

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

1.1 Product identifier

DESMODUR RFE

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

Use:

Hardener for coating materials or adhesives for industrial and trade applications

Uses advised against:

Not suitable for use in homemaker (DIY) applications.

1.3 Details of the supplier of the safety data sheet

Bayer MaterialScience AG
BMS-IO-S&T-PSRA-PSI Product Safety
51368 Leverkusen

Tel.: +49 214 30 25026

Email: productsafety@bayerbms.com

1.4 Emergency telephone number

+49 214 30 99300 (Sicherheitszentrale Bayer)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Regulation (EC) No 1272/2008

Flammable liquids, Category 2 (H225)

Specific target organ toxicity (single exposure), Category 3 (H336)

Directive 67/548/EEC or 1999/45/EC

Highly flammable.

Repeated exposure may cause skin dryness or cracking. Vapours may cause drowsiness and dizziness.

2.2 Label elements

Regulation (EC) No 1272/2008



Danger

Hazardous components which must be listed on the label

ethyl acetate

Hazard statements:

H225 Highly flammable liquid and vapour.

H336 May cause drowsiness or dizziness.

Precautionary statements:

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P243 Take precautionary measures against static discharge.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

Supplementary hazardous characteristics and labeling elements:

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

Directive 67/548/EEC or 1999/45/EC

Labeling and classification in accordance with the EC Dangerous Preparations Directive (1999/45/EC) and subsequent amendments

F Highly flammable

Contains:
 ethyl acetate
 Contains isocyanates. See information supplied by the manufacturer.

R-phrases(s)

R11 Highly flammable.
R66 Repeated exposure may cause skin dryness or cracking.
R67 Vapours may cause drowsiness and dizziness.

S-phrases(s)

S 9 Keep container in a well-ventilated place.
S16 Keep away from sources of ignition - No smoking.
S33 Take precautionary measures against static discharges.
S36 Wear suitable protective clothing.

2.3 Other hazards

No information available.

SECTION 3: Composition/information on ingredients

Type of product: Mixture

3.2 Mixtures

Tris(p-isocyanatophenyl) thiophosphate

ca. 28 % in ethyl acetate

Hazardous components

ethyl acetate
 Concentration [wt.-%]: ca. 71
 EC-No.: 205-500-4
 REACH Registration Number: 01-2119475103-46-0017
 CAS-No.: 141-78-6
 Classification (1272/2008/CE): Flam. Liq. 2 H225 Eye Irrit. 2 H319 STOT SE 3 H336
 Classification (67/548/EEC): F R11 Xi R36 R66 R67

Tris(p-isocyanatophenyl) thiophosphate
 Concentration [wt.-%]: ca. 28
 EC-No.: 223-981-9
 REACH Registration Number: 01-2119948848-16-0000
 CAS-No.: 4151-51-3
 Classification (1272/2008/CE): Acute Tox. 4 Oral H302
 Classification (67/548/EEC): Xn R22

This contains:

chlorobenzene

Concentration [wt.-%]: < 1

Index-No.: 602-033-00-1

REACH Registration Number: 01-2119432722-45

CAS-No.: 108-90-7

Classification (1272/2008/CE): Flam. Liq. 3 H226 Acute Tox. 4 Inhalative H332 Skin Irrit. 2 H315 Aquatic

Chronic 2 H411

Classification (67/548/EEC): R10 Xn R20 Xi R38 N R51/53

Specific threshold concentration

	R52/53	2,5 - < 5 %
Xn, N	R20, R52/53	5 - < 25 %
Xn, N	R20, R51/53	>= 25 %

Exposure scenarios are not required for the impurities of the substance according to article 3(1) of Regulation (EC) No 1907/2006 mentioned above.

Candidate List of Substances of Very High Concern for Authorisation

This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice: Take off all contaminated clothing immediately.

If inhaled: If aerosol or vapor is inhaled in high concentrations: Take the person into the fresh air and keep him warm, let him rest; if there is difficulty in breathing, medical advice is required.

In case of skin contact: In case of skin contact wash affected areas thoroughly with soap and plenty of water. Consult a doctor in the event of a skin reaction.

In case of eye contact: Hold the eyes open and rinse with preferably lukewarm water for a sufficiently long period of time (at least 10 minutes). Contact an ophthalmologist.

If swallowed: DO NOT induce the patient to vomit, medical advice is required.

