



## IMPRAFIX TRL SOLUTION

Version 3.6

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

#### 1.1 Product identifier

### IMPRAFIX TRL SOLUTION

**Material number:** 04347455

#### 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

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 3 (H226)  
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-Labeling**



Danger

**Hazardous components which must be listed on the label**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate  
n-Butyl acetate  
hexamethylene-di-isocyanate  
4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

**Hazard statements:**

H226 Flammable liquid and vapour.  
 H332 Harmful if inhaled.  
 H319 Causes serious eye irritation.  
 H317 May cause an allergic skin reaction.  
 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.  
 P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
 P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
 P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 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.  
 P405 Store locked up.  
 P501 Dispose of contents/ container to an approved waste disposal plant.

HAZARDOUS according to the criteria of NOHSC DANGEROUS GOODS

**2.3 Other hazards**

In case of hypersensitivity of the respiratory tract (e.g. asthmatics and those who suffer from chronic bronchitis) it is inadvisable to work with the product.  
 Symptoms affecting the respiratory tract can also occur several hours after overexposure.  
 Dust, vapors and aerosols are the primary risk to the respiratory tract.

**SECTION 3: Composition/information on ingredients**

**Type of product:** Mixture

**3.2 Mixtures**

aromatic-aliphatic polyisocyanate

ca. 60 % in n-butyl acetate

**Hazardous components**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate

Concentration [wt.-%]: ca. 60

CAS-No.: 26426-91-5

GHS Classification: Eye Irrit. 2 H319 Skin Sens. 1 H317

n-Butyl acetate

Concentration [wt.-%]: ca. 40

EC-No.: 204-658-1

CAS-No.: 123-86-4

GHS Classification: Flam. Liq. 3 H226 STOT SE 3 H336

hexamethylene-di-isocyanate

Concentration [wt.-%]: < 0,5

CAS-No.: 822-06-0

GHS Classification: Acute Tox. 1 Inhalative H330 Acute Tox. 4 Oral H302 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Resp. Sens. 1 H334 Skin Sens. 1 H317 STOT SE 3 H335

Specific threshold concentration (GHS):

Resp. Sens. 1 H334 >= 0,5 %

Skin Sens. 1 H317 >= 0,5 %

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

Concentration [wt.-%]: < 0,5

CAS-No.: 584-84-9

GHS Classification: Carc. 2 H351 Acute Tox. 1 Inhalative H330 Eye Irrit. 2 H319 STOT SE 3 H335 Skin Irrit. 2 H315 Resp. Sens. 1 H334 Skin Sens. 1 H317 Aquatic Chronic 3 H412

Total content of monomer toluene diisocyanate and hexamethylenediisocyanate less than 0,5 %.

#### SECTION 4: First aid measures

##### 4.1 Description of first aid measures

**General advice:** Soiled, soaked clothing and shoes must be immediately removed, decontaminated and disposed of.

**If inhaled:** 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 the event of contact with the skin, preferably wash with a cleanser based on polyethylene glycol or with plenty of warm water and soap. 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 vomiting. Wash/clean mouth with water. Medical advice is required.

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

**Notes to physician:** The product irritates the respiratory tract and may trigger sensitisation of the skin and respiratory tract. Treatment of acute irritation or bronchial constriction is primarily symptomatic. Extended medical treatment may be required depending on the degree of exposure and the severity of the symptoms.

##### 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 (CO<sub>2</sub>), 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.

Fire in vicinity poses risk of pressure build-up and rupture. Containers at risk from fire should be cooled with water and, if possible, removed from the danger area.

##### 5.3 Advice for fire-fighters

For firefighting, self-contained breathing apparatus is required, plus a gas-tight chemical hazmat suit.

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). 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 CO<sub>2</sub>!). Keep damp in a safe ventilated area for several days.

Spill area can be decontaminated with the following recommended decontamination solution:

Decontamination solution 1: 8-10% sodium carbonate and 2% of liquid soap in water

Decontamination solution 2: Liquid/yellow soap (potassium soap with ~15% anionic tenside): 20ml;  
Water:700ml; Polyethylenglycol (PEG 400): 350ml

Decontamination solution 3: 30 % commercial laundry detergent containing monoethanolamine, 70 % water

### 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.

Solid products: Avoid formation and deposition of dust.

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.

Products containing solvent: Explosion protection required.

