyl thiophosphate	126-68-1*	$\geq 0.1 - < 1$	-
Sulfotep	3689-24-5*	$\geq 0.1 - < 1$	-

* Indicates that the identifier is a CAS No.
Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : First aiders need to protect themselves.
Show this safety data sheet to the doctor in attendance.

If inhaled : After inhalation: fresh air. Immediately call in physician.
If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact : In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

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Call a physician immediately.

- In case of eye contact : After eye contact: rinse out with plenty of water.
Call in ophthalmologist.
Remove contact lenses.
- If swallowed : If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.
Pulmonary failure possible after aspiration of vomit.
- Most important symptoms and effects, both acute and delayed : The most important known symptoms and effects are described in the labelling (see section 2 GHS label elements) and/or in section 11
- Protection of first-aiders : For personal protection see section 8.
- Notes to physician : No data available

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Foam
Carbon dioxide (CO₂)
Dry powder
- Unsuitable extinguishing media : For this substance/mixture no limitations of extinguishing agents are given.
- Specific hazards during fire fighting : Combustible.

Pay attention to flashback.

Vapours are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire.

Forms explosive mixtures with air at ambient

temperatures.

Hazardous combustion products	: Carbon oxides
Specific extinguishing methods	: No data available
Further information	: Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for fire-fighters	: Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: Wear appropriate personal protective equipment, as indicated in Section 8.
Environmental precautions	: Do not let product enter drains. Risk of explosion.
Methods and materials for containment and cleaning up	: Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

SECTION 7. HANDLING AND STORAGE

For precautions see section 2 GHS label elements

Advice on protection against fire and explosion	: Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.
Advice on safe handling	: Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.
Further information on storage conditions	: Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorised persons.
Storage class	: 3, Flammable liquids
Recommended storage temperature	: Recommended storage temperature see product label.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
n-Hexane	110-54-3	TWA	50 ppm	ACGIH
		TWA	50 ppm 180 mg/m ³	NIOSH REL
		TWA	500 ppm 1,800 mg/m ³	OSHA Z-1
acetone	67-64-1	TWA	250 ppm	ACGIH
		STEL	500 ppm	ACGIH
		TWA	250 ppm 590 mg/m ³	NIOSH REL
		TWA	1,000 ppm 2,400 mg/m ³	OSHA Z-1
Parathion - methyl	298-00-0	TWA (Inhalable fraction and vapor)	0.02 mg/m ³	ACGIH
		TWA	0.2 mg/m ³	NIOSH REL
Phorate	298-02-2	TWA (Inhalable fraction and vapor)	0.05 mg/m ³	ACGIH
		TWA	0.05 mg/m ³	NIOSH REL
		ST	0.2 mg/m ³	NIOSH REL
Disulfoton	298-04-4	TWA (Inhalable fraction)	0.05 mg/m ³	ACGIH

		and vapor)		
		TWA	0.1 mg/m3	NIOSH REL
Parathion	56-38-2	TWA	0.1 mg/m3	OSHA Z-1
		TWA (Inhalable fraction and vapor)	0.05 mg/m3	ACGIH
		TWA	0.05 mg/m3	NIOSH REL
Sulfotep	3689-24-5	TWA (Inhalable fraction and vapor)	0.1 mg/m3	ACGIH
		TWA	0.2 mg/m3	OSHA Z-1
		TWA	0.2 mg/m3	OSHA P0
		TWA	0.2 mg/m3	NIOSH REL

Biological occupational exposure limits

Components	CAS-No.	Control parameter s	Biological specimen	Samplin g time	Permissibl e concentrat ion	Basis
n-Hexane	110-54-3	2,5- Hexanedio ne	Urine	End of shift	0.5 mg/l	ACGIH BEI
acetone	67-64-1	Acetone	Urine	End of shift (As soon as possible after exposur e ceases)	25 mg/l	ACGIH BEI
Parathion - methyl	298-00-0	Acetylcholi nesterase activity	In red blood cells	End of shift	70 % of an individual' s baseline	ACGIH BEI
		Butyrylcho linesterase activity	In serum or plasma	End of shift	60 % of an individual' s baseline	ACGIH BEI
Parathion	56-38-2	Total p- nitropheno l	Urine	End of shift (As soon as possible after exposur e ceases)	0.5 mg/g creatinine	ACGIH BEI
		Acetylcholi	In red	End of	70 % of	ACGIH

		nesterase activity	blood cells	shift	an individual's baseline	BEI
Dimethoate	60-51-5	Acetylcholinesterase activity	In red blood cells	End of shift	70 % of an individual's baseline	ACGIH BEI
		Butyrylcholinesterase activity	In serum or plasma	End of shift	60 % of an individual's baseline	ACGIH BEI

