1.Identification of the substance/mixture and of the company

Product identifier
Trade name: Universal Hardener
Article number: H0060-H

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

Application: Universal hardener for all NILOS cold adhesives
Uses advised against: Not for private use

1.3 Manufacturer / Supplier

NILOS GmbH & Co. KG, Reisholzstr. 15, 40721 Hilden, Germany
Phone: +49 2103 951 - 0
Fax: +49 2103 951 - 199

1.4 Emergency telephone number:

Phone: +49 173 9652041
E-Mail: SDB@nilos.de

2. Possible Hazards

2.1 Classification of the substance or mixture

Flammable liquids, category 2 (H225)
Specific target organ toxicity (single exposure), Category 3 (H336)

Hazard icons

Danger

Hazard-determining component(s) for labeling
Ethyl acetate

Hazard statements:
H225 Highly flammable liquid and vapour.
H336 May cause drowsiness and dizziness.

Safety information
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor/… if you feel unwell.
P403 + P235 Store in a well-ventilated place. Keep cool.

Supplemental hazard characteristics and labeling elements:
EUH066 Repeated exposure may cause skin dryness or cracking.
EUH204 Contains isocyanates. May produce an allergic reaction.

2.2 Other hazards

In case of hypersensitivity of the respiratory tract (asthma, chronic bronchitis), handling of the product is not recommended.
Respiratory symptoms may occur even several hours after overexposure.
Dust, vapors and aerosols are the main respiratory hazard.
This substance/mixture does not contain components at concentrations of 0.1% or higher that are classified as either persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB).

3. Composition / information for ingredients

Product type: Mixture

3.2 Mixture

Tris-(p-isocyanatophenyl)-thiophosphat

approx. 28 % in ethyl acetate

Hazardous ingredients

Ethyl acetate
Concentration [Gew.-%]: approx. 72
INDEX-No.: 607-022-00-5
EG-No.: 205-500-4
Reg.-No. 01-2119475103-46-0017
CAS-No.: 141-78-6
Classification (1272/2008/EG): Flam. Liq. 2 H225 Eye Irrit. 2 H319 STOT SE 3 H336

Tris-(p-isocyanatophenyl)-thiophosphat
Concentration[Gew.-%]: approx. 27
EG-No.: 223-981-9
REACH registration number: 01-2119948848-16-0000
CAS-No.: 4151-51-3
Classification(1272/2008/EG): Acute Tox. 4 Oral H302

Chlorbenzol
Concentration[Gew.-%]: < 1
INDEX-No.: 602-033-00-1
REACH registration number: 01-2119432722-45
CAS-No.: 108-90-7
Classification (1272/2008/EG): Flam. Liq. 3 H226 Acute Tox. 4 Inhalative H332 Skin Irrit. 2 H315 Aquatic Chronic 2 H411

Candidate List of Substances of Very High Concern for Authorization
This product does not contain any substances of very high concern in concentrations subject to nomination (REACH Regulation (EC) No 1907/2006, Article 59).

4. First aid steps

4.1 Description of the first aid steps

General information:
Immediately remove, decontaminate and dispose of soiled, soaked clothing and shoes.

After inhalation: Remove person to fresh air, keep warm, rest; medical attention required if breathing is difficult.

After skin contact: In case of contact with skin, wash preferably with cleaner based on polyethylene glycol or clean with plenty of warm water and soap. In case of skin reactions, seek medical advice.

After eye contact: Wash eyes with open eyelids for a sufficiently long time (at least 10 minutes) with lukewarm water, if possible. Consult an ophthalmologist.

4.2 Most important acute and delayed symptoms and effects

Details for the doctor
The product is irritating to the respiratory tract and is a potential trigger for skin and respiratory sensitization.Treatment of acute irritation or bronchial constriction is primarily symptomatic. Depending on the extent of exposure and symptoms, prolonged medical attention may be necessary.

4.3 Indication of any immediate medical attention and special treatment needed

Therapeutic Measures: No information available.

5. Firefighting steps

5.1 Extinguisher

Suitable extinguishing medium: carbon dioxide (CO_2), foam, extinguishing powder, for larger fires also water spray.

