

# Thiophosphoryl Chloride

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830  
Date of issue: 8/10/2018 Revision date: 2/25/2019 Supersedes: 8/10/2018 Version: 1.1

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product form	: Substance
Substance name	: Thiophosphoryl Chloride
Chemical name	: Thiophosphoryl trichloride
IUPAC name	: phosphorothioyl trichloride
EC-No.	: 223-622-6
CAS-No.	: 3982-91-0
Product code	: 75254135
Formula	: Cl <sub>3</sub> PS

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

##### 1.2.1. Relevant identified uses

Industrial/Professional use spec	: For professional use only Industrial Laboratory chemicals
----------------------------------	---

##### 1.2.2. Uses advised against

No additional information available

#### 1.3. Details of the supplier of the safety data sheet

Safell Organics  
Molekula Ltd  
Lingfield Way  
Darlington - England  
T +44 (0) 1949 823777 / +44 (0) 7590 545705  
[info@molekula.com](mailto:info@molekula.com) / [kbowen@molekula.com](mailto:kbowen@molekula.com) - [www.molekula.com](http://www.molekula.com)

#### 1.4. Emergency telephone number

Emergency number : +44 (0) 7590 545705

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute toxicity (oral), Category 4	H302
Acute toxicity (inhal.), Category 2	H330
Skin corrosion/irritation, Category 1B	H314
Full text of H statements : see section 16	

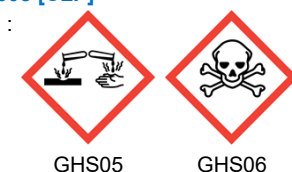
##### Adverse physicochemical, human health and environmental effects

No additional information available

#### 2.2. Label elements

##### Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



GHS05

GHS06

Signal word (CLP)

: Danger

Hazard statements (CLP)

: H302 - Harmful if swallowed.  
H314 - Causes severe skin burns and eye damage.  
H330 - Fatal if inhaled.

Precautionary statements (CLP)

: P260 - Do not breathe vapours.  
P280 - Wear protective clothing, eye protection, face protection.  
P284 - Wear respiratory protection.  
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.  
P304 - IF INHALED: Remove person to fresh air and keep comfortable for breathing, Get immediate medical advice/attention.  
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P315 - Get immediate medical advice/attention.

EUH-statements

: EUH029 - Contact with water liberates toxic gas.

# Thiophosphoryl Chloride

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%
Thiophosphoryl Chloride	(CAS-No.) 3982-91-0 (EC-No.) 223-622-6	100

Full text of H-statements: see section 16

### 3.2. Mixtures

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general	: Never give anything by mouth to an unconscious person. If possible show this sheet, if not available show packaging or label.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. Give oxygen or artificial respiration if necessary. Do not give mouth-to-mouth resuscitation if victim ingested or inhaled the substance.
First-aid measures after skin contact	: Take off immediately all contaminated clothing. Do not remove clothing if it sticks to the skin. Rinse skin with water/shower. Immediately call a POISON CENTER/doctor.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
First-aid measures after ingestion	: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects	: Causes severe skin burns and eye damage. Fatal if inhaled.
Symptoms/effects after inhalation	: Material is destructive to tissue of the mucuous membranes and upper respiratory tract. Cough, shortness of breath, headache, nausea. Burning sensation. Loss of consciousness. May be fatal if inhaled.
Symptoms/effects after skin contact	: May produce skin irritation, blistering, ulcers, and deep scarring.
Symptoms/effects after eye contact	: May cause severe chemical burns to skin and cornea. redness, itching, tears.
Symptoms/effects after ingestion	: Abdominal pain, nausea. Swallowing a small quantity of this material will result in serious health hazard. Burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

### 4.3. Indication of any immediate medical attention and special treatment needed

Get immediate medical advice/attention. SYMPTOMS MAY BE DELAYED.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media	: Foam. Dry powder. Carbon dioxide. Sand.
Unsuitable extinguishing media	: Water.