4.2 Most important symptoms and effects, both acute and delayed

Notes to physician: Basic first aid, decontamination, symptomatic treatment.

4.3 Indication of any immediate medical attention and special treatment needed

Therapeutic measures: No information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media: Carbon dioxide (CO₂), Foam, extinguishing powder, in cases of larger fires, water spray should be used.

Unsuitable extinguishing media: High volume water jet

5.2 Special hazards arising from the substance or mixture

Burning releases carbon monoxide, carbon dioxide, oxides of nitrogen, isocyanate vapors and traces of hydrogen cyanide. In the event of fire and/or explosion do not breathe fumes.

5.3 Advice for fire-fighters

During fire-fighting respirator with independent air-supply and airtight garment is required.

Do not allow contaminated extinguishing water to enter the soil, ground-water or surface waters.

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

Put on protective equipment (see section 8). Keep away from sources of ignition. Ensure adequate ventilation/exhaust extraction. Keep unauthorized persons away.

6.2 Environment related measures

Do not allow to escape into waterways, wastewater or soil.

6.3 Methods and material for containment and cleaning up

Remove mechanically; cover the remainder with wet, absorbent material (e.g. sawdust, chemical binder based on calcium silicate hydrate, sand). After approx. one hour transfer to waste container and do not seal (evolution of CO₂!). Keep damp in a safe ventilated area for several days.

6.4 Reference to other sections

For further disposal measures see section 13.

SECTION 7: Handling and storage**7.1 Precautions for safe handling**

Provide sufficient air exchange and/or exhaust in work rooms. Exhaust ventilation necessary if product is sprayed.

In all areas where isocyanate aerosols and/or vapor concentrations are produced in elevated concentrations, exhaust ventilation must be provided in such a way that the workplace exposure limits (WEL) is not exceeded. The air should be drawn away from the personnel handling the product. The threshold limit values noted in section 8 must be monitored.

Explosion protection required.

The personal protective measures described in section 8 must be observed. The precautions required in the handling of solvents and isocyanates must be taken. Avoid contact with skin and eyes and the inhalation of vapor.

Keep away from foodstuffs, drinks and tobacco. Wash hands before breaks and at end of work and use skin-protecting ointment. Keep working clothes separately. Take off all contaminated clothing immediately.

7.2 Conditions for safe storage, including any incompatibilities

Keep container dry and tightly closed in a cool and well ventilated place. Further information on the storage conditions which must be observed to preserve quality can be found in our product information sheet.

Storage class (TRGS 510) : 3: Flammable liquids

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection**8.1 Control parameters****Components with workplace control parameters**

Substance	CAS-No.	Basis	Type	Value	Ceiling Limit Value	Remarks
ethyl acetate	141-78-6	TRGS 900				Listed.
ethyl acetate	141-78-6	TRGS 900	TLV	400 ppm 1.500 mg/m ³	2	Y
ethyl acetate	141-78-6	TRGS 900	STEL CL			Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.
chlorobenzene	108-90-7	EU ELV	TWA	5 ppm 23 mg/m ³		Indicative
chlorobenzene	108-90-7	EU ELV	STEL	15 ppm 70 mg/m ³		Indicative
chlorobenzene	108-90-7	TRGS 900				Listed.
chlorobenzene	108-90-7	TRGS 900	TLV	10 ppm 47 mg/m ³	2	Y
chlorobenzene	108-90-7	TRGS 900	STEL CL			Category II: substances with a resorptive effect.

The product may contain traces of phenylisocyanate.

Substance	CAS-No.	Basis	Type	Value	Ceiling Limit Value	Remarks
Phenyl isocyanate	103-71-9	TRGS 900				Listed.
Phenyl isocyanate	103-71-9	TRGS 900	TLV	0,01 ppm 0,05 mg/m ³	1	
Phenyl isocyanate	103-71-9	TRGS 900	STEL CL			Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.