Engineering measures : No data available

Personal protective equipment

Respiratory protection : required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter type ABEK

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Hand protection

Material : butyl-rubber
Break through time : 30 min
Glove thickness : 0.3 mm
Protective index : Splash contact
Manufacturer : Butoject® (KCL 897 / Aldrich Z677647, Size M)

Manufacturer : data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

Remarks : Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good

laboratory practices. Wash and dry hands.
If used in solution, or mixed with other substances,
and under conditions which differ from EN 374,
contact the supplier of the CE approved gloves. This
recommendation is advisory only and must be
evaluated by an industrial hygienist and safety officer
familiar with the specific situation of anticipated use
by our customers. It should not be construed as
offering an approval for any specific use scenario.

- Eye protection : Use equipment for eye protection tested and
approved under appropriate government standards
such as NIOSH (US) or EN 166(EU).
Safety glasses
- Skin and body protection : Flame retardant antistatic protective clothing.
- Hygiene measures : Immediately change contaminated clothing. Apply
preventive skin protection. Wash hands and face
after working with substance.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Colour : No data available
- Odour : No data available
- Odour Threshold : No data available
pH : No data available
- Melting point : No data available
- Boiling point/boiling range : No data available
- Flash point : -15 °F / -26 °C
- Evaporation rate : No data available
- Flammability (solid, gas) : No data available
- Flammability (liquids) : No data available
- Burning rate : No data available
- Upper explosion limit /
Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Relative density	: No data available
Density	: No data available
Water solubility	: No data available
Partition coefficient: n- octanol/water	: No data available
Autoignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, dynamic	: No data available
Viscosity, kinematic	: No data available
Flow time	: No data available
Explosive properties	: Not classified as explosive.
Oxidizing properties	: none
Particle characteristics Particle size	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Vapours may form explosive mixture with air.
Chemical stability	: The product is chemically stable under standard ambient conditions (room temperature) .
Possibility of hazardous reactions	: No data available
Conditions to avoid	: Warming.
Incompatible materials	: Bases Oxidizing agents Strong oxidizing agents Reducing agents

Acetone reacts violently with phosphorous oxychloride.
Corrosive to most metals in the presence of moisture, reacts slowly with water to form non-hazardous products

Hazardous decomposition : In the event of fire: see section 5 products

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Mixture

Acute toxicity

Oral: No data available

Acute toxicity estimate Oral - 216.36 mg/kg

(Calculation method)

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Inhalation: No data available

Acute toxicity estimate Inhalation - 4 h - 0.5001 mg/l - vapour (Calculation method)

Symptoms: Possible symptoms: , mucosal irritations

Dermal: No data available

Acute toxicity estimate Dermal - 460.7 mg/kg

(Calculation method)

Skin corrosion/irritation

Remarks: Mixture causes skin irritation.

Serious eye damage/eye irritation

Remarks: Mixture causes serious eye irritation.

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Parathion)

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

Aspiration hazard, Aspiration may cause pulmonary oedema and pneumonitis.

11.2 Additional Information

Prolonged or repeated contact with skin may cause:, defatting, Dermatitis, Contact with eyes can cause:, Redness, Blurred vision, Provokes tears., Effects due to ingestion may include:, Gastrointestinal discomfort, Central nervous system depression, Lung irritation, chest pain, pulmonary edema

Kidney - Irregularities - Based on Human Evidence

Skin - Dermatitis - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

Components**n-Hexane****Acute toxicity**

LD50 Oral - Rat - male and female - 16,000 mg/kg
(OECD Test Guideline 401)

LC50 Inhalation - Rat - 4 h - 172 mg/l - vapour

Remarks: (RTECS)

LD50 Dermal - Rabbit - male - > 2,000 mg/kg
(OECD Test Guideline 402)

Skin corrosion/irritation

Skin - Rabbit

Result: Skin irritation - 24 h

(OECD Test Guideline 404)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation - 72 h

(OECD Test Guideline 405)

Respiratory or skin sensitization

Local lymph node assay (LLNA) - Mouse

Result: negative

(OECD Test Guideline 429)

Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Mouse lymphoma test

Result: negative

Method: OECD Test Guideline 478

Species: Mouse - male

Result: negative
Method: OECD Test Guideline 475
Species: Rat - male and female - Bone marrow
Result: negative

Carcinogenicity

No data available

Reproductive toxicity

Suspected of damaging fertility.

