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

1.1 Product identifier

DESMODUR RC

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 homeworker (DIY) applications.

1.3 Details of the supplier of the safety data sheet

Covestro Pty Ltd.
Level 1, 700 Springvale Road
MULGRAVE, VIC 3170
AUSTRALIA

Phone: (61) 3-9581-9888
e-mail: productsafetyapac@covestro.com

1.4 Emergency telephone number

IXOM SH&E Shared Services
In Australia: 1800 033 111
In New Zealand: 0800 734 607

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification:
Flammable liquids, Category 2 (H225)
Acute toxicity, Inhalative, Category 4 (H332)
Eye irritation, Category 2 (H319)
Sensitization of the respiratory airways, Category 1 (H334)
Sensitization of the skin, Category 1 (H317)
Specific target organ toxicity (single exposure), Category 3 (H336)

2.2 Label elements

GHS-Labelling

Danger

Hazardous components which must be listed on the label
ethyl acetate
m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Aromatic polyisocyanate
Di-isocyanatotoluene (mixture of isomers)

Hazard statements:
H225 Highly flammable liquid and vapour.
H317 May cause an allergic skin reaction.
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.

Precautionary statements:
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
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.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P309 + P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor/ physician.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/ container to an approved waste disposal plant.

HAZARDOUS according to the criteria of NOHSC DANGEROUS GOODS

2.3 Other hazards

No information available.

SECTION 3: Composition/information on ingredients

Type of product: Mixture

3.2 Mixtures

aromatic polyisocyanate

ca. 35 % in ethyl acetate

Hazardous components

ethyl acetate
Concentration [wt.-%]: ca. 65
EC-No.: 205-500-4
CAS-No.: 141-78-6
GHS Classification: Flam. Liq. 2 H225 Eye Irrit. 2 H319 STOT SE 3 H336

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Concentration [wt.-%]: ca. 25
CAS-No.: 9017-01-0
GHS Classification: Skin Sens. 1B H317

Aromatic polyisocyanate
Concentration [wt.-%]: ca. 10
CAS-No.: 26006-20-2
GHS Classification: Eye Irrit. 2 H319 Skin Sens. 1 H317

Di-isocyanatotoluene (mixture of isomers)
Concentration [wt.-%]: < 0,4
CAS-No.: 26471-62-5
GHS Classification: Acute Tox. 1 Inhalative H330 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Resp. Sens. 1 H334 Skin Sens. 1 H317 Carc. 2 H351 STOT SE 3 H335 Aquatic Chronic 3 H412
Specific threshold concentration (GHS):

Resp. Sens. 1	H334	>= 0,1 %

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.

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	AU NOEL	TWA	200 ppm 720 mg/m3		
ethyl acetate	141-78-6	AU NOEL	STEL	400 ppm 1.440 mg/m3		
ethyl acetate	141-78-6	AU OEL	TWA	200 ppm 720 mg/m3		
ethyl acetate	141-78-6	AU OEL	STEL	400 ppm 1.440 mg/m3		

Di-isocyanatotoluene (mixture of isomers)	26471-62-5	AU NOEL	TWA	0,02 mg/m3		, measured as NCO
Di-isocyanatotoluene (mixture of isomers)	26471-62-5	AU NOEL	STEL	0,07 mg/m3		, measured as NCO
Di-isocyanatotoluene (mixture of isomers)	26471-62-5	AU OEL	TWA	0,02 mg/m3		, measured as NCO
Di-isocyanatotoluene (mixture of isomers)	26471-62-5	AU OEL	STEL	0,07 mg/m3		, measured as NCO

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.

In case of hypersensitivity of the respiratory tract and skin (e.g. asthmatics and those who suffer from chronic bronchitis and chronic skin complaint) it is inadvisable to work with the product.

Symptoms affecting the respiratory tract can also occur several hours after overexposure.

Hand protection
Conditionally suitable materials for protective gloves; EN 374:
Butyl rubber - IIR: thickness >=0,5mm; breakthrough time >=60min.
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:	colourless	
Odour:	solvent-like	
Odour Threshold:	not established	
pH:	not applicable	
Initial boiling point:	ca. 77 °C at 1.013 hPa	
Flash point:	ca. -4 °C	DIN 51755
Evaporation rate:	not established	
Flammability (solid, gas):	not applicable	
Burning number:	not applicable	
Upper/lower flammability or explosive limits:		
ethyl acetate	upper: 11,5 %(V) / lower: 2,2 %(V)	
Di-isocyanatotoluene (mixture of isomers)	upper: 9,5 %(V) / lower: 0,9 %(V)	
Vapour pressure:	ca. 97 hPa at 20 °C	
Vapour density:	not established	
Density:	ca. 1,01 g/cm³ 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

This information is not available.