Derived No Effect Level (DNEL) or Derived Minimal Effect Level (DMEL)**ethyl acetate**

Value type	Route of exposure	Health Effects	Value	Remarks
Worker (short-term)				
DNEL	Dermal	- systemic effects		Not relevant
DNEL	Inhalation	- systemic effects	1468 mg/m ³ air	
DNEL	Dermal	- local effects		Not relevant
DNEL	Inhalation	- local effects	1468 mg/m ³ air	Most sensitive endpoint: Irritation (respiratory tract)
Worker (long-term)				
DNEL	Dermal	- systemic effects	63 mg/kg body weight/day	

DNEL	Inhalation	- systemic effects	734 mg/m ³ air	Most sensitive endpoint: Irritation (respiratory tract)
DNEL	Dermal	- local effects		No quantitative risk assessment possible.
DNEL	Inhalation	- local effects	734 mg/m ³ air	Most sensitive endpoint: Irritation (respiratory tract)
General population (short-term)				
DNEL	Dermal	- systemic effects		Not relevant
DNEL	Inhalation	- systemic effects	734 mg/m ³ air	
DNEL	Oral	- systemic effects		Not relevant
DNEL	Dermal	- local effects		Not relevant
DNEL	Inhalation	- local effects	734 mg/m ³ air	Most sensitive endpoint: Irritation (respiratory tract)
General population (long-term)				
DNEL	Dermal	- systemic effects	37 mg/kg body weight/day	
DNEL	Inhalation	- systemic effects	367 mg/m ³ air	Most sensitive endpoint: Irritation (respiratory tract)
DNEL	Oral	- systemic effects	4,5 mg/kg body weight/day	Most sensitive endpoint: Irritation (respiratory tract)
DNEL	Dermal	- local effects		No quantitative risk assessment possible.
DNEL	Inhalation	- local effects	367 mg/m ³ air	Most sensitive endpoint: Irritation (respiratory tract)

Tris(p-isocyanatophenyl) thiophosphate

Value type	Route of exposure	Health Effects	Value	Remarks
DNEL	Eye contact	- local effects		No hazard identified
Worker (long-term)				
DNEL	Inhalative	- systemic effects		No hazard identified
DNEL	Dermal	- systemic effects		No hazard identified
DNEL	Inhalative	- local effects	0,047 mg/m ³	Most sensitive endpoint: Repeated dose toxicity
DNEL	Dermal	- local effects		No hazard identified
Worker (short-term)				
DNEL	Inhalative	- systemic effects		No hazard identified
DNEL	Dermal	- systemic effects		No hazard identified
DNEL	Inhalative	- local effects		No hazard identified
DNEL	Dermal	- local effects		No hazard identified

Predicted No Effect Concentration (PNEC)**ethyl acetate**

Compartment	Value	Remarks
Freshwater	0,26 mg/l	

Marine water	0,026 mg/l	
Water: Intermittent release	1,65 mg/l	
Fresh water sediment	1,25 mg/kg dry weight	
Marine sediment	0,125 mg/kg dry weight	
Soil	0,24 mg/kg dry weight	
STP (sewage-treatment plant)	650 mg/l	
Oral	200 mg/kg food	

Tris(p-isocyanatophenyl) thiophosphate

Compartment	Value	Remarks
Freshwater	0,1 mg/l	
Marine water	0,01 mg/l	
Water: Intermittent release	1 mg/l	
Freshwater sediment	2557 mg/kg dry weight	
Marine sediment	155 mg/kg dry weight	
STP (sewage-treatment plant)	100 mg/l	
Soil	510 mg/kg dry weight	
Air		No hazard identified
Secondary poisoning		Does not bioaccumulate.

8.2 Exposure controls**Respiratory protection**

Respiratory protection required in insufficiently ventilated working areas and during spraying. An air-fed mask, or for short periods of work, a combination of charcoal filter and particulate filter is recommended.

Hand protection

Conditionally suitable materials for protective gloves; EN 374:
Butyl rubber - IIR (≥ 0.5 mm); Break through time: ≥ 60 min
Recommendation: contaminated gloves should be disposed of.

Eye protection

Wear eye/face protection.

Skin and body protection

Wear suitable protective clothing.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties**

Appearance:	liquid
Colour:	yellow to brownish
Odour:	ester-like
Odour Threshold:	not established
pH:	not applicable
Boiling point/boiling range:	ca. 77 °C at 1.013 hPa
Flash point:	ca. -4 °C
Evaporation rate:	not established
Flammability (solid, gas):	not established
Burning number:	not applicable
Upper/lower flammability or explosive limits:	
ethyl acetate	upper: 11,5 %(V) / lower: 2,2 %(V)

DIN 51755

Vapour pressure:	ca. 97 hPa at 20 °C	
Vapour density:	not established	
Density:	ca. 1,0 g/cm ³ at 20 °C	DIN 53217
Miscibility with water:	immiscible at 15 °C	
Water solubility of ingredients:		
ethyl acetate	ca. 85 g/l at 20 °C	
Surface tension:	not established	
Partition coefficient (n-octanol/water):	not established	
Auto-ignition temperature:	not applicable	
Ignition temperature:	ca. 460 °C	
Decomposition temperature:	not established	
Viscosity, dynamic:	ca. 3 mPa.s at 20 °C	DIN 53019
Explosive properties:	not established	
Dust explosion class:	not applicable	
Oxidising properties:	not established	

9.2 Other information

The indicated values do not necessarily correspond to the product specification. Please refer to the technical information sheet for specification data.