### 5.2. Special hazards arising from the substance or mixture

Explosion hazard	: Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries. Vapours may travel long distances along ground before igniting/flashing back to vapour source.
Reactivity in case of fire	: Contact with water liberates toxic gas.
Hazardous decomposition products in case of fire	: irritating vapours are released. Corrosive vapours. Toxic fumes.

### 5.3. Advice for firefighters

Precautionary measures fire	: Exposure to fire/heat: seal off low-lying areas. Keep container tightly closed and away from heat, sparks and flame.
Firefighting instructions	: Eliminate all ignition sources if safe to do so. Use water spray or fog for cooling exposed containers. In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Keep upwind.
Protection during firefighting	: Use self-contained breathing apparatus and chemically protective clothing.
Other information	: Warn all persons of corrosive and toxic hazard.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Eliminate every possible source of ignition. Do not allow contact with water. Do not breathe gas, fumes, vapour or spray. Evacuate area.
------------------	--

# Thiophosphoryl Chloride

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 6.1.1. For non-emergency personnel

Protective equipment	: Wear recommended personal protective equipment. Wear respiratory protection.
Emergency procedures	: Do not touch or walk on the spilled product. Evacuate area. Mark out the contaminated area with signs and prevent access to unauthorized personnel. Do not breathe vapours. Do not get in eyes, on skin, or on clothing. Turn leaking containers leak-side up to prevent the escape of liquid.
Measures in case of dust release	: Shelter from vapours by keeping upwind. Special attention should be given to low areas/pits where flammable vapours can accumulate.

### 6.1.2. For emergency responders

Protective equipment	: Use self-contained breathing apparatus and chemically protective clothing.
Emergency procedures	: All equipment used when handling the product must be grounded. Cover spill with non combustible material, e.g.: sand/earth. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Stop leak if safe to do so.

### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

### 6.3. Methods and material for containment and cleaning up

For containment	: Collect leaking and spilled liquid in sealable containers as far as possible.
Methods for cleaning up	: Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage.
Other information	: Do not flush with water.

### 6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Additional hazards when processed	: Do not allow contact with water.
Precautions for safe handling	: Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Provide local exhaust or general room ventilation.
Hygiene measures	: Do not eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace.

### 7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Provide local exhaust or general room ventilation. Store in a well-ventilated place. Keep container tightly closed.
Storage conditions	: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Incompatible products	: Water. alkalis. alcohols. Oxidising agents.
Incompatible materials	: Do not allow contact with water.
Storage area	: Store at ambient temperature. Store in dry protected location to prevent any moisture contact.

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

No additional information available

### 8.2. Exposure controls

#### Appropriate engineering controls:

Floors should be impervious, resistant to liquids and easy to clean. Ensure that there is a suitable ventilation system. Handle in accordance with good industrial hygiene and safety procedures. (Harmful on single exposure) : Use local exhaust ventilation.

#### Personal protective equipment:

Avoid inhalation of vapours. Avoid contact with skin and eyes.

#### Materials for protective clothing:

Use chemically protective clothing

#### Hand protection:

The protective gloves to be used must comply with the specifications of the regulation 2016/425 and the resultant standard EN 374. Always wash hands after handling the product

# Thiophosphoryl Chloride

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Type	Material	Permeation	Thickness (mm)	Penetration	Standard
	Fluoroelastomer (FKM)	Impermeable protective gloves	0.7		EN 374

### Eye protection:

Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure. Use eye protection according to EN 166, designed to protect against liquid splashes.