Unsuitable extinguishing medium: Full water jet.

5.2 Special hazards arising from the substance or mixture concerned

In case of fire, carbon dioxide, carbon monoxide, nitrogen oxides, isocyanate vapors and traces of hydrogen cyanide (hydrocyanic acid) are generated. Do not inhale explosion and fire gases. In case of an ambient fire, pressure builds up, risk of bursting. Cool fire-endangered containers with water and, if possible, pull them out of the danger zone.

5.3 Advice for fire fighting

When fighting fires, respiratory protection with independent air supply and tightly fitting chemical protective suit required

Do not let contaminated extinguishing water enter the ground, groundwater or bodies of water.

6. Actions to take if released accidentally

Personal protective steps
Ensure adequate ventilation and air extraction.

Environmental protection steps
Prevent it from getting into the drainage and sewage system, into the groundwater or into the soil. Otherwise inform the relevant authorities.

Procedure for cleaning-up
Mop it with absorbant material (sand, universal binder) and put it into a sealed container.

7. Handling and storage

Store in sealed containers. Ensure that there is good ventilation/air extraction at the workplace. Vapors are heavier than air. Protect against heat and direct sunlight. Follow the legal instructions and the technical guidelines (TRGS 510)

8. Limitation of exposure and personal protective equipment

8.1 Monitored parameters

Components with limit values that require monitoring at the workplace

Ingredient	CAS-No.	Basis	Type	Value	Peak limit value	Notes
Ethyl acetate	141-78-6	EU ELV	TWA	200 ppm 734 mg/m3		indicative
Ethyl acetate	141-78-6	EU ELV	STEL	400 ppm 1.468 mg/m3		indicative
Ethyl acetate	141-78-6	TRGS 900	Short term			Category I
Ethyl acetate	141-78-6	TRGS 900				Registered
Ethyl acetate	141-78-6	TRGS 900		200 ppm 730 mg/m3	2	Y

The product may contain traces of phenyl isocyanate.

Ingredient	CAS-No.	Basis	Typr	Value	Peak limit value	Notes
Phenyl isocyanate	103-71-9	TRGS 900	TWA			Registered
Phenyl isocyanate	103-71-9	TRGS 900	STEL	0,01 ppm 0,05 mg/m3	1	
Phenyl isocyanate	103-71-9	TRGS 900	Short term			Category I

Derived no adverse effect exposure level (DNEL)

Ethyl acetate

Value type	Exposure path	Health impact	Value	Notes
Employee	Inhale	Long-term systemic effects	734 mg/m3	Most critical endpoint: irritation (respiratory tract)
Employee	Inhale	Acute - systemic effects	1468 mg/m3	
Employee	Inhale	Long-term - local effects	734 mg/m3	Most critical endpoint: irritation (respiratory tract)
Employee	Inhale	Acute - local effects	1468 mg/m3	Most critical endpoint: irritation (respiratory tract)
Employee	Dermal	Long-term systemic effects	63 mg/kg body weight/day	
Employee	Dermal	Acute - systemic effects		Not relevant.
Employee	Dermal	Long-term - local effects		No quantitative risk assessment possible.
Employee	Dermal	Acute - local effects		Not relevant
Consumer	Inhale	Long-term systemic effects	367 mg/m3	Most critical endpoint: irritation (respiratory tract)
Consumer	Inhale	Acute - systemic effects	734 mg/m3	
Consumer	Inhale	Long-term - local effects	367 mg/m3	Most critical endpoint: irritation (respiratory tract)
Consumer	Inhale	Acute - local effects	734 mg/m3	Most critical endpoint: irritation (respiratory tract)
Consumer	Dermal	Long-term systemic effects	37 mg/kg body weight/day	

Value type	Exposure path	Health impact	Value	Notes
Consumer	Dermal	Acute - systemic effects		Not relevant
Consumer	Dermal	Long-term - local effects		No quantitative risk assessment possible.
Consumer	Dermal	Acute - local effects		Not relevant
Consumer	Oral	Long-term systemic effects	4.5 mg/kg body weight/day	Most critical endpoint: irritation (respiratory tract)
Consumer	Oral	Acute - systemic effects		Not relevant