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

Toxicological studies on the product are not yet available.

Please find below the toxicological data available to us for the components.

11.1 Information on toxicological effects

Acute toxicity, oral
ethyl acetate
LD50 rat, female: 10.170 mg/kg

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
LD50 rat, female: > 2.000 mg/kg
Method: OECD Test Guideline 423

Aromatic polyisocyanate
LD50 rat: > 5.000 mg/kg
Toxicological studies of a comparable product.

Di-isocyanatotoluene (mixture of isomers)
LD50 rat, male: 5.110 mg/kg
Method: OECD Test Guideline 401

LD50 rat, female: 4.130 mg/kg
Method: OECD Test Guideline 401

Acute toxicity, dermal
ethyl acetate
LD50 rabbit, male: > 18.000 mg/kg
m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)

Assessment: The substance or mixture has no acute dermal toxicity
Method: Expert judgement

Aromatic polyisocyanate
LD50 rat: > 1 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Di-isocyanatotoluene (mixture of isomers)
LD50 rabbit, male/female: > 9.400 mg/kg
Method: OECD Test Guideline 402

Acute toxicity, inhalation
ethyl acetate
LC50 rat: > 22,5 mg/l, 6 h
Test atmosphere: vapour

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
LC50 rat, male/female: > 1,839 mg/l, 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity
Method: OECD Test Guideline 403

Aromatic polyisocyanate
LC50 rat: > 3,003 mg/l, 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity
Toxicological studies of a comparable product.

Di-isocyanatotoluene (mixture of isomers)
LC50 rat, male/female: 0,107 mg/l, 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

LC50 rat, male/female: 0,47 mg/l, 1 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

Primary skin irritation
ethyl acetate
Species: rabbit
Exposure duration: 4 h
Result: non-irritant
Classification: No skin irritation

Species: Human experience
Classification: Repeated exposure may cause skin dryness or cracking.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Species: rabbit
Result: slight irritant
Classification: No skin irritation
Method: OECD Test Guideline 404

Aromatic polyisocyanate
Species: rabbit
Exposure duration: 4 h
Result: slight irritant
Classification: No skin irritation
Toxicological studies of a comparable product.

Di-isocyanatotoluene (mixture of isomers)
Species: rabbit
Result: severe irritant
Classification: Causes skin irritation.

Primary mucosae irritation
ethyl acetate
Species: rabbit
Result: slight irritant
Method: OECD Test Guideline 405

Species: Human experience
In high concentrations vapor has irritating effects on eyes and mucous membranes.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Species: rabbit
Result: slight irritant
Classification: No eye irritation
Method: OECD Test Guideline 405

Aromatic polyisocyanate
Species: rabbit
Result: irritating
Classification: Causes serious eye irritation.
Method: OECD Test Guideline 405
Toxicological studies of a comparable product.

Di-isocyanatotoluene (mixture of isomers)
Species: rabbit
Result: severe irritant
Classification: Causes serious eye irritation.

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

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Skin sensitization (local lymph node assay (LLNA)):
Species: Mouse
Result: positive
Classification: H317: May cause sensitization by skin contact (Sub cat. 1B)
Method: OECD Test Guideline 429

Respiratory sensitization

No pulmonary sensitisation observed in animal tests.
No pulmonary sensitisation potential was observed in guinea pigs after either intradermal or inhalative induction with polyisocyanate based on di-isocyanatotoluene.
Studies of a comparable product.

Aromatic polyisocyanate
Skin sensitisation:

Classification: May cause sensitization by skin contact.
Classification according to Directive 2006/121/EC Annex VI

Respiratory sensitization

Classification: No classification according to EC Directives 2006/121/EC or 1999/45/EC as respiratory sensitizer.
No pulmonary sensitisation observed in animal tests.
No pulmonary sensitisation potential was observed in guinea pigs after either intradermal or inhalative induction with polyisocyanate based on di-isocyanatotoluene.