SECTION 10: Stability and reactivity**10.1 Reactivity**

This information is not available.

10.2 Chemical stability

No decomposition below initial boiling point.

10.3 Possibility of hazardous reactions

Exothermic reaction with amines and alcohols; reacts with water forming CO₂; in closed containers, risk of bursting owing to increase of pressure.

10.4 Conditions to avoid

This information is not available.

10.5 Incompatible materials

This information is not available.

10.6 Hazardous decomposition products

No hazardous decomposition products when stored and handled correctly.

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity, oral**

LD50 rat: > 2.000 mg/kg

Method: OECD Test Guideline 423

Toxicological studies at 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.

Acute toxicity, inhalation

ethyl acetate

LC50 rat: > 22,5 mg/l, 6 h

Test atmosphere: vapour

Tris(p-isocyanatophenyl) thiophosphate

LC50 rat, male: 5,721 mg/l, 4 h

Test atmosphere: dust/mist

Method: OECD Test Guideline 403

Primary skin irritation

Species: rabbit

Result: slight irritant

Classification: No skin irritation

Method: OECD Test Guideline 404

Toxicological studies at the product

Primary mucosae irritation

Species: rabbit

Result: slight irritant

Classification: No eye irritation

Method: OECD Test Guideline 405

Toxicological studies at the product

Sensitisation

ethyl acetate

Skin sensitisation according to Magnusson/Kligmann (maximizing test):

Species: guinea pig

Result: negative

Classification: Does not cause skin sensitization.

Method: OECD Test Guideline 406

Tris(p-isocyanatophenyl) thiophosphate

Skin sensitisation according to Buehler (epicutaneous test):

Species: guinea pig

Result: negative

Classification: Does not cause skin sensitization.

Method: OECD Test Guideline 406

Toxicological studies at the product containing solvent.

Respiratory sensitization

Classification: No classification according to EC Directives 2006/121/EC or 1999/45/EC as respiratory sensitizer.

Subacute, subchronic and prolonged toxicity

ethyl acetate

LOAEL (Lowest observable adverse effect level): 350 ppm

Application Route: Inhalative

Species: rat, male/female

Dose Levels: 0 - 350 - 750 - 1500 ppm

Exposure duration: 13 w

Frequency of treatment: 6 hours a day, 5 days a week

Target Organs: Nasal inner lining

Test substance: vapour

Method: OECD Test Guideline 413

NOAEL: 900 mg/kg
Application Route: Oral
Species: rat, male/female
Dose Levels: 0 - 300 - 900 - 3600 mg/kg
Exposure duration: 13 w
Frequency of treatment: daily

Tris(p-isocyanatophenyl) thiophosphate
NOAEL: 2,8 mg/m³
Application Route: Inhalative
Species: rat, male/female
Dose Levels: 0 - 2,8 - 15,4 - 74 mg/m³
Exposure duration: 28 d
Frequency of treatment: (6 hours a day, 5 days a week)
Test substance: as aerosol
Method: OECD Test Guideline 412

Carcinogenicity

ethyl acetate
No data available.

Reproductive toxicity/Fertility

ethyl acetate
Available data show no indications for reproductive toxicity.

Tris(p-isocyanatophenyl) thiophosphate
Available data show no indications for reproductive toxicity.

Reproductive toxicity/Teratogenicity

ethyl acetate
NOAEL (teratogenicity): 20000 ppm
NOAEL (maternal): 16000 ppm
NOAEL (developmental toxicity): 20000 ppm
Species: rat, female
Application Route: Inhalative
Dose Levels: 0 - 10000 - 16000 - 20000 ppm
Method: OECD Test Guideline 414
Studies of a comparable product.

Tris(p-isocyanatophenyl) thiophosphate
Available data show no indications for reproductive toxicity.

Genotoxicity in vitro

Test type: Salmonella/microsome test (Ames test)
Result: No indication of mutagenic effects.
Method: OECD Test Guideline 471
Studies at the product.