Tris-(p-isocyanatophenyl)-thiophosphat

Value type	Exposure path-	Health impact	Value	Notes
Employee	Inhale	Long-term systemic effects		No hazard identified
Employee	Inhale	Acute - systemic effects		No hazard identified
Employee	Inhale	Long-term - local effects	0,047 mg/m3	Most critical endpoint: repeated dose toxicity
Employee	Inhale	Acute - local effects		No hazard identified
Employee	Dermal	Long-term systemic effects		No hazard identified
Employee	Dermal	Acute - systemic effects		No hazard identified
Employee	Dermal	Long-term - local effects		No hazard identified
Employee	Dermal	Acute - local effects		No hazard identified
Consumer	Eye contact	Local effetcs		No hazard identified

Chlorobenzene

Value type	Exposure path-	Health impact	Value	Notes
Employee	Inhale	Long-term systemic effects	23 mg/m3	
Employee	Inhale	Acute - systemic effects	70 mg/m3	
Employee	Dermal	Long-term systemic effects	5 mg/kg body weight/day	
Employee	Dermal	Acute - systemic effects	15 mg/kg body weight/day	

Estimated no-effect concentration (PNEC)

Ethyl acetate

Compartment	Value	Notes
Freshwater	0,26 mg/l	
Freshwater sediment	1,25 mg/kg	Dry weight
Seawater	0,026 mg/l	
Seawater sediment	0,125 mg/kg	Dry weight
Wastewater treatment plant	650 mg/l	
Ground	0,24 mg/kg	Dry weight
Oral	200 mg/kg	
Temporary Use/Release	1,65 mg/l	

Tris-(p-isocyanatophenyl)-thiophosphate

Compartment	Value	Notes
Freshwater	0,1 mg/l	
Freshwater sediment	2557 mg/kg	Dry weight
Sea water	0,01 mg/l	
Seawater sediment	155 mg/kg	Dry weight
Wastewater treatment plant	100 mg/l	
Air		No danger identified
Ground	510 mg/kg	Dry weight
Oral		No bioaccumulation.
Temporary Use / Release	1 mg/l	

Chlorobenzene

Compartment	Value	Notes
Freshwater	0,032 mg/l	
Freshwater sediment	0,922 mg/kg	Dry weight
Seawater	0,0032 mg/l	
Seawater sediment	0,0922 mg/kg	Dry weight
Wastewater treatment plant	1,4 mg/l	
Ground	0,166 mg/kg	Dry weight

8.2 Exposure controls and monitoring

General protective and hygienic measures:
Keep away from beverages, food and feed. Immediately remove contaminated, soaked clothing. Wash hands before breaks and at the end of work. Avoid contact with eyes and skin. Do not breathe vapors and spray mist.

Respiratory protection:
Not required if room is well ventilated. Respiratory protection required at inadequately ventilated workplaces and during spray processing. Fresh air mask or combination filter A2-P2 (EN529) are recommended for short-term work.

Hand glove material:
Nitrile rubber. The selection of a suitable glove depends not only on the material, but also on other quality characteristics and varies from manufacturer to manufacturer. As the product is a combination of several substances, the resistance of glove materials cannot be calculated in advance and must therefore be checked before use.

Penetration time of the glove material:
Our recommendation refers to a single short-term use as protection against liquid splashes. For other applications, please contact a glove manufacturer. The exact breakthrough time must be obtained from the protective glove manufacturer and must be adhered to.

Eye protection:
Tight-fitting safety glasses.

Body Protection:
Standard protective work clothing. Chemical resistant safety shoes or boots. If skin contact may occur, wear protective clothing impervious to this solution.