Di-isocyanatotoluene (mixture of isomers)
Skin sensitization (local lymph node assay (LLNA)):
Species: Mouse
Result: positive
Classification: May cause sensitization by skin contact.
Method: OECD Test Guideline 429

Respiratory sensitization

Classification: May cause sensitization by inhalation.
Classification according to Directive 2006/121/EC Annex VI

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

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
NOAEL: 20,6 mg/m³ air
Application Route: Inhalative
Species: rat, male/female
Dose Levels: 0 - 5 - 20 - 80 - 320 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

Di-isocyanatotoluene (mixture of isomers)
LOAEL (Lowest observable adverse effect level): 0,05 ppm
Application Route: Inhalative
Species: rat, male/female

Dose Levels: 0 - 0,05 - 0,15 ppm
Exposure duration: 2 a
Frequency of treatment: 6 hours a day, 5 days a week
Target Organs: Nasal inner lining
Test substance: as vapour
Method: OECD Test Guideline 453

LOAEL (Lowest observable adverse effect level): 0,05 ppm
Application Route: Inhalative
Species: Mouse, male/female
Dose Levels: 0 - 0,05 - 0,15 ppm
Exposure duration: 2 a
Frequency of treatment: 6 hours a day, 5 days a week
Target Organs: Nasal inner lining, Lungs
Test substance: as vapour
Method: OECD Test Guideline 453

Carcinogenicity
ethyl acetate
No data available.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
No data available.

Di-isocyanatotoluene (mixture of isomers)
Species: rat, male/female
Application Route: Inhalative
Dose Levels: 0 - 0,05 - 0,15 ppm
Test substance: as vapour
Exposure duration: 2 a
Frequency of treatment: 6 hours/day, 5 days/week
Method: OECD Test Guideline 453
No increase in the incidence of tumors.

Species: Mouse, male/female
Application Route: Inhalative
Dose Levels: 0 - 0,05 - 0,15 ppm
Test substance: as vapour
Exposure duration: 2 a
Frequency of treatment: 6 hours/day, 5 days/week
Method: OECD Test Guideline 453
No increase in the incidence of tumors.

Reproductive toxicity/Fertility
ethyl acetate
Available data show no indications for reproductive toxicity.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
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.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Available data show no indications for reproductive toxicity.

Di-isocyanatotoluene (mixture of isomers)
NOAEL (teratogenicity): 0,5 ppm

NOAEL (maternal): 0,1 ppm
NOAEL (developmental toxicity): 0,1 ppm
Species: rat, female
Application Route: Inhalative
Dose Levels: 0 - 0,02 - 0,10 - 0,50 ppm
Frequency of treatment: 6 hours/day (Exposure duration: 10 days (day 6 - 15 p.c.))
Test period: 21 d
Test substance: as vapour
Method: OECD Test Guideline 414
Did not show teratogenic effects in animal experiments.

Genotoxicity in vitro
ethyl acetate
Test type: Salmonella/microsome test (Ames test)
Metabolic activation: with/without
Result: No indication of mutagenic effects.
Method: OECD Test Guideline 471

Test type: In vitro mammalian cell gene mutation test
Test system: Mouse lymphoma cells
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 476

Test type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary (CHO) cells
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 473

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Test type: Salmonella/microsome test (Ames test)
Result: No indication of mutagenic effects.
Method: OECD Test Guideline 471

Test type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster V79 cell line
Result: negative
Method: OECD Test Guideline 476

Test type: Chromosome aberration test in vitro
Test system: Chinese hamster V79 cell line
Result: negative
Method: OECD Test Guideline 473

Aromatic polyisocyanate
Test type: Salmonella/microsome test (Ames test)
Result: No indication of mutagenic effects.
Method: OECD Test Guideline 471
Toxicological studies of a comparable product.

Di-isocyanatotoluene (mixture of isomers)
Test type: Salmonella/microsome test (Ames test)
Test system: Salmonella typhimurium
Metabolic activation: without
Result: negative
Method: OECD Test Guideline 471

Test type: Salmonella/microsome test (Ames test)
Test system: Salmonella typhimurium
Metabolic activation: with
Result: positive
Method: OECD Test Guideline 471

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

Di-isocyanatotoluene (mixture of isomers)
Test type: Micronucleus test
Species: Mouse, male/female
Application Route: Inhalative
Exposure duration: 6 h
Result: negative
Method: OECD Test Guideline 474
Test substance: as vapour

STOT evaluation – one-time exposure
ethyl acetate
May cause drowsiness or dizziness.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Based on available data, the classification criteria are not met.

Di-isocyanatotoluene (mixture of isomers)
Route of exposure: Inhalative
Target Organs: Respiratory Tract
May cause respiratory irritation.

STOT evaluation – repeated exposure
ethyl acetate
Based on available data, the classification criteria are not met.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Based on available data, the classification criteria are not met.

Di-isocyanatotoluene (mixture of isomers)
Based on available data, the classification criteria are not met.

Aspiration toxicity

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

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Based on available data, the classification criteria are not met.