The personal protective measures described in section 8 must be observed. The precautions required in the handling of isocyanates must be taken. Contact with skin and eyes and inhalation of vapors must be avoided under all circumstances.

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
n-Butyl acetate	123-86-4	AU NOEL	STEL	200 ppm 950 mg/m <sup>3</sup>		
n-Butyl acetate	123-86-4	AU NOEL	TWA	150 ppm 713 mg/m <sup>3</sup>		
n-Butyl acetate	123-86-4	AU OEL	TWA	150 ppm 713 mg/m <sup>3</sup>		
n-Butyl acetate	123-86-4	AU OEL	STEL	200 ppm 950 mg/m <sup>3</sup>		
4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate	584-84-9	AU NOEL	STEL	0,07 mg/m <sup>3</sup>		
4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate	584-84-9	AU NOEL	TWA	0,02 mg/m <sup>3</sup>		
4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate	584-84-9	AU OEL	TWA	0,02 mg/m <sup>3</sup>		
4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate	584-84-9	AU OEL	STEL	0,07 mg/m <sup>3</sup>		
hexamethylene-di-isocyanate	822-06-0	AU NOEL	STEL	0,07 mg/m <sup>3</sup>		
hexamethylene-di-isocyanate	822-06-0	AU NOEL	TWA	0,02 mg/m <sup>3</sup>		
hexamethylene-di-isocyanate	822-06-0	AU OEL	TWA	0,02 mg/m <sup>3</sup>		
hexamethylene-di-isocyanate	822-06-0	AU OEL	STEL	0,07 mg/m <sup>3</sup>		

**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 A2-P2 (EN529) 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:

Nitrile rubber - NBR (>= 0.35 mm)

Only suitable as splash protection. Only suitable for brief exposure. In the event of contamination, change protective gloves immediately.

**Eye protection**

Wear eye/face protection.

**Skin and body protection**

Wear suitable protective clothing.

In case of hypersensitivity of the skin it is inadvisable to work with the product.

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

Appearance:	liquid	
Colour:	yellowish	
Odour:	solvent-like	
Odour Threshold:	not established	
pH:	not applicable	
Melting point/range:	ca. -15 °C	
Boiling point/boiling range:	ca. 125 °C at 1.013 hPa	
Flash point:	ca. 28 °C	DIN 53213
Evaporation rate:	not established	
Flammability:	not established	
Burning number:	not established	
Upper/lower flammability or explosive limits:		
n-Butyl acetate	upper: 7,5 %(V) / lower: 1,2 %(V)	
hexamethylene-di-isocyanate	upper: 9,5 %(V) / lower: 0,9 %(V)	
Vapour pressure:	< 20 hPa at 20 °C	
Vapour density:	not established	
Density:	ca. 1,13 g/cm <sup>3</sup> at 20 °C	DIN 51757
Miscibility with water:	immiscible at 15 °C	
Water solubility of ingredients:		
n-Butyl acetate	ca. 10 g/l at 20 °C	
Surface tension:	not established	
Partition coefficient (n-octanol/water):	not established	
Auto-ignition temperature:	not established	
Ignition temperature:	ca. 440 °C	DIN 51794
Decomposition temperature:	not established	
Viscosity, dynamic:	ca. 2.200 mPa.s at 23 °C	DIN EN ISO 3219/A.3
Explosive properties:	not established	
Dust explosion class:	not established	
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**

Polymerises at about 200 °C with evolution of CO<sub>2</sub>.

**10.3 Possibility of hazardous reactions**

Exothermic reaction with amines and alcohols; reacts with water forming CO<sub>2</sub>; 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**

Please find below the data available to us:

**11.1 Information on toxicological effects****Acute toxicity, oral**

LD50 rat: > 5.000 mg/kg

Toxicological studies at the product

**Acute toxicity, dermal**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate

Assessment: no data available

n-Butyl acetate

LD50 rat, male/female: 14.112 mg/kg

Method: OECD Test Guideline 402

hexamethylene-di-isocyanate

LD50 rat, male/female: > 7.000 mg/kg

Method: OECD Test Guideline 402

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

LD50 rabbit, male/female: > 9.400 mg/kg

Method: OECD Test Guideline 402

Studies of a comparable product.