9. Physical and chemical properties

9.1 Information on the basic physical and chemical properties

Form:	liquid	
Color:	yellow to brownish	
Smell:	by solvent	
Odor threshold:	not determined	
pH-Wert:	not applicable	
Melting point:	approx. 77 °C at 1,013 hPa	
Flash point:	approx. -4 °C	DIN 51755
Evaporation rate:	not determined	
Flammability	not determined	
Burning number:	not determined	
upper/lower flammability or explosion limits:		
Ethyl acetate	upper: 11.5 %(V) / lower: 2.2 %(V)	
Chlorbenzene	upper: 11.0 %(V) / lower: 1.3 %(V)	
Vapor pressure:	approx. 97 hPa at 20 °	
Vapor density:	not determined	
Density:	approx. 1.0 g/cm^3 at 20 °C	DIN 53217
Miscibility with water: Water	not miscible at 15 °C	
solubility of ingredients:		
Ethyl acetate:	approx. 85 g/l	
Surface tension:	not determined	
Partition coefficient	not determined	
(n–octanol/water) :		
Auto-ignition temperature:	not determined	
Ignition temperature:	approx. 460 °C	
Decomposition temperature:	not determined	
Viscosity, dynamic:	approx. 3 mPa.s at 20 °C	DIN 53019
Run-out time:	10 sec	DIN 53221
Explosive properties:	not determined	
Dust explosion class:	not determined	
Oxidizing properties	not determined	

9.2 Further information

The values given do not correspond to the product specification in every case. The specification data can be found in the technical data sheet.

10. Stability and reactivity

10.1 Reactivity
No information available.

10.2 Chemical stability
No decomposition up to initial boiling point.

10.3 Possibility of hazardous reactions
Exothermic reaction with amines and alcohols; with water CO2 evolution, in closed containers pressure build-up; danger of bursting..

10.4 Conditions to avoid
No information available.

10.5 Incompatible materials
No information available.

10.6 Hazardous decomposition products
No hazardous decomposition products when stored and handled properly.

11. Toxilogical details

11.1 Information on toxicological effects

Acute toxicity, oral
LD50 rat: > 2,000 mg/kg
Method: OECD Test Guideline 423
Toxicological studies on the product

Acute toxicity, dermal
Ethyl acetate
LD50 rabbit, male: > 18,000 mg/kg

Tris-(p-isocyanatophenyl)-thiophosphate
Based on available data, the classification criteria are not met.

Chlorbenzol
LD50 Rabbit:
Assessment: The substance or mixture does not possess acute

Acute toxicity, inhalation
Ethyl acetate
LC50 rat > 22,5 mg/l, 6 h
Test atmosphere: Vapor
Assessment: The substance or mixture has no acute respiratory toxicity.

Tris-(p-isocyanatophenyl)-thiophosphate
LC50 Ra, male: 5,721 mg/l, 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403

Chlorobenzene
LC50 Rat: 29,7 mg/l, 4 h
Test atmosphere: Vapor
Assessment: Harmful by inhalation

Primary skin irritant effect
Species: Rabbit
Result: mild irritant
Classification: No skin irritation
Method: OECD Test Guideline 404
Toxicological studies on the product

Primary mucosal irritant effect
Species: Rabbit
Result: mild irritant
Classification: No eye irritation
Method: OECD Test Guideline 405
Toxicological studies on the product

Sensitization
Ethyl acetate
Skin sensitization according to Magnusson/Kligman (maximization test):
Species: Guinea pig
Resul: negativ
Classification: Does not cause skin sensitization
Method: OECD Test Guideline 406

Tris-(p-isocyanatophenyl)-thiophosphate
Skin sensitization according to Buehler (epicutaneous test):
Species: Guinea pig
Result: negative
Classification: Does not cause skin sensitization.
Method: OECD Test Guideline 406
Toxicological tests on product in solvent.

Respiratory sensitization:
Classification: No classification under Directives 2006/121/EC or 1999/45/EC as respiratory sensitizing.

Chlorobenzene
Skin sensitization:
Species: Guinea pig
Result: negative
Classification: Does not cause skin sensitization.