Specific target organ toxicity - single exposure

May cause drowsiness or dizziness. - Central nervous system

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Specific target organ toxicity - repeated exposure

Inhalation - Causes damage to organs through prolonged or repeated exposure.
- Nervous system

Aspiration hazard

Aspiration may cause pulmonary oedema and pneumonitis.

acetone

Acute toxicity

LD50 Oral - Rat - female - 5,800 mg/kg

Remarks: (ECHA)

Symptoms: Stomach/intestinal disorders, Risk of aspiration upon vomiting.,
Pulmonary failure possible after aspiration of vomit.

LC50 Inhalation - Rat - 4 h - 76 mg/l - vapour

Remarks: Unconsciousness

Drowsiness

Dizziness

(External MSDS)

LD50 Dermal - Rabbit - 20,000 mg/kg

Remarks: (IUCLID)

Skin corrosion/irritation

Skin - Rabbit

Result: Mild skin irritation - 24 h

(Draize Test)

Remarks: (RTECS)

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Eye irritation - 24 h

(Draize Test)

Remarks: (RTECS)

Respiratory or skin sensitization

Maximisation Test - Guinea pig

Result: negative

Remarks: (ECHA)

Chronic exposure may cause dermatitis.

Germ cell mutagenicity

Test Type: Mutagenicity (mammal cell test): chromosome aberration.

Test system: Chinese hamster ovary cells

Result: negative

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Mouse lymphoma test

Result: negative

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

Inhalation - May cause drowsiness or dizziness. - Narcotic effects

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute oral toxicity - Stomach/intestinal disorders, Risk of aspiration upon vomiting., Pulmonary failure possible after aspiration of vomit.

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

O,O-Diethyl O-pyrazin-2-yl phosphorothioate**Acute toxicity**

Acute toxicity estimate Oral - 5.1 mg/kg

(Expert judgement)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

Inhalation: No data available

LD50 Dermal - Rat - 8 mg/kg

Remarks: (RTECS)

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Parathion - methyl**Acute toxicity**

LD50 Oral - Rat - 6.01 mg/kg

Remarks: (RTECS)

Acute toxicity estimate Inhalation - 4 h - 0.51 mg/l - vapour
(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

LD50 Dermal - Rabbit - 300 mg/kg

Remarks: (RTECS)

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Result: Positive results were obtained in some in vitro tests.

Remarks: (Lit.)

Test Type: Ames test

Test system: Escherichia coli

Result: negative

Remarks: (Lit.)

Test Type: Chromosome aberration test in vitro

Test system: mammalian cells

Result: positive

Remarks: (Lit.)

Species: Mouse - Bone marrow

Result: positive

Remarks: (Lit.)

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Aspiration hazard

No data available

Phorate**Acute toxicity**

LD50 Oral - Rat - 1 mg/kg

Remarks: (RTECS)

LC50 Inhalation - Rat - 4 h - 0.00275 mg/l - vapour

Remarks: (RTECS)

LD50 Dermal - Rat - 2.5 mg/kg

Remarks: Behavioral:Tremor.

Behavioral:Convulsions or effect on seizure threshold.

Behavioral:Excitement.

(RTECS)

No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Disulfoton**Acute toxicity**

Acute toxicity estimate Oral - 5.1 mg/kg

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

LC50 Inhalation - Rat - 200 mg/m³ - vapour

Remarks: (RTECS)

LD50 Dermal - Rat - 3.6 mg/kg

Remarks: (RTECS)

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Famophos

Acute toxicity

LD50 Oral - Rat - 28 mg/kg

Remarks: (RTECS)

Inhalation: No data available

LD50 Dermal - Rat - 400 mg/kg

Remarks: (RTECS)

No data available

Skin corrosion/irritation

Remarks: No data available

Serious eye damage/eye irritation

Remarks: No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Parathion**Acute toxicity**

LD50 Oral - Rat - 2 mg/kg

Remarks: Biochemical:Enzyme inhibition, induction, or change in blood or tissue levelsTrue cholinesterase.

(RTECS)

LC50 Inhalation - Rat - 4 h - 0.084 mg/l - vapour

Remarks: Behavioral:Tremor.

Behavioral:Convulsions or effect on seizure threshold.