**Acute toxicity, inhalation**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate

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.

n-Butyl acetate

LC50 rat, male/female: > 21 mg/l, 4 h

Test atmosphere: vapour

Method: OECD Test Guideline 403

hexamethylene-di-isocyanate

LC50 rat, male/female: 0,124 mg/l, 4 h

Test atmosphere: vapour

Method: OECD Test Guideline 403

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

LC50 rat, male/female: 0,107 mg/l, 4 h

Test atmosphere: vapour

Method: OECD Test Guideline 403

Toxicological studies of a comparable product.

LC50 rat, male/female: 0,47 mg/l, 1 h  
Test atmosphere: vapour  
Method: OECD Test Guideline 403  
Toxicological studies of a comparable product.

**Primary skin irritation**

Species: rabbit  
Exposure duration: 4 h  
Result: An irritant effect cannot be distinguished from a mechanical load caused by the removal of the test specimen.  
Classification: No skin irritation  
Method: OECD Test Guideline 404  
Toxicological studies at the product

**Primary mucosae irritation**

Species: rabbit  
Result: irritating  
Classification: Causes serious eye irritation.  
Method: OECD Test Guideline 405  
Toxicological studies at the product

**Sensitisation**

Skin sensitisation according to Magnusson/Kligmann (maximizing test):  
Species: Guinea pig  
Result: positive  
Classification: May cause sensitization by skin contact.  
Method: OECD Test Guideline 406  
Toxicological studies at the product

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 hexamethylene diisocyanate.  
No pulmonary sensitisation potential was observed in guinea pigs after either intradermal or inhalative induction with polyisocyanate based on di-isocyanatotoluene.

**Subacute, subchronic and prolonged toxicity**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate  
No data available.

n-Butyl acetate  
NOAEL: 500 ppm  
Application Route: inhalation (vapour)  
Species: rat, male/female  
Dose Levels: 500 - 1500 - 3000 ppm  
Exposure duration: 90 d  
Frequency of treatment: 6 hours a day, 5 days a week

hexamethylene-di-isocyanate  
NOAEL: 0,035 mg/m<sup>3</sup>  
LOAEL (Lowest observable adverse effect level): 0,175 mg/m<sup>3</sup>  
Application Route: Inhalative  
Species: rat, male/female  
Dose Levels: 0 - 0,035 - 0,175 - 1,23 mg/m<sup>3</sup>  
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  
Findings: Irritation to nasal cavity and to lungs.

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate  
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  
Toxicological studies of a comparable product.

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  
Toxicological studies of a comparable product.

**Carcinogenicity**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate  
No data available.

n-Butyl acetate  
No data available.

hexamethylene-di-isocyanate  
Species: rat, male/female  
Application Route: Inhalative  
Dose Levels: 0 - 0,035 - 0,175 - 1,23 mg/m<sup>3</sup>  
Test substance: as vapour  
Exposure duration: 2 a  
Frequency of treatment: 6 hours/day, 5 days/week  
Method: OECD Test Guideline 453  
Did not show carcinogenic effects in animal experiments.

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate  
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.  
Studies of a comparable product.

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.  
Studies of a comparable product.

**Reproductive toxicity/Fertility**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate  
No data available.

n-Butyl acetate  
Test type: Two-generation study  
Species: rat, male/female  
Application Route: Inhalative  
Method: OECD Test Guideline 416  
Animal testing did not show any effects on fertility.

hexamethylene-di-isocyanate

NOAEL – F1: 0,3 ppm  
NOAEL (parents, generally toxicity): 0,005 ppm  
NOAEL (parents, fertility): 0,3 ppm  
Test type: Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test  
Species: rat, male/female  
Application Route: Inhalative  
Dose Levels: 0 - 0,005 - 0,050 - 0,300 ppm  
Test substance: as vapour  
Exposure duration: males: 28 days, females: 50 days  
Frequency of treatment: 6 hours/day 7 days/week  
Exposure time before mating - Male: 14 d  
Exposure time before mating - Female: 14 d  
Method: OECD Test Guideline 422  
Fertility and developmental toxicity tests did not reveal any effect on reproduction.

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

NOAEL - Parents: 0,08 ppm  
NOAEL – F1: 0,03 ppm  
NOAEL – F2: 0,02 ppm  
Test type: Two-generation study  
Species: rat, male/female  
Application Route: Inhalative  
Dose Levels: 0 - 0,02 - 0,08 - 0,3 ppm  
Test substance: as vapour  
Frequency of treatment: (6 hours a day, 5 days a week)  
Method: OECD Test Guideline 416  
Animal testing did not show any effects on fertility.  
Studies of a comparable product.