Subacute, subchronic and long-term toxicity
Ethyl acetate

LOAEL: 350 ppm
Route of administration: Inhalation
Species: Rat, male/female
Dosages: 0 - 350 - 750 - 1500 ppm
Exposure duration: 13 w
Frequency of exposure: 6 h per day, 5 days per week
Target organs: Nasal cavity
Test substance: Vapor
Method: OECD Test Guideline 413

NOAEL: 900 mg/kg
Route of administration: Oral
Species: Rat, male/female
Doses: 0 - 300 - 900 - 3600 mg/kg
Exposure duration: 13 w
Frequency of treatment: daily

Tris-(p-isocyanatophenyl)-thiophosphate
NOAEL: 2,8 mg/m3
Route of administration: Inhalation
Species: Rat, male/female
Doses: 0 - 2,8 - 15,4 - 74 mg/m^3
Exposure duration: 28 d
Frequency of exposure: (6 h per day, 5 days per week)
Test substance: as aerosol
Method: OECD Test Guideline 412

Chlorobenzenel
NOAEL: 125 mg/kg
Route of administration: Oral
Species: Rat, male/female
Duration of follow-up: 90 days
Method: OECD Test Guideline 408

NOAEL: 120 mg/kg
Route of administration: Oral
Species: Rat, male/female
Doses: 0 60 - 120 mg/kg/day
Frequency of treatment: 5 days/week
Method: OECD Test Guideline 451

NOAEL: 234 mg/m^3 Luft
Route of administration: Inhalation (Vapor)
Species: Rat, male/female
Frequency of exposure: 6 hrs per day, 5 days per week

Carcinogenicity
Ethyl acetate
No data available.

Chlorobenzene
NOAEL (toxicity): 120 mg/kg body weight/day
Species: Rat, male/female
Route of administration: Oral
Dosages: 0 - 60 – 120

Exposure duration: 103 week(s)
Frequency of treatment: 5 times per week
Method: OECD Test Guideline 451

Reproductive toxicity/fertility
Ethyl acetate
There is no evidence of reproductive toxicity from the available data.

Tris-(p-isocyanatophenyl)-thiophosphate
There is no evidence of reproductive toxicity from the available data.

Chlorobenzene
NOAEL Parents: 450 ppm
NOAEL F1: 450 ppm
NOAEL F2: 450 ppm
Test type: two-generation study
Species: Rat, male/female
Route of administration: Inhalation
Frequency of exposure: 6 hours/day 7 days/week

Reproductive toxicity/teratogenicity
Ethyl acetate
NOAEL (teratogenicity): 20000 ppm
NOAEL (maternal): 16000 ppm
NOAEL (developmental toxicity): 20000 ppm
Species: Rat, female
Route of administration: Inhalation
Doses: 0 - 10000 - 16000 - 20000 ppm
Method: OECD Test Guideline 414
Test on a comparable product.

Tris-(p-isocyanatophenyl)-thiophosphate
There is no evidence of reproductive toxicity from the available data.

Chlorobenzene
NOAEL (teratogenicity): 590 ppm
NOAEL (maternal): 590 ppm
Species: Rat, female
Route of administration: Inhalation
Doses: 75 - 210 - 590 ppm
Frequency of exposure: 6 hours/day (exposure duration: 10 days (day 6 - 15 p.c.))
Method: OECD Test Guideline 414

Genotoxicity in vitro
Test type: Salmonella/microsome test (Ames test)
Result: No evidence of a mutagenic effect.
Method: OECD Test Guideline 471
Tests on the product

Test type: point mutation on mammalian cells (HPRT test)
Test system: Chinese hamster cell line V79
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 476
Tests on product.

Test type: Micronucleus test
Test system: Chinese hamster cell line V79
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 487
Tests on product.

Genotoxicity in vivo
Ethyl acetate
Test type: In vivo micronucleus test
Species: Mouse, male
Route of administration: Intraperitoneal
Dose: 0 -100 - 200 - 400 - 800 mg/kg
Result: negative
Method: OECD Test Guideline 474

Assessment STOT - Single exposure
Ethyl acetate
May cause drowsiness and dizziness.

Tris-(p-isocyanatophenyl)-thiophosphate
Based on available data, the classification criteria are not met.

Chlorobenzene
Based on available data, the classification criteria are not met.

Assessment STOT - Repeated exposure
Ethyl acetate
If the available data set is used as a basis, the classification criteria are not met.

Tris-(p-isocyanatophenyl)-thiophosphate
If the available data set is used as a basis, the classification criteria are not met.

Chlorobenzene
If the available data set is used as a basis, the classification criteria are not met..

