

SAFETY DATA SHEET

according to Regulation (EU) No. 1907/2006

112000015160

Version 2.1

Revision Date 06.04.2011

Print Date 07.04.2011

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Trade name : **DESMODUR RFE**

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.

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

Fax: +49 214 30 50035

e-mail: productsafety@bayerbms.com

Emergency telephone number: Address in New Zealand: Bayer New Zealand Limited

3 Argus Place, Hillcrest

North Shore 0627, New Zealand

Phone: 0800 652 436, Fax: 09 444 7191

Emergency Tel. No. 0800 734 607 Orica SH&E Shared Services

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS Classification:

Flammable liquids, Category 2 (H225)

Eye irritation, Category 2 (H319)

Sensitization of the respiratory airways, Category 1 (H334)

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

Label elements

Hazardous components which must be listed on the label

Thionophosphoric acid-tris-(p-isocyanatophenyl ester)

GHS-Labeling



Danger

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Hazard statements:

H225 Highly flammable liquid and vapour.

H319 Causes serious eye irritation.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H336 May cause drowsiness or dizziness.

Precautionary statements:

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P312 Call a POISON CENTER or doctor/ physician if you feel unwell.

P370 Advice for fire-fighters

P378 Suitable extinguishing media: Carbon dioxide (CO₂), Foam, extinguishing powder. In cases of larger fires, water spray should be used. Don't use high volume water jet.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P501 Dispose of contents/container in accordance with local regulation.

3. COMPOSITION/INFORMATION ON INGREDIENTS**Type of product:** Mixture

Mixture

Hazardous components

Thionophosphoric acid-tris-(p-isocyanatophenyl ester)

Concentration [wt.-%]: ca. 27

CAS-No.: 4151-51-3

EINECS-No.: 223-981-9

GHS Classification: Sens. Resp. 1 H334

ethyl acetate

Concentration [wt.-%]: ca. 71

CAS-No.: 141-78-6

EINECS-No.: 205-500-4

Index-No.: 607-022-00-5

GHS Classification: Flam. Liq. 2 H225 Eye Irrit. 2 H319 STOT SE 3 H336

chlorobenzene

Concentration [wt.-%]: < 1

CAS-No.: 108-90-7

EINECS-No.: 203-628-5

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

GHS Classification: Flam. Liq. 3 H226 Acute Tox. 4 Inhalative H332 Aquatic Chronic 2 H411



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4. FIRST AID MEASURES**Description of first aid measures****General advice:** Take off immediately all contaminated clothing.**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.

5. Fire-fighting measures**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**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.

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.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures:** Put on protective equipment (see chapter 8). Keep away from sources of ignition. Ensure adequate ventilation/exhaust extraction. Keep unauthorized persons away.**Environment related measures:** Do not allow to escape into waterways, wastewater or soil.**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.

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Reference to other sections: For further disposal measures see chapter 13.

7. HANDLING AND STORAGE**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 Chapter 8 must be monitored.

Explosion protection required.

The personal protective measures described in Chapter 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.

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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If no airborne exposure limit is indicated for materials listed in Section 3, no limit has been defined.

Control parameters

The product may contain traces of phenylisocyanate.

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.

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Eye protection:

Wear eye/face protection.

Skin and body protection:

Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES**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	DIN 51755
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)	
chlorobenzene	upper: 11,0 %(V) / lower: 1,3 %(V)	
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	
Autoignition 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	
Other information:	The indicated values do not necessarily correspond to the product specification. Please refer to the technical information sheet for specification data.	



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10. STABILITY AND REACTIVITY

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.