#### **Reproductive toxicity/Teratogenicity**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate  
No data available.

n-Butyl acetate

NOAEL (teratogenicity): 1500 ppm  
Species: rat, female  
Application Route: Inhalative  
Method: OECD Test Guideline 414  
Did not show teratogenic effects in animal experiments.

hexamethylene-di-isocyanate

NOAEL (teratogenicity): 0,3 ppm  
NOAEL (maternal): 0,005 ppm  
NOAEL (developmental toxicity): 0,3 ppm  
Species: rat, female  
Application Route: Inhalative  
Dose Levels: 0 - 0,005 - 0,050 - 0,300 ppm  
Frequency of treatment: 6 hours/day (Exposure duration: day 0 - 19 of gestation)  
Test substance: as vapour  
Method: OECD Test Guideline 414  
Did not show teratogenic effects in animal experiments.

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

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.  
Studies of a comparable product.

**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

**Genotoxicity in vivo**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate

No data available.

n-Butyl acetate

Test type: In vivo micronucleus test

Species: Mouse

Application Route: Oral

Result: negative

Method: OECD Test Guideline 474

Studies of a comparable product.

hexamethylene-di-isocyanate

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

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

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

Toxicological studies of a comparable product.

**STOT evaluation – one-time exposure**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate

No data available.

n-Butyl acetate

May cause drowsiness or dizziness.

hexamethylene-di-isocyanate

Route of exposure: Inhalative

Target Organs: Respiratory Tract

May cause respiratory irritation.

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

Route of exposure: Inhalative

Target Organs: Respiratory Tract

May cause respiratory irritation.

**STOT evaluation – repeated exposure**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate

No data available.

n-Butyl acetate

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

hexamethylene-di-isocyanate

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

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

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

**Aspiration toxicity**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate  
No data available.

n-Butyl acetate

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

hexamethylene-di-isocyanate

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

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

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

**CMR Assessment**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate

Carcinogenicity: No data available.

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

Teratogenicity: No data available.

Reproductive toxicity/Fertility: No data available.

n-Butyl acetate

Carcinogenicity: No data available.

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

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

Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

hexamethylene-di-isocyanate

Carcinogenicity: Did not show carcinogenic effects in animal experiments. Based on available data, the classification criteria are not met.

Mutagenicity: In vitro and in vivo tests did not show mutagenic effects. 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.

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

Carcinogenicity: Animal testing did not show any carcinogenic effects after inhalation. The European Union classifies this product as a carcinogen. Suspected of causing cancer by inhalation (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**

n-Butyl acetate

Acute effects: Based on available data, the classification criteria are not met.

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

hexamethylene-di-isocyanate

Acute effects: Fatal if inhaled. Harmful if swallowed. Causes severe skin burns and eye damage.

Sensitization: May cause sensitization by inhalation and skin contact.

Repeated dose toxicity: Based on available data, the classification criteria are not met.

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

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, especially when spraying coatings containing isocyanate without the necessary precautions, 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 occupational exposure limit. Prolonged contact with the skin may cause tanning and irritant effects.

Animal tests and other research indicate that skin contact with diisocyanates can play a role in causing isocyanate sensitization and respiratory reaction.

**SECTION 12: Ecological information**

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

Please find below the data available to us:

**12.1 Toxicity****Acute Fish toxicity**

LC50

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**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate

No data available.

n-Butyl acetate

No data available.

**Acute toxicity for daphnia**

EC50

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**

polyisocyanate based on hexamethylene diisocyanate/toluene diisocyanate

No data available.

n-Butyl acetate

NOEC 23 mg/l

Species: Daphnia magna (Water flea)

Exposure duration: 21 d

Method: OECD Test Guideline 211

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

NOEC (Reproduction) 1,1 mg/l

Species: Daphnia magna (Water flea)

Exposure duration: 21 d

Studies of a comparable product.