Lungs, Thorax, or Respiration:Dyspnea.

(RTECS)

LD50 Dermal - Rabbit - 15 mg/kg

Remarks: (RTECS)

Skin corrosion/irritation

Skin - Rabbit

Result: Mild skin irritation

Remarks: (IUCLID)

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Mild eye irritation

Remarks: (IUCLID)

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

Causes damage to organs through prolonged or repeated exposure.

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Aspiration hazard

No data available

Dimethoate

Acute toxicity

LD50 Oral - Rat - 60 mg/kg

Remarks: (RTECS)

LC50 Inhalation - Rat - 4 h - > 1,553 mg/l - dust/mist

Remarks: (IUCLID)

LD50 Dermal - Rat - 353 mg/kg

Remarks: (RTECS)

Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation

Remarks: (IUCLID)

Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation

Remarks: (IUCLID)

Respiratory or skin sensitization

Buehler Test - Guinea pig

Result: negative

Remarks: (IUCLID)

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

O,O,O-triethyl thiophosphate

Acute toxicity

LD50 Oral - Mouse - 750 mg/kg

Remarks: (RTECS)

LC50 Inhalation - Rat - 4 h - 41 ppm - vapour

Remarks: (RTECS)

Dermal: No data available

No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Moderate eye irritation

Remarks: Causes serious eye damage.

The value / statement given is based on a (Q)SAR approach

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Sulfotep**Acute toxicity**

LD50 Oral - Rat - 5 mg/kg

Remarks: (RTECS)

LC50 Inhalation - Rat - 4 h - 38 mg/m³ - dust/mist

Remarks: Autonomic Nervous System:Other (direct) parasympathomimetic.
(RTECS)

LD50 Dermal - Rabbit - 20 mg/kg

Remarks: (RTECS)

No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****n-Hexane:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2.5 mg/l
Exposure time: 96 h
Remarks: (ECOTOX Database)

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.1 mg/l
Exposure time: 48 h
Remarks: (Lit.)

acetone:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 6,210 mg/l
End point: mortality
Exposure time: 96 h
Test Type: flow-through test
Analytical monitoring: yes
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia pulex (Water flea)): 8,800 mg/l
End point: mortality
Exposure time: 48 h
Test Type: static test
Remarks: (ECHA)

Toxicity to algae/aquatic plants : NOEC (M.aeruginosa): 530 mg/l
Exposure time: 8 d
Test Type: static test
Method: DIN 38412
Remarks: (maximum permissible toxic concentration) (IUCLID)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 2,212 mg/l
End point: reproduction rate
Exposure time: 28 d
Test Type: flow-through test

Remarks: (ECHA)

Toxicity to microorganisms : EC50 (activated sludge): 61.15 mg/l
Exposure time: 30 min
Test Type: static test
Method: OECD Test Guideline 209

O,O-Diethyl O-pyrazin-2-yl phosphorothioate:

Toxicity to fish : LC50 (other fish): 0.09 mg/l
Exposure time: 48 h

Parathion - methyl:

Toxicity to fish : LC50 (Morone saxatilis (Striped bass)): 0.79 mg/l
Exposure time: 96 h
Test Type: flow-through test
Method: US-EPA

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.0087 mg/l
Exposure time: 48 h
Test Type: flow-through test
Method: US-EPA

Toxicity to algae/aquatic plants : ErC50 (Desmodesmus subspicatus (green algae)): 15 mg/l
Exposure time: 72 h
Test Type: static test
Remarks: (ECOTOX Database)

M-Factor (Acute aquatic toxicity) : 100

Toxicity to fish (Chronic toxicity) : NOEC (Cyprinodon variegatus (sheepshead minnow)): 0.00019 mg/l
Exposure time: 28 d
Test Type: flow-through test
Method: US-EPA

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.16 mg/l
Exposure time: 21 d
Test Type: static test
Method: US-EPA

NOEC (Ceriodaphnia dubia (water flea)): 0.001 mg/l
Exposure time: 7 d
Remarks: (ECOTOX Database)

M-Factor (Chronic aquatic toxicity) : 100

Phorate:

Supelco - 48469

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M-Factor (Acute aquatic toxicity) : 1,000

M-Factor (Chronic aquatic toxicity) : 1,000

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

Disulfoton:

Toxicity to fish : LC50 (*Lepomis macrochirus* (Bluegill)): 0.07 mg/l
Exposure time: 96.0 h
Remarks: (ECOTOX Database)