Type	Use	Characteristics	Standard
Face shield, Safety goggles	Droplet	tightly fitting safety goggles	EN 166

### Skin and body protection:

Emergency safety showers should be available in the immediate vicinity of any potential exposure. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work

Type	Standard
PVC apron covering the tops of the boots, Total impervious protective suits, gloves, and boots must be worn to prevent any contact with the product	EN 14605
Boots made of PVC	EN ISO 20345

### Respiratory protection:

Keep self contained breathing apparatus readily available for emergency use. Where exposure through inhalation may occur from use, respiratory protection equipment is recommended

Device	Filter type	Condition	Standard
Respiratory protective device with a particle filter	ABEK	Vapour protection, Protection for Liquid particles	EN 14387

### Other information:

Do not eat, drink or smoke during use.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Molecular mass	: 169.4 g/mol
Colour	: Colourless.
Odour	: Pungent.
Odour threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: -35 °C lit
Freezing point	: No data available
Boiling point	: 124 - 127 °C lit
Flash point	: No data available
Auto-ignition temperature	: 340 °C lit
Decomposition temperature	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Density	: 1.668 g/cm <sup>3</sup>
Solubility	: Reacts with water.
Log Pow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: No data available

### 9.2. Other information

No additional information available

# Thiophosphoryl Chloride

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

#### 10.2. Chemical stability

Stable under recommended handling and storage conditions (see section 7).

#### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

#### 10.4. Conditions to avoid

Water, humidity.

#### 10.5. Incompatible materials

alkalis. Alcohols. Oxidising agents. water.

#### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. On combustion releases : Corrosive vapours. irritating vapours. Toxic fumes.

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

Acute toxicity (oral) : Oral: Harmful if swallowed.

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Inhalation: Fatal if inhaled.

Thiophosphoryl Chloride (3982-91-0)	
LD50 oral rat	750 mg/kg
Skin corrosion/irritation	: Causes severe skin burns and eye damage.
Serious eye damage/irritation	: Serious eye damage, category 1, implicit
Respiratory or skin sensitisation	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Germ cell mutagenicity	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Carcinogenicity	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Reproductive toxicity	: Not classified
Additional information	: Based on available data, the classification criteria are not met
STOT-single exposure	: Not classified
Additional information	: Based on available data, the classification criteria are not met
STOT-repeated exposure	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Aspiration hazard	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Potential adverse human health effects and symptoms	: Harmful if swallowed.

### SECTION 12: Ecological information

#### 12.1. Toxicity

Acute aquatic toxicity : Not classified

Chronic aquatic toxicity : Not classified

Thiophosphoryl Chloride (3982-91-0)	
LC50 fish 1	99 mg/l Zebrafish (Brachydanio rerio)
12.2. Persistence and degradability	
Thiophosphoryl Chloride (3982-91-0)	
Persistence and degradability	No data available.
12.3. Bioaccumulative potential	
Thiophosphoryl Chloride (3982-91-0)	
Bioaccumulative potential	No bioaccumulation data available.
12.4. Mobility in soil	
Thiophosphoryl Chloride (3982-91-0)	
Ecology - soil	No data available.

# Thiophosphoryl Chloride

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 12.5. Results of PBT and vPvB assessment

#### Thiophosphoryl Chloride (3982-91-0)

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

### 12.6. Other adverse effects

Additional information : Avoid release to the environment.

## SECTION 13: Disposal considerations






### 13.1. Waste treatment methods

Product/Packaging disposal recommendations : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Ecology - waste materials : Avoid release to the environment.

## SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
<b>14.1. UN number</b>				
1837	1837	1837	1837	1837
<b>14.2. UN proper shipping name</b>				
THIOPHOSPHORYL CHLORIDE	THIOPHOSPHORYL CHLORIDE	Thiophosphoryl chloride	THIOPHOSPHORYL CHLORIDE	THIOPHOSPHORYL CHLORIDE
<b>Transport document description</b>				
UN 1837 THIOPHOSPHORYL CHLORIDE (Thiophosphoryl Chloride), 8, II, (E)	UN 1837 THIOPHOSPHORYL CHLORIDE (Thiophosphoryl Chloride), 8, II	UN 1837 Thiophosphoryl chloride (Thiophosphoryl Chloride), 8, II	UN 1837 THIOPHOSPHORYL CHLORIDE (Thiophosphoryl Chloride), 8, II	UN 1837 THIOPHOSPHORYL CHLORIDE (Thiophosphoryl Chloride), 8, II
<b>14.3. Transport hazard class(es)</b>				
8	8	8	8	8
				