**Acute toxicity for algae**

IC50

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 > 1.000 mg/l  
Species: activated sludge  
Exposure duration: 3 h  
Method: OECD Test Guideline 209  
Ecotoxicological studies of the product

**Toxicity to soil dwelling organisms**

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate  
NOEC (mortality) > 1.000 mg/kg  
Species: Eisenia fetida (earthworms)  
Exposure duration: 14 Days  
Method: OECD Test Guideline 207  
Studies of a comparable product.

**Toxicity to terrestrial plants**

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate  
NOEC (seedling emergence) > 1.000 mg/kg  
Species: Avena sativa (oats)  
Exposure duration: 17 d  
Method: OECD Test Guideline 208  
Studies of a comparable product.

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

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

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

**Ecotoxicology Assessment**

n-Butyl acetate

Acute aquatic toxicity: Harmful to aquatic life.

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.

hexamethylene-di-isocyanate

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.

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

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**

Biodegradation: < 60 %, 28 d, i.e. not readily degradable

Method: OECD Test Guideline 301 F

Ecotoxicological reports on a comparable product

**Stability in water**

hexamethylene-di-isocyanate

Test type: Hydrolysis

Half life: 0,23 h at 23 °C

The substance hydrolyzes rapidly in water.

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

Test type: Hydrolysis

Half life: 0,7 h at 27 °C

The substance hydrolyzes rapidly in water.

**Photodegradation**

hexamethylene-di-isocyanate

Test type: Phototransformation in air

Temperature: 25 °C

sensitizer: OH-radicals

Half-life indirect photolysis: 48,4 h

Method: SRC - AOP (calculation)

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

Test type: Phototransformation in air

Temperature: 25 °C

sensitizer: OH-radicals

Half-life indirect photolysis: 5,6 h

Method: SRC - AOP (calculation)

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

Studies of hydrolysis products.

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

Test type: Phototransformation in air

sensitizer: OH-radicals

Concentration sensibilisator: 500.000 1/cm<sup>3</sup>

Half-life indirect photolysis: 1,71 d

Method: SRC - AOP (calculation)

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

**Volatility (Henry's Law constant)**

hexamethylene-di-isocyanate

Calculated value = 5 Pa\*m<sup>3</sup>/mol at 25 °C

Method: Bond-method

The substance has to be scored as non-volatile from water.

**12.3 Bioaccumulative potential****Bioaccumulation**

hexamethylene-di-isocyanate

Bioconcentration factor (BCF): 57,6

Species: value calculated

Method: (calculated)

An accumulation in aquatic organisms is not to be expected.

Bioconcentration factor (BCF): 3,2

Species: value calculated

Method: (calculated)

An accumulation in aquatic organisms is not to be expected.

Studies of hydrolysis products.

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

An accumulation in aquatic organisms is not to be expected.

#### 12.4 Mobility in soil

##### Distribution among environmental compartments

hexamethylene-di-isocyanate

Adsorption/Soil

not applicable

4-methyl-m-phenylene diisocyanate; toluene-2,6-di-isocyanate

Adsorption/Soil

not applicable

##### Environmental distribution

hexamethylene-di-isocyanate

not applicable

#### 12.5 Results of PBT and vPvB assessment

No data available.

#### 12.6 Other adverse effects

Isocyanate reacts with water at the interface forming CO<sub>2</sub> 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). Packaging empty of usable product can be handed to a professional waste management company; in the EU, this is done per packaging type at collection points run by the existing take-back systems for the chemicals industry. The product and hazardous substance labelling must be left intact on the packaging.

Alternatively, the product and hazardous substance labelling can be removed if the product residues adhering to the sides are rendered non-hazardous. This packaging can also be handed to the collection points run by the existing take-back systems for the chemicals industry for packaging type-specific recycling.

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 : 3Y  
14.4 Packing group : III  
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 : III



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 : III  
14.5 Marine pollutant : no  
EmS Code : F-E - S-E  
Segregation Group IMDG : not applicable

**14.6 Special precautions for user**

See section 6 - 8.

Additional information : Combustible.  
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**

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

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

Products containing solvent:

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

**SECTION 16: Other information****Full text of the hazard statements of the CLP classification (1272/2008/CE) referred to under sections 2, 3 and 10.**

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
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 directives for safe loading/unloading, transport and storage of TDI and MDI. See ISOPA website: [www.isopa.org](http://www.isopa.org) (Product Stewardship „Walk the Talk“).

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/HDI 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 homemaker (DIY) applications.

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,

**IMPRAFIX TRL SOLUTION**

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.