Test type: Point mutation in mammalian cells (HPRT test)
Test system: Chinese hamster V79 cell line
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 476
Studies at the product.

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

Genotoxicity in vivo

ethyl acetate
Test type: In vivo micronucleus test
Species: mouse, male
Application Route: intraperitoneal
Dose: 0 -100 - 200 - 400 - 800 mg/kg
Result: negative
Method: OECD Test Guideline 474

STOT evaluation – one-time exposure

ethyl acetate
May cause drowsiness or dizziness.

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

STOT evaluation – repeated exposure

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

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

Aspiration toxicity

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

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

CMR Assessment

ethyl acetate
Carcinogenicity: Based on available data, the classification criteria are not met.
Mutagenicity: In vitro and in vivo tests did not show mutagenic effects. On the basis of this data, the substance is not classified as mutagenic.
Teratogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity/Fertility: 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 did not show mutagenic effects
Teratogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

Toxicology Assessment

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.

Additional information

Tris(p-isocyanatophenyl) thiophosphate
Special properties/effects: Over-exposure entails the risk of concentration-dependent irritating effects on eyes, nose throat, and respiratory tract. Delayed appearance of the complaints and development of hypersensitivity (difficult breathing, coughing, asthma) are possible. Hypersensitive persons may suffer from these effects even at low isocyanate concentrations. Prolonged or repeated exposure may cause irritation of skin and eyes.

SECTION 12: Ecological information

Do not allow to escape into waterways, wastewater or soil.

12.1 Toxicity

Acute Fish toxicity

Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: OECD Test Guideline 203
No toxic effects with saturated solution.
Ecotoxicological studies of 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

Acute toxicity for daphnia

Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202
No toxic effects with saturated solution.
Ecotoxicological studies of the product

Chronic toxicity to daphnia

ethyl acetate
NOEC (Reproduction) 2,4 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: no data available

Acute toxicity for algae

Species: scenedesmus subspicatus
Exposure duration: 72 h
Method: OECD Test Guideline 201
No toxic effects with saturated solution.
Ecotoxicological studies of the product

Acute bacterial toxicity

EC50 > 10.000 mg/l
Species: activated sludge
Method: OECD Test Guideline 209
Ecotoxicological studies of the product

Sediment Toxicity

ethyl acetate
Due to the low n-octanol-water partition coefficient, an adsorption on the sediment is not to be expected.

Ecotoxicology Assessment

ethyl acetate

Acute aquatic toxicity: The substance is graded as non-critical to water organisms.

Chronic aquatic toxicity: Due to easy biodegradability, the chronic aquatic toxicity can be regarded as uncritical.

Toxicity Data on Soil: Not expected to adsorb on soil.

Impact on Sewage Treatment: Because of the low bacterial toxicity, there is no risk of an adverse effect on the performance of biological waste water treatment plants.

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.

Impact on Sewage Treatment: Because of the low bacterial toxicity, there is no risk of an adverse effect on the performance of biological waste water treatment plants.

12.2 Persistence and degradability

Biodegradability

ethyl acetate

Test type: aerobic

Inoculum: activated sludge

Biodegradation: ca. 69 %, 20 d, i.e. readily biodegradable

Inoculum: activated sludge

Biodegradation: 93 %, 6 d, i.e. readily biodegradable

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

Stability in water

ethyl acetate

Test type: Hydrolysis

Half life: 16 Years (pH: 5)

Hydrolytic temperature: 25 °C

Test type: Hydrolysis

Half life: 2 Years (pH: 7)

Hydrolytic temperature: 25 °C

Test type: Hydrolysis

Half life: 7,5 d (pH: 9)

Hydrolytic temperature: 25 °C

Hydrolyses 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.

Studies of a comparable product.

Photodegradation

ethyl acetate

Test type: Phototransformation in air

Temperature: 25 °C

sensitizer: OH-radicals

Half-life indirect photolysis: 75 h

After evaporation or exposure to the air, the product will be slowly degraded by photochemical processes.

Volatility (Henry's Law constant)

Tris(p-isocyanatophenyl) thiophosphate

Calculated value = 0,621 Pa*m³/mol at 20 °C

The substance has to be scored as being slightly volatile from water.

12.3 Bioaccumulative potential**Bioaccumulation**

ethyl acetate

Bioconcentration factor (BCF): 30

Species: Leuciscus idus (Golden orfe)

Exposure duration: 3 d

Does not significantly accumulate in organisms.