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 0.01 mg/l
Exposure time: 48 h
Remarks: (ECOTOX Database)

Toxicity to algae/aquatic plants : EC50 (*Desmodesmus subspicatus* (green algae)): 11 mg/l
Exposure time: 72 h
Remarks: (ECOTOX Database)

M-Factor (Acute aquatic toxicity) : 100

M-Factor (Chronic aquatic toxicity) : 100

Parathion:

M-Factor (Acute aquatic toxicity) : 100

M-Factor (Chronic aquatic toxicity) : 100

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

Dimethoate:

Toxicity to fish : LC50 (*Salmo gairdneri*): 7.5 mg/l
Exposure time: 96 h
Test Type: static test
Remarks: (IUCLID)

Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 5.4 mg/l End point: Immobilization Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	: ErC50 (Scenedesmus capricornutum (fresh water algae)): 282.3 mg/l Exposure time: 72 h Test Type: Growth inhibition Method: OECD Test Guideline 201 Remarks: (IUCLID)
Toxicity to fish (Chronic toxicity)	: NOEC (Salmo gairdneri): 8.88 mg/l End point: mortality Exposure time: 21 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): 0.04 mg/l End point: mortality Exposure time: 21 d

O,O,O-triethyl thiophosphate:

Toxicity to fish : Remarks: No data available

Sulfotep:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.0025 mg/l
Exposure time: 48 h
Remarks: (ECOTOX Database)

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

Persistence and degradability

Components:

n-Hexane:

Biodegradability : aerobic
Inoculum: activated sludge
Concentration: 100 mg/l
Result: Readily biodegradable.
Biodegradation: 98 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
GLP: yes
Remarks: (in analogy to similar products)

acetone:

Biodegradability : aerobic
Inoculum: activated sludge
Result: Readily biodegradable.
Biodegradation: 91 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Biochemical Oxygen Demand (BOD) : 1,850 mg/g
Incubation time: 5 d
Remarks: (IUCLID)

Chemical Oxygen Demand (COD) : 2,070 mg/g
Remarks: (IUCLID)

ThOD : 2,200 mg/g
Remarks: (Lit.)

Phorate:

Biodegradability : Remarks: No data available

Disulfoton:

Biodegradability : Result: According to the results of tests of biodegradability this product is not readily biodegradable.
Remarks: No data available

Dimethoate:

Biodegradability : anaerobic
Inoculum: activated sludge
Concentration: 0.4 mg/l
Result: Readily biodegradable.
Biodegradation: 50 %
Exposure time: 14.5 d
Remarks: (IUCLID)

O,O,O-triethyl thiophosphate:

Biodegradability : Remarks: No data available

Sulfotep:

Biodegradability : Remarks: No data available

Bioaccumulative potential**Components:****n-Hexane:**

Partition coefficient: n- : log Pow: ca. 4 (68 °F / 20 °C)

octanol/water Method: (experimental)
Remarks: (Lit.)
Potential bioaccumulation

acetone:

Bioaccumulation : Bioconcentration factor (BCF): < 10
Remarks: Does not bioaccumulate.

Parathion - methyl:

Bioaccumulation : Species: Oncorhynchus mykiss (rainbow trout)
Bioconcentration factor (BCF): 26,268.00
Exposure time: 14 d
Concentration: 64.1 µg/l

Partition coefficient: n- : log Pow: 2.86 (77 °F / 25 °C)
octanol/water Method: (experimental)
Remarks: Bioaccumulation is not expected.
(Lit.)

Phorate:

Partition coefficient: n- : log Pow: 3.6 (77 °F / 25 °C)
octanol/water Method: EPI Suite™
Remarks: Bioaccumulation is not expected.
(Lit.)

Disulfoton:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 407
Exposure time: 56 d
Concentration: 9 µg/l

Partition coefficient: n- : log Pow: 4.02 (77 °F / 25 °C)
octanol/water Method: EPI Suite™
Remarks: (Lit.)
Potential bioaccumulation

Parathion:

Bioaccumulation : Species: Pimephales promelas (fathead minnow)
Bioconcentration factor (BCF): 115
Exposure time: 260 d
Concentration: 24.6 µg/l

Partition coefficient: n- : log Pow: 3.83
octanol/water Remarks: Bioaccumulation is not expected.
(Lit.)