Aspiration toxicity

Ethyl acetate
If the available data set is used as a basis, the classification criteria are not met.

Tris-(p-isocyanatophenyl)-thiophosphate
If the available data set is used as a basis, the classification criteria are not met.

Chlorobenzene
No data available.

Assessment CMR

Ethyl acetate
Carcinogenicity: Based on available data, the classification criteria are not met. Mutagenicity: In vivo and in vitro tests showed no mutagenic effects. Therefore, based on these data, there is no classification as mutagenic. Teratogenicity: Based on available data, the classification criteria are not met. Reproductive toxicity: Based on available data, the classification criteria are not met.

Tris-(p-isocyanatophenyl)-thiophosphate
Carcinogenicity: Based on available data, the classification criteria are not met. Mutagenicity: In vitro tests showed no mutagenic effects.
Teratogenicity: Based on available data, the classification criteria are not met. Reproductive toxicity: Based on available data, the classification criteria are not met.

Chlorobenzene
Carcinogenicity: Based on available data, the classification criteria are not met. Mutagenicity: Based on available data, the classification criteria are not met.
Teratogenicity: Based on available data, the classification criteria are not met. Reproductive toxicity: Based on available data, the classification criteria are not met.

Bassessment toxicity
Ethyl acetate
Acute effects: Based on available data, the classification criteria are not met.
Sensitization: Based on available data, the classification criteria are not met.
Repeated dose toxicity: Repeated exposure may cause skin dryness or cracking.

Tris-(p-isocyanatophenyl)-thiophosphate
Acute effects: Harmful if swallowed.
Sensitization: Based on available data, the classification criteria are not met.
Repeated dose toxicity: Based on available data, the classification criteria are not met.

Further information
Special properties/effects: In case of overexposure there is a risk of concentration-dependent irritant effect on eyes, nose, throat and airways. Delayed onset of symptoms and development of hypersensitivity (breathing difficulties, cough, asthma) are possible. In hypersensitive persons, reactions may be triggered even at very low isocyanate concentrations. Even at very low isocyanate concentrations, even below the occupational exposure limit. Tanning and irritation effects are possible with prolonged contact with the skin.

Animal studies and other research indicate that skin contact with diisocyanates may play a role in isocyanate sensitization and respiratory reactions.

12. Ecological details

Do not allow to enter waters, waste water or soil.

12.1 Toxicity
Acute fish toxicity
Species: Danio rerio (Zebra danio)
Exposure time: 96 h
Method: OECD Test Guideline 203
No toxic effects in saturated solution. Ecotoxicological studies on the product

Chronic fish toxicity
Ethyl acetate
NOEC < 9.65 mg/l
Species: Pimephales promelas (fathead minnow)
Exposure duration: 32 d
Method: Early life stage test

Chlorbenzene
4,8 mg/l
Test type: Early-Life-Stage-Test
Spezies: Danio rerio (Zebra fish
Exposure time: 28 d

Acute daphnia toxicity
Species: Daphnia magna (Greater water flea)
Exposure time: 48 h
Method: OECD Test Guideline 202
No toxic effects in saturated solution.
Ecotoxicological studies on the product

Chronic daphnia toxicity
Ethyl acetate
NOEC (reproduction) 2.4 mg/l
Species: Daphnia magna (Greater water flea)
Exposure time: 21 d
Method: No data available

Chlorbenzene
NOEC 0,32 mg/l
Species: Daphnia (Water flea)
Exposure time: 16 d

Acute algal toxicity
Species: Scenedesmus subspicatus
Exposure time: 72 h
Methode: OECD- Test Guideline 201
No toxic effects in saturated solution.
Ecotoxicological studies on the product

Acute bacterial toxicity
EC50 > 10.000 mg/l
Species: Activated sludge
Methode: OECD- Test guideline 209
Ecotoxicological studies on the product

Sediment Toxicity
Ethyl acetate
Due to the low partition coefficient n-octanol/water, adsorption on sediment is not expected.

