



## Safety Data Sheet according to (EC) No 1907/2006 as amended

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LOCTITE UK 5400 B

SDS No. : 488272

V006.0

Revision: 14.12.2023

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Replaces version from: 31.10.2023

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

#### 1.1. Product identifier

LOCTITE UK 5400 B

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

Intended use:

Hardener

#### 1.3. Details of the supplier of the safety data sheet

Henkel AG & Co. KGaA

Henkelstr. 67

40589 Düsseldorf

Germany

Phone: +49 211 797 0

SDSinfo.Adhesive@henkel.com

For Safety Data Sheet updates please visit our website <https://mysds.henkel.com/index.html#/appSelection> or [www.henkel-adhesives.com](http://www.henkel-adhesives.com).

#### 1.4. Emergency telephone number

The Henkel information service also provides an around-the-clock telephone service on phone no.+49-(0)211-797-3350 for exceptional cases.

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification (CLP):

Acute toxicity	Category 4
H332 Harmful if inhaled.	
Route of Exposure: Inhalation	
Skin irritation	Category 2
H315 Causes skin irritation.	
Serious eye irritation	Category 2
H319 Causes serious eye irritation.	
Respiratory sensitizer	Category 1
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.	
Skin sensitizer	Category 1
H317 May cause an allergic skin reaction.	
Carcinogenicity	Category 2
H351 Suspected of causing cancer.	
Specific target organ toxicity - single exposure	Category 3
H335 May cause respiratory irritation.	
Target organ: respiratory tract irritation	
Specific target organ toxicity - repeated exposure	Category 2
H373 May cause damage to organs through prolonged or repeated exposure.	

## 2.2. Label elements

### Label elements (CLP):

**Hazard pictogram:**



**Contains**

Diphenylmethane diisocyanate, isomers and homologues

**Signal word:**

Danger

**Hazard statement:**

H315 Causes skin irritation.  
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.  
H335 May cause respiratory irritation.  
H351 Suspected of causing cancer.  
H373 May cause damage to organs through prolonged or repeated exposure.

**Supplemental information**

As from 24 August 2023 adequate training is required before industrial or professional use.  
Further information: <https://www.feica.eu/PUinfo>

**Precautionary statement:  
Prevention**

P260 Do not breathe mist/spray.  
P280 Wear protective gloves/eye protection.

**Precautionary statement:  
Response**

P308+P313 IF exposed or concerned: Get medical advice/attention.  
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor.

## 2.3. Other hazards

Following substances are present in a concentration  $\geq$  the concentration limit for depiction in Section 3 and fulfill the criteria for PBT/vPvB, or were identified as endocrine disruptor (ED):

This mixture does not contain any substances in a concentration  $\geq$  the concentration limit for depiction in Section 3 that are assessed to be a PBT, vPvB or ED.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

**Declaration of the ingredients according to CLP (EC) No 1272/2008:**

<b>Hazardous components CAS-No. EC Number REACH-Reg No.</b>	<b>Concentration</b>	<b>Classification</b>	<b>Specific Conc. Limits, M- factors and ATEs</b>	<b>Add. Information</b>
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	40- 60 %	Carc. 2, H351 Acute Tox. 4, Inhalation, H332 STOT RE 2, H373 Eye Irrit. 2, H319 STOT SE 3, H335 Skin Irrit. 2, H315 Resp. Sens. 1, H334 Skin Sens. 1, H317	Eye Irrit. 2; H319; C >= 5 % Skin Irrit. 2; H315; C >= 5 % Resp. Sens. 1; H334; C >= 0,1 % STOT SE 3; H335; C >= 5 % ===== inhalation:ATE = 1,5 mg/l;dust/mist	
4,4'- methylenediphenyl diisocyanate 101-68-8 202-966-0 01-2119457014-47	20- 40 %	Carc. 2, H351 Acute Tox. 4, Inhalation, H332 STOT RE 2, H373 Eye Irrit. 2, H319 STOT SE 3, H335 Skin Irrit. 2, H315 Resp. Sens. 1, H334 Skin Sens. 1, H317	Eye Irrit. 2; H319; C >= 5 % Skin Irrit. 2; H315; C >= 5 % Resp. Sens. 1; H334; C >= 0,1 % STOT SE 3; H335; C >= 5 %	
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1 227-534-9 01-2119480143-45	1- < 5 %	STOT RE 2, H373 Carc. 2, H351 Acute Tox. 4, Inhalation, H332 Eye Irrit. 2, H319 STOT SE 3, H335 Skin Irrit. 2, H315 Skin Sens. 1, H317 Resp. Sens. 1, H334	Eye Irrit. 2; H319; C >= 5 % Skin Irrit. 2; H315; C >= 5 % Resp. Sens. 1; H334; C >= 0,1 % STOT SE 3; H335; C >= 5 %	
2,2'-Methylenediphenyl diisocyanate 2536-05-2 219-799-4 01-2119927323-43	0,1- < 1 %	STOT RE 2, H373 Carc. 2, H351 Acute Tox. 4, Inhalation, H332 Eye Irrit. 2, H319 STOT SE 3, H335 Skin Irrit. 2, H315 Resp. Sens. 1, H334 Skin Sens. 1, H317	Eye Irrit. 2; H319; C >= 5 % Skin Irrit. 2; H315; C >= 5 % Resp. Sens. 1; H334; C >= 0,1 % STOT SE 3; H335; C >= 5 %	

If no ATE values are displayed, please refer to LD/LC50 values in Section 11.