Hazardous decomposition products: No hazardous decomposition products when stored and handled correctly.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity, oral:

LD50 rat: > 2.500 mg/kg
Method: OECD Test Guideline 423
Toxicological studies at the product

Acute toxicity, dermal:

ethyl acetate
LD50 rabbit: > 5.000 mg/kg

Acute toxicity, inhalation:

ethyl acetate
LC50 rat: 29,3 - 58,6 mg/l, 4 h

chlorobenzene

LC50 rat, male: ca. 13,9 mg/l, 6 h

LC50 rat: 29,7 mg/l, 4 h

Method: OECD Test Guideline 403

Test substance: vapour

Primary skin irritation:

rabbit
Result: slight irritant
Method: OECD Test Guideline 404
Toxicological studies at the product

Primary mucosae irritation:

rabbit
Result: slight irritant
Method: OECD Test Guideline 405
Toxicological studies at the product



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Sensitisation:

Skin sensitisation according to Buehler (epicutaneous test): guinea pig

Result: negative

Method: OECD Test Guideline 406

Toxicological studies at the product

Classification according to Directive 2006/121/EC Annex VI

Classification: May cause sensitization by inhalation.

Subacute, subchronic and prolonged toxicity:

chlorobenzene

Application Route: Inhalative

Species: rat

Exposure duration: 24 Weeks

NOAEL: < 75 ppm

Application Route: Inhalative

Species: rat

Exposure duration: 13 Weeks

LOAEL (Lowest observable adverse effect level): 125 mg/kg

Carcinogenicity:

chlorobenzene

Species: rat

Application Route: Oral

negative

Species: mouse

Application Route: Oral

negative

Genotoxicity in vitro:

Test type: Salmonella/microsome test (Ames test)

Result: No indication of mutagenic effects.

Method: OECD Test Guideline 471

Toxicological studies at the product

CMR Assessment:

Mutagenicity: Not mutagenic in Ames Test. Toxicological studies at the product

Toxicology Assessment:

chlorobenzene

Acute effects: Harmful if inhaled.

Additional information:

Thionophosphoric acid-tris-(p-isocyanatophenyl ester)

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.



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ethyl acetate
Vapours may cause drowsiness and dizziness.

12. ECOLOGICAL INFORMATION

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

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 toxicity to Fish:

chlorobenzene
4,8 mg/l
Species: Danio rerio (zebra fish)
Exposure duration: 28 d

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:

chlorobenzene
NOEC 0,32 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 16 d

Acute toxicity for algae:

Tested on: scenedesmus subspicatus Duration of test: 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
Tested on: activated sludge
Method: OECD Test Guideline 209
Ecotoxicological studies of the product

Ecotoxicology Assessment:

chlorobenzene
Toxic to aquatic life.
May cause long-term adverse effects in the aquatic environment.

Persistence and degradability

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Biodegradability:

Biodegradation: 58,2 %, 28 d, i.e. not readily degradable

Method: OECD Test Guideline 301 F

Ecotoxicological testing of the solvent-free product

Photodegradation:

chlorobenzene

Degradation (direct photolysis): 55 %

Degradation time (direct photolysis): 24 d

Bioaccumulative potential**Bioaccumulation:**

chlorobenzene

Bioconcentration factor (BCF): 3,9 - 40

Accumulation in aquatic organisms is unlikely.

Theoretical oxygen demand (ThOD):

ethyl acetate

ThBOD value: 1.820 mg/g

Partition coefficient (n-octanol/water):

chlorobenzene

log Pow: 2,8 - 3

Additional information on ecotoxicology:

The resin 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.

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.

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.

14. TRANSPORT INFORMATION

Hazchem 3YE

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ADR/RID

UN Number : 1173
Packaging group : II
Hazard identification No : 33
hazard label : 3
Environmentally hazardous : no

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

ADN

UN Number : 1173
Packaging group : II
Hazard identification No : 33
hazard label : 3
Environmentally hazardous : no

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

IATA

UN Number : 1173
Description of the goods : ETHYL ACETATE, SOLUTION
Class : 3
Packaging group : II
hazard label : 3
Packing instruction (cargo aircraft) : 364
Packing instruction (passenger aircraft) : 353

IMDG

UN Number : 1173
Description of the goods : ETHYL ACETATE, SOLUTION
Class : 3
Packaging group : II
IMDG-Labels : 3
Marine pollutant : no

Special precautions for user : Highly flammable. Irritating to the eyes.
Keep dry. Avoid heat above +40 °C.
Keep away from foodstuffs, acids and alkalis.

15. REGULATORY INFORMATION



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16. OTHER INFORMATION

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

H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H336	May cause drowsiness or dizziness.
H411	Toxic to aquatic life with long lasting effects.

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.