Di-isocyanatotoluene (mixture of isomers)
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 an 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.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Carcinogenicity: Based on available data, the classification criteria are not met.
Mutagenicity: In vitro 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.

Di-isocyanatotoluene (mixture of isomers)
Carcinogenicity: Animal testing did not show any carcinogenic effects after inhalation. The European Union classifies this product as a carcinogen. Suspected of causing cancer (Carc. 2).
Mutagenicity: In vitro tests showed mutagenic effects which were not observed with in vivo test. Based on available data, the classification criteria are not met.
Teratogenicity: Did not show teratogenic effects in animal experiments. Based on available data, the classification criteria are not met.
Reproductive toxicity/Fertility: Animal testing did not show any effects on 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.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Acute effects: Based on available data, the classification criteria are not met.
Sensitization: May cause sensitization by skin contact.
Repeated dose toxicity: Based on available data, the classification criteria are not met.

Di-isocyanatotoluene (mixture of isomers)
Acute effects: Fatal if inhaled. Severe skin irritation Severe eye irritation
Sensitization: May cause sensitization by inhalation and skin contact.
Repeated dose toxicity: Based on available data, the classification criteria are not met.

Additional information
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, including concentrations below the UK Workplace Exposure Limit (WEL). Prolonged contact with the skin may cause tanning and irritant effects.

ethyl acetate : Vapours may cause drowsiness and dizziness.

SECTION 12: Ecological information

Ecotoxicological studies of the product are not available.

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

Please find below the ecotoxicological data available to us for the components.

12.1 Toxicity

Acute Fish toxicity
ethyl acetate
LC50 230 mg/l
Test type: flow-through test
Species: Pimephales promelas (fathead minnow)
Exposure duration: 96 h

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
LC50 > 100 mg/l
Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: OECD Test Guideline 201

Aromatic polyisocyanate
No toxic effects with saturated solution. Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: OECD Test Guideline 203
Ecotoxicological reports on a comparable product

Di-isocyanatotoluene (mixture of isomers)
LC50 133 mg/l
Species: Oncorhynchus mykiss (rainbow trout)
Exposure duration: 96 h
Method: OECD Test Guideline 203

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
ethyl acetate
EC50 165 mg/l
Test type: Fresh water study
Species: Daphnia cucullata
Exposure duration: 48 h

EC50 346 mg/l
Test type: Salt water study
Species: Artemia salina
Exposure duration: 24 h

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
EC50 > 100 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202

Aromatic polyisocyanate
No toxic effects with saturated solution. Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202
Ecotoxicological reports on a comparable product

Di-isocyanatotoluene (mixture of isomers)
EC50 12,5 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202

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

Di-isocyanatotoluene (mixture of isomers)
NOEC (Reproduction) 1,1 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d

Acute toxicity for algae
ethyl acetate
ErC50 > 100 mg/l
Test type: Growth inhibition
Species: Desmodesmus subspicatus (Green algae)

Exposure duration: 72 h
Method: OECD Test Guideline 201

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
ErC50 > 100 mg/l
Species: Desmodesmus subspicatus (Green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

NOEC >= 100 mg/l
Species: Desmodesmus subspicatus (Green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

Aromatic polyisocyanate
No toxic effects with saturated solution.
Species: scenedesmus subspicatus
Exposure duration: 72 h
Method: OECD Test Guideline 201
Ecotoxicological reports on a comparable product

Di-isocyanatotoluene (mixture of isomers)
ErC50 4.300 mg/l
Species: Chlorella vulgaris (Fresh water algae)
Exposure duration: 96 h
Method: OECD Test Guideline 201

ErC50 3.230 mg/l
Species: Skeletonema costatum
Exposure duration: 96 h
Method: OECD Test Guideline 201

Acute bacterial toxicity
ethyl acetate
NOEC 650 mg/l
Test type: Cell multiplication inhibition test
Species: Pseudomonas putida
Exposure duration: 16 h
Method: DIN 38412

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
EC50 > 1.000 mg/l
Species: activated sludge
Exposure duration: 3 h
Method: OECD Test Guideline 209

Aromatic polyisocyanate
EC50 > 10.000 mg/l
Species: activated sludge
Method: OECD Test Guideline 209
Ecotoxicological reports on a comparable product

Di-isocyanatotoluene (mixture of isomers)
EC50 > 100 mg/l
Test type: Respiration inhibition
Species: activated sludge
Exposure duration: 3 h
Method: OECD Test Guideline 209

Toxicity to soil dwelling organisms
Di-isocyanatotoluene (mixture of isomers)
NOEC (mortality) > 1.000 mg/kg
Species: Eisenia fetida (earthworms)
Exposure duration: 14 d
Method: OECD Test Guideline 207