Evaluation ecotoxicity
Ethyl acetate
Acute aquatic toxicity: The substance is to be classified as non-critical to aquatic organisms.
Chronic aquatic toxicity: Based on the easy biodegradability, the chronic aquatic toxicity is to be rated as non-critical.
Toxicity in soil: Adsorption to soil not expected.
Effects on sewage treatment plants: In biological sewage treatment plants there is no risk of impairment of the of the cleaning performance due to the low bacterial toxicity.

Tris-(p-isocyanatophenyl)-thiophosphate
Acute aquatic toxicity: Based on available data, the classification criteria are not met. Chronic aquatic toxicity: Based on available data, the classification criteria are not met. Effects on sewage treatment plants: In biological sewage treatment plants there is no risk of impairment of the purification performance due to the low bacterial toxicity.

Chlorobenzene
Chronic aquatic toxicity: Toxic to aquatic organisms, with long lasting effects.

12.2 Persistence and degradability

Biodegradability
Ethyl acetate
Test type: aerobic
Inoculum: activated sludge
Biodegradation: approx. 69 %, 20 d, i.e. easily degradable

Inoculum: activated sludge
Biodegradation: 93 %, 6 d, i.e. readily degradable.
Method: Simulation study

Tris-(p-isocyanatophenyl)-thiophosphate
Test type: aerobic
Inoculum: activated sludge
Biodegradation: 58.2 %, 28 d, i.e. not readily degradable
Method: OECD Test Guideline 301 F

Chlorobenzene
Biodegradation: 15 %, 28 d, i.e. not readily degradable
Method: OECD Test Guideline 301 F

Stability in water
Ethyl acetate
Test type: Hydrolysis

Half-life: 16 a (pH: 5)
Hydrolysis temperature: 25 °C

Test type: Hydrolysis
Half-life: 2 a (pH: 7)
Hydrolysis temperature: 25 °C

Test type: Hydrolysis
Half-life: 7.5 d (pH: 9)
Hydrolysis temperature: 25 °C Hydrolyzes
slowly on contact with water.

Tris-(p-isocyanatophenyl)-thiophosphate
Test type: Hydrolysis
Half-life: < 24 h at 20 °C (pH: 7)
Method: OECD Test Guideline 111
The substance hydrolyzes rapidly in water.
Test on a comparable product.

Photodegradation
Ethyl acetat
Test type: Phototransformation in air
Temperature: 25 °C
Sensitizer: OH radicals
Half-life indirect photolysis: 75 h
After release or contact with air, slow photochemical degradation of the substance occu

Chlorobenzene
Degradation (direct photolysis): 55 %.
Degradation time (direct photolysis): 24

Volatility (Henry constant)
Tris-(p-isocyanatophenyl)-thiophosphate
Calculated value = 0.621 Pa*m3/mol at 20 °C
The substance is classified as low volatile from water.

Adsorb. organically bound halogen (AOX)
Chlorobenzene

The product contains organic halogens.

12.3 Bioaccumulative potential

Bioaccumulation
Ethyl acetate
Bioconcentration factor (BCF): 30
Species: Leuciscus idus (golden orfe)
Exposure duration: 3 d
Does not accumulate significantly in organisms.

Chlorobenzene
Bioconcentration factor (BCF): 3.9 - 40

Partition coefficient (n-octanol/water).
Chlorobenzene

log Pow: 3

12.4 Mobility in ground

Distribution between environmental compartments
Ethyl acetate
Adsorption/soil
Due to the low partition coefficient n-octanol/water, adsorption to soil is not expected.
Highly mobile in soils

Tris-(p-isocyanatophenyl)-thiophosphate
Adsorption/soil
Koc - value: 256000
calculated

Distribution in the environment
Ethyl acetate
Method: (calculated)
The product will be distributed in the different environmental compartments (soil/ water/ air).

12.5 Results of PBT and vPvB assessment

This ingredient/mixture does not contain any components at concentrations of 0.1% or higher that are classified as either persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB)

12.6 Other hazardous effects

Isocyanate reacts with water at the interface with the formation of carbon dioxide to form a solid, high-melting and insoluble reaction product (polyurea).
This reaction is strongly promoted by interface-active substances (e.g. liquid soaps) or water-soluble solvents.
According to experience to date, polyurea is inert and non-degradable.