12.4 Mobility in soil

Distribution among environmental compartments

ethyl acetate

Adsorption/Soil

Due to the low n-octanol-water partition coefficient, an adsorption on the soil is not to be expected.

Highly mobile in soils

Tris(p-isocyanatophenyl) thiophosphate

Adsorption/Soil

Koc value: 256000

Method: calculated

Environmental distribution

ethyl acetate

Method: (calculated)

The product will be dispersed amongst the various environmental compartments (soil/ water/ air).

12.5 Results of PBT and vPvB assessment

ethyl acetate

This substance does not meet the criteria for classification as PBT or vPvB.

Tris(p-isocyanatophenyl) thiophosphate

This substance does not meet the criteria for classification as PBT or vPvB.

12.6 Other adverse effects

Isocyanate reacts with water at the interface forming CO₂ and a solid insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by watersoluble solvents. Previous experience shows that polyurea is inert and non-degradable.

SECTION 13: Disposal considerations

Dispose in accordance with applicable international, national and local laws, ordinances and statutes. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.

13.1 Waste treatment methods

After final product withdrawal, all residues must be removed from containers (drip-free, powder-free or paste-free). Once the product residues adhering to the walls of the containers have been rendered harmless, the product and hazard labels must be invalidated. These containers can be returned for recycling to the appropriate centres set up within the framework of the existing take-back scheme of the chemical industry. Containers must be recycled in compliance with national legislation and environmental regulations.

None disposal into waste water.

SECTION 14: Transport information**ADR/RID**

14.1 UN number	:	1173
14.2 UN proper shipping name	:	ETHYL ACETATE, SOLUTION
14.3 Transport hazard class(es)	:	3
Hazard Identification Number	:	33
14.4 Packing group	:	II
14.5 Environmental hazards	:	no

Limited quantity regulations applicable in accordance with chapter 3.4 ADR/RID in compliance with threshold value

ADN

14.1 UN number	:	1173
14.2 UN proper shipping name	:	ETHYL ACETATE, SOLUTION
14.3 Transport hazard class(es)	:	3

Hazard Identification Number : 33
 14.4 Packing group : II
 14.5 Environmental hazards : no

This classification data does not apply to transportation by tanker. If required, additional information can be requested from the manufacturer.

IATA

14.1 UN number : 1173
 14.2 UN proper shipping name : ETHYL ACETATE, SOLUTION
 14.3 Transport hazard class(es) : 3
 14.4 Packing group : II
 14.5 Environmental hazards : no

IMDG

14.1 UN number : 1173
 14.2 UN proper shipping name : ETHYL ACETATE, SOLUTION
 14.3 Transport hazard class(es) : 3
 14.4 Packing group : II
 14.5 Environmental hazards : no

14.6 Special precautions for user

See section 6 - 8.

Additional information : Highly flammable.
 Keep dry. Avoid heat above +40 °C.
 Keep away from foodstuffs, acids and alkalis.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

SECTION 15: Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****EU Directive 96/82 EC (Seveso II Directive)**

Revision: 2003
 Listed in regulation: Highly flammable
 Number in regulation: 7b
 Quantity1: 5.000 t
 Quantity2: 50.000 t

TA Luft List (Germany)

Type: Organic Substances
 portion Class 1: 28 %
 Fraction of other substances: 72 %

Water contaminating class (Germany)

1 slightly water endangering
 (in accordance with Annex 4 to the Directive on Water-Hazardous Substances)

Any existing national regulations on the handling of isocyanates and solvents must be observed.

15.2 Chemical Safety Assessment**A Chemical Safety Assessment has been carried out for:**

ethyl acetate
 Tris(p-isocyanatophenyl) thiophosphate

SECTION 16: Other information

Full text of hazardous (H) warnings referred to under sections 2, 3 and 10 of the CLP classification (1272/2008/CE).

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.

Full text of R-phrases referred to under sections 2, 3 and 10 of the EU classification (67/548/EEC,1999/45/EC).

R10	Flammable.
R11	Highly flammable.
R20	Harmful by inhalation.
R22	Harmful if swallowed.
R36	Irritating to eyes.
R38	Irritating to skin.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapours may cause drowsiness and dizziness.

No exposure scenarios are provided for this mixture, because the necessary information about operational conditions and Risk Management Measures (RMM) of the identified uses can be found in chapter 8 of this SDS.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.