Dimethoate:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 0.4 - 0.8
Exposure time: 42 d
Temperature: 77 °F / 25 °C
Concentration: 2 mg/l

Partition coefficient: n-octanol/water : log Pow: 0.8 (77 °F / 25 °C)
Method: EPI Suite™
Remarks: Bioaccumulation is not expected.
(Lit.)

O,O,O-triethyl thiophosphate:

Bioaccumulation : Remarks: No data available

Sulfotep:

Bioaccumulation : Remarks: No data available

Mobility in soil

Components:

n-Hexane:

Stability in soil : Remarks: No data available

O,O,O-triethyl thiophosphate:

Stability in soil : Remarks: No data available

Sulfotep:

Stability in soil : Remarks: No data available

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Components:

n-Hexane:

Results of PBT and vPvB assessment : Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

acetone:

Results of PBT and vPvB assessment : Not persistent, bioaccumulative, and toxic (PBT). Not very persistent and very bioaccumulative (vPvB).

: Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

O,O-Diethyl O-pyrazin-2-yl phosphorothioate:

Additional ecological information : No data available

Phorate:

Additional ecological information : Discharge into the environment must be avoided.

Parathion:

Additional ecological information : Discharge into the environment must be avoided.

O,O,O-triethyl thiophosphate:

Additional ecological information : No data available

Endocrine disrupting properties

No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14. TRANSPORT INFORMATION**International Regulations****IATA-DGR**

UN/ID No. : UN 1208
Proper shipping name : Hexanes solution
Class : 3
Packing group : II
Labels : Class 3 - Flammable liquids
Packing instruction (cargo) : 364

aircraft)
Packing instruction : 353
(passenger aircraft)

IMDG-Code

UN number : UN 1208
Proper shipping name : HEXANES SOLUTION

Class : 3
Packing group : II
Labels : 3
EmS Code : F-E, S-D
Marine pollutant : yes

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

National Regulations

49 CFR

UN/ID/NA number : UN 1208
Proper shipping name : Hexanes SOLUTION

Class : 3

Packing group : II
Labels : Class 3 - Flammable liquids
ERG Code : 128
Marine pollutant : no
Poison Inhalation Hazard : No

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Disulfoton	298-04-4	1	500

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Disulfoton	298-04-4	1	500

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 : Fire Hazard

Hazards

Acute Health Hazard
Chronic Health Hazard

SARA 313

: The following components are subject to reporting levels established by SARA Title III, Section 313:

n-Hexane	110-54-3	>= 70 - < 90 %
Parathion	56-38-2	>= 0.1 - < 1 %

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B). The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

n-Hexane	110-54-3	>= 70 - < 90 %
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This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

acetone	67-64-1	>= 10 - < 20 %
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Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Parathion - methyl	298-00-0	>= 0.1 - < 1 %
Disulfoton	298-04-4	>= 0.1 - < 1 %
Parathion	56-38-2	>= 0.1 - < 1 %

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Parathion - methyl	298-00-0	>= 0.1 - < 1 %
Disulfoton	298-04-4	>= 0.1 - < 1 %
Parathion	56-38-2	>= 0.1 - < 1 %

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

US State Regulations**Massachusetts Right To Know**

n-Hexane	110-54-3
acetone	67-64-1
O,O-Diethyl O-pyrazin-2-yl phosphorothioate	297-97-2
Parathion - methyl	298-00-0
Phorate	298-02-2
Disulfoton	298-04-4
Parathion	56-38-2
Dimethoate	60-51-5
Sulfotep	3689-24-5

Pennsylvania Right To Know

n-Hexane	110-54-3
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acetone	67-64-1
O,O-Diethyl O-pyrazin-2-yl phosphorothioate	297-97-2
Parathion - methyl	298-00-0
Phorate	298-02-2
Disulfoton	298-04-4
Famophos	52-85-7
Parathion	56-38-2
Dimethoate	60-51-5
Sulfotep	3689-24-5

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including Parathion, which is/are known to the State of California to cause cancer, and n-Hexane, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov. **International Regulations**

Rotterdam Convention (Prior Informed Consent) : Parathion - methyl
Phorate
Parathion

The components of this product are reported in the following inventories:

US TSCA : Product contains substance(s) not listed on TSCA inventory.

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	: ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	: USA. NIOSH Recommended Exposure Limits
OSHA P0	: USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	: USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	: 8-hour, time-weighted average
ACGIH / STEL	: Short-term exposure limit

NIOSH REL / TWA	: Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	: STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA P0 / TWA	: 8-hour time weighted average
OSHA Z-1 / TWA	: 8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonised System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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