13. Notes on disposal

Waste treatment procedure:
The following note refers to the product left as it is and not to further processed products. When mixing with other products, other disposal routes may be required; in case of doubt, consult the supplier of the product or the local authority..

Recommendation:
Must not be disposed of together with household waste. Do not allow to enter drains. If possible, recycle, otherwise incinerate or landfill in an approved facility. Separate contaminated water via separator and dispose of in accordance with official regulations.

Waste code number::
Since 1.1.1999, the waste code numbers are not only product-related but essentially application-related. The waste code number valid for the application can be taken from the European Waste Catalogue.

Uncleaned packages: Dispose of in accordance with official regulations.

Recommendation
Empty the container completely and send it cleaned for reconditioning or recycling. Dispose of containers only in consultation with local authorities.
LENDING PACKAGE: After optimal emptying, immediately return tightly closed and without cleaning to the supplier. Care must be taken that no foreign matter gets into the packaging!
Other containers: Empty completely and send cleaned to reconditioning or reprocessing. CAUTION: Residues in the containers may present an explosion hazard. Do not cut, perforate or weld uncleaned containers.

14. Details for transport

ADR/RID

14.1 UN-No.	1173
14.2 Orderly UN shipping designation	Ethyl acetate
14.3 Transport hazard classes	3
14.4 Transport category	II
14.5 Environmental hazards	no

Small quantity regulation according to chapter 3.4 ADR/RID applicable if quantity thresholds are observed.

ADN

14.1 UN-No.	1173
14.2 Orderly UN shipping designation	Ethyl acetate
14.3 Transport hazard classes	3
14.4 Transport category	II
14.5 Environmental hazards	no

This classification information does not generally apply to carriage in tankers. If necessary, additional information can be requested from the manufacturer.

IATA

14.1 UN-No.	1173
14.2 Orderly UN shipping designation	Ethyl acetate
14.3 Transport hazard classes	3
14.4 Transport category	II
14.5 Environmental hazards	no

IMDG

14.1 UN-No.	1173
14.2 Orderly UN shipping designation	Ethyl acetate
14.3 Transport hazard classes	3
14.4 Transport category	II
14.5 Ocean pollutant	no

EmS Code	F-E - S-D
Separation GroupIMDG	not applicable

14.6 Special safety precautions for the user

See section 6 - 8.

Further informations:	Fire hazard. Protect from moisture. Sensitive to heat above +40 °C. Keep away from food, beverages, acids and alkalis.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and according to the IBC Code.

Not applicable.

15. Legal regulations

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

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances.
P5c Flammable liquids
Quantity1: 5.000 t Quantity2: 50.000 t

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)
The restriction conditions for the following entries should be considered: 3,40

This product contains substances subject to Annex XVII of REACH Regulation 1907/2006/EC.

Ethyl acetate
CAS-No.: 141-78-6, EG-Nro.: 205-500-4
Subject to REACH attachment XVII, No. 40

TA Air
Type: Organic subtances
Share class 1: 27 %
Proportion of other substances: 73 %

Water hazard class
1 slightly hazardous to water

Classification according to AwSV, Annex 1 (5.2).

Observe BG Chemie leaflet M 044 "Polyurethane production and processing/Isocyanates". For products containing solvents:

The BG Chemie leaflet M 017 "Solvents" must be observed.

Other regulations
Observe employment restrictions in accordance with Directive 94/33/EC on the protection of young people at work or more stringent national regulations, where applicable.

15.2 Chemical Safety Assessment

A Chemical Safety Assessment is available for:
Ethyl acetate
Tris-(p-isocyanatophenyl)-thiophosphate
Chlorobenzene

16. Other details

H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H336	May cause drowsiness or dizziness.
H411	Toxic to aquatic life with long lasting effects.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P403 + P235	Store in a well-ventilated place. Keep cool.

Supplemental hazard characteristics and labeling elements:

EUH066	Repeated exposure may cause skin dryness or cracking.
EUH204	Contains isocyanates. May produce an allergic reaction.

This product is intended for commercial use only. The details given here are based on current knowledge and experience. The safety data sheet describes products in terms of its safety requirements. The details are in no way intended to imply a warranty of performance of capabilities.