<b>14.4. Packing group</b>				
II	II	II	II	II
<b>14.5. Environmental hazards</b>				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

### 14.6. Special precautions for user

#### Overland transport

Classification code (ADR) : C1  
Limited quantities (ADR) : 1I  
Excepted quantities (ADR) : E0  
Packing instructions (ADR) : P001, IBC02  
Mixed packing provisions (ADR) : MP15  
Portable tank and bulk container instructions (ADR) : T7  
Portable tank and bulk container special provisions (ADR) : TP2  
Tank code (ADR) : L4BN  
Vehicle for tank carriage : AT  
Transport category (ADR) : 2

# Thiophosphoryl Chloride

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Hazard identification number (Kemler No.) : X80

Orange plates :



Tunnel restriction code (ADR) : E

EAC code : 4WE

### Transport by sea

Packing instructions (IMDG) : P001

IBC packing instructions (IMDG) : IBC02

Tank instructions (IMDG) : T7

Tank special provisions (IMDG) : TP2

EmS-No. (Fire) : F-A

EmS-No. (Spillage) : S-B

Stowage category (IMDG) : C

Stowage and handling (IMDG) : SW2

Properties and observations (IMDG) : Colourless liquid with a pungent odour. Reacts violently with water, evolving hydrogen chloride, an irritating and corrosive gas apparent as white fumes. In the presence of moisture, highly corrosive to most metals. Vapour irritates mucous membranes.

### Air transport

PCA Excepted quantities (IATA) : E0

PCA Limited quantities (IATA) : Forbidden

PCA limited quantity max net quantity (IATA) : Forbidden

PCA packing instructions (IATA) : Forbidden

PCA max net quantity (IATA) : Forbidden

CAO packing instructions (IATA) : 855

CAO max net quantity (IATA) : 30L

Special provisions (IATA) : A1

ERG code (IATA) : 8W

### Inland waterway transport

Classification code (ADN) : C1

Limited quantities (ADN) : 1 L

Excepted quantities (ADN) : E0

Equipment required (ADN) : PP, EP

Number of blue cones/lights (ADN) : 0

### Rail transport

Classification code (RID) : C1

Limited quantities (RID) : 1L

Excepted quantities (RID) : E0

Packing instructions (RID) : P001, IBC02

Mixed packing provisions (RID) : MP15

Portable tank and bulk container instructions (RID) : T7

Portable tank and bulk container special provisions (RID) : TP2

Tank codes for RID tanks (RID) : L4BN

Transport category (RID) : 2

Colis express (express parcels) (RID) : CE6

Hazard identification number (RID) : X80

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

#### 15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

# Thiophosphoryl Chloride

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

3(b) Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10	Thiophosphoryl Chloride
--	-------------------------

Thiophosphoryl Chloride is not on the REACH Candidate List

Thiophosphoryl Chloride is not on the REACH Annex XIV List

Directive 2012/18/EU (SEVESO III)

### 15.1.2. National regulations

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Listed on the Canadian NDSL (Non-Domestic Substances List)

### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out for the substance or the mixture by the supplier

## SECTION 16: Other information

Data sources	: REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.
Other information	: None.

Full text of H- and EUH-statements:	
Acute Tox. 2 (Inhalation)	Acute toxicity (inhal.), Category 2
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Skin Corr. 1B	Skin corrosion/irritation, Category 1B
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H330	Fatal if inhaled.
EUH029	Contact with water liberates toxic gas.

SDS EU (REACH Annex II)

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product*