Toxicity to terrestrial plants
Di-isocyanatotoluene (mixture of isomers)
NOEC (seedling emergence) > 1.000 mg/kg
Species: Avena sativa (oats)
Exposure duration: 17 d
Method: OECD Test Guideline 208

NOEC (Growth rate) > 1.000 mg/kg
Species: Avena sativa (oats)
Exposure duration: 14 d
Method: OECD Test Guideline 208

NOEC (seedling emergence) > 1.000 mg/kg
Species: Lactuca sativa (lettuce)
Exposure duration: 17 d
Method: OECD Test Guideline 208

NOEC (Growth rate) > 1.000 mg/kg
Species: Lactuca sativa (lettuce)
Exposure duration: 14 d
Method: OECD Test Guideline 208

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.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Acute aquatic toxicity: Based on available data, the classification criteria are not met.
Chronic aquatic toxicity: There is no evidence of a chronic aquatic toxicity.
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.

Di-isocyanatotoluene (mixture of isomers)
Acute aquatic toxicity: Harmful to aquatic organisms.
Chronic aquatic toxicity: May cause long-term adverse effects in the aquatic environment.
Toxicity Data on Soil: The substance is graded as non-critical to soil-dwelling organisms.
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

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Biodegradation: 4 %, 28 d, i.e. not readily degradable
Method: OECD Test Guideline 301 F

Biodegradation: 8 %, 28 d, i.e. not inherently degradable
Method: OECD Test Guideline 302 C

Aromatic polyisocyanate
Biodegradation: 2 %, i.e. not readily degradable
Method: respirometer test
Ecotoxicological reports on a comparable product

Di-isocyanatotoluene (mixture of isomers)
Biodegradation: 0 %, 28 d, i.e. not inherently degradable
Method: OECD Test Guideline 302 C

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.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Test type: Hydrolysis
Half life: 24 h at 20 °C (pH: 7)
Method: OECD Test Guideline 111
The substance hydrolyzes rapidly in water.

Di-isocyanatotoluene (mixture of isomers)
Test type: Hydrolysis
Half life: 0,5 h at 27 °C
The substance hydrolyzes rapidly in water.

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.

Di-isocyanatotoluene (mixture of isomers)
Test type: Phototransformation in air
Temperature: 25 °C
sensitizer: OH-radicals
Half-life indirect photolysis: 2 d
After evaporation or exposure to the air, the product will be moderately degraded by photochemical processes.

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.

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
The substance hydrolyzes rapidly in water.
An accumulation in aquatic organisms is not to be expected.

Di-isocyanatotoluene (mixture of isomers)
An accumulation in aquatic organisms is not to be expected.

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

m-Tolylidene diisocyanate, oligomerisation product (isocyanurate type)
Adsorption/Soil
log Koc value: 5,519
Method: calculated

Di-isocyanatotoluene (mixture of isomers)
Adsorption/Soil
not applicable

Environmental distribution
ethyl acetate
Method: (calculated)
The product will be dispersed amongst the various environmental compartments (soil/ water/ air).

Di-isocyanatotoluene (mixture of isomers)
no data available

12.5 Results of PBT and vPvB assessment

Di-isocyanatotoluene (mixture of isomers)
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

ADG7 - Australia

14.1 UN number	:	1866
14.2 UN proper shipping name	:	RESIN SOLUTION
14.3 Transport hazard class(es)	:	3
Hazchem Code	:	3YE
14.4 Packing group	:	II
14.5 Environmental hazards	:	no

IATA

14.1 UN number	:	1866
14.2 UN proper shipping name	:	RESIN SOLUTION
14.3 Transport hazard class(es)	:	3
14.4 Packing group	:	II
14.5 Environmental hazards	:	no

IMDG

14.1 UN number	:	1866
14.2 UN proper shipping name	:	RESIN 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. Irritating to skin and eyes. Intense smelling. Keep dry. Avoid heat above +50 °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

Schedule 6 (Standard for the Uniform Scheduling of Medicines and Poisons)

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.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H412	Harmful to aquatic life with long lasting effects.

ISOPA Guidelines for safe loading/unloading, transport and storage of TDI and MDI. ISOPA Order No.: PSC-0005-GUIDL

The product is used mainly as a hardener in coating materials or adhesives. The handling of coating materials or adhesives containing reactive polyisocyanates and residual monomeric TDI requires appropriate protective measures referred to in this safety data sheet. These products may therefore be used only in industrial or trade applications. They are not suitable for use in homeworker (DIY) applications.

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.