For full text of the H - statements and other abbreviations see section 16 "Other information".

**SECTION 4: First aid measures****4.1. Description of first aid measures**

General information:

Symptoms of poisoning may occur even after several hours, continue medical observation for at least 48 hours after the accident.

Inhalation:

Fresh air, oxygen supply, warmth; seek specialist medical attention.

Delayed effects possible after inhalation.

Skin contact:

IF ON SKIN: Wash with plenty of soap and water.

In case of adverse health effects seek medical advice.

Eye contact:

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Ingestion:

Rinse mouth, drink 1-2 glasses of water, do not induce vomiting, consult a doctor.

**4.2. Most important symptoms and effects, both acute and delayed**

RESPIRATORY: Irritation, coughing, shortness of breath, chest tightness.

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

SKIN: Redness, inflammation.

EYE: Irritation, conjunctivitis.

SKIN: Rash, Urticaria.

**4.3. Indication of any immediate medical attention and special treatment needed**

See section: Description of first aid measures

## SECTION 5: Firefighting measures

**5.1. Extinguishing media**

**Suitable extinguishing media:**

All common extinguishing agents are suitable.

**Extinguishing media which must not be used for safety reasons:**

High pressure waterjet

**5.2. Special hazards arising from the substance or mixture**

In case of fire toxic gases can be released.

**5.3. Advice for firefighters**

Wear self-contained breathing apparatus.

Wear protective equipment.

## SECTION 6: Accidental release measures

**6.1. Personal precautions, protective equipment and emergency procedures**

Wear protective equipment.

Avoid contact with skin and eyes.

Keep unprotected persons away.

Danger of slipping on spilled product.

**6.2. Environmental precautions**

Do not empty into drains / surface water / ground water.

**6.3. Methods and material for containment and cleaning up**

Remove with liquid-absorbing material (sand, peat, sawdust).

Dispose of contaminated material as waste according to Section 13.

**6.4. Reference to other sections**

See advice in section 8

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling**

Hygiene measures:

Take off contaminated clothing and wash before reuse.

Wash hands before work breaks and after finishing work.

Do not eat, drink or smoke while working.

**7.2. Conditions for safe storage, including any incompatibilities**

Ensure good ventilation/extraction.

Keep container tightly sealed and store in a frost free place.

< + 15 °C

> + 30 °C

**7.3. Specific end use(s)**

Hardener

**SECTION 8: Exposure controls/personal protection****8.1. Control parameters****Occupational Exposure Limits**Valid for  
Germany

<b>Ingredient [Regulated substance]</b>	<b>ppm</b>	<b>mg/m<sup>3</sup></b>	<b>Value type</b>	<b>Short term exposure limit category / Remarks</b>	<b>Regulatory list</b>
Diphenylmethane diisocyanate, isomers and homologs 9016-87-9			STEL (Short Term Exposure Limit) factor:	1 Substance listed with both Peak factor and STEL factor. The Peak factor is supplied with the AGW values.	TRGS 900
Diphenylmethane diisocyanate, isomers and homologs 9016-87-9			Skin designation:	Can be absorbed through the skin.	TRGS 900
Diphenylmethane diisocyanate, isomers and homologs 9016-87-9			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900
Diphenylmethane diisocyanate, isomers and homologs 9016-87-9		0,05	Exposure limit(s):	2 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
4,4'-Methylenediphenyl diisocyanate 101-68-8			Skin designation:	Can be absorbed through the skin.	TRGS 900
4,4'-Methylenediphenyl diisocyanate 101-68-8			STEL (Short Term Exposure Limit) factor:	1 Substance listed with both Peak factor and STEL factor. The Peak factor is supplied with the AGW values.	TRGS 900
4,4'-Methylenediphenyl diisocyanate 101-68-8		0,05	Exposure limit(s):	2 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
4,4'-Methylenediphenyl diisocyanate 101-68-8			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1			STEL (Short Term Exposure Limit) factor:	1 Substance listed with both Peak factor and STEL factor. The Peak factor is supplied with the AGW values.	TRGS 900
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1		0,05	Exposure limit(s):	2	TRGS 900
2,2'-Methylenediphenyl diisocyanate 2536-05-2			STEL (Short Term Exposure Limit) factor:	1 Substance listed with both Peak factor and STEL factor. The Peak factor is supplied with the AGW values.	TRGS 900
2,2'-Methylenediphenyl diisocyanate 2536-05-2			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900
2,2'-Methylenediphenyl diisocyanate		0,05	Exposure limit(s):	2	TRGS 900

2536-05-2					
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**Predicted No-Effect Concentration (PNEC):**

Name on list	Environmental Compartment	Exposure period	Value				Remarks
			mg/l	ppm	mg/kg	others	
4,4'-methylenediphenyl diisocyanate 101-68-8	aqua (freshwater)		0,0037 mg/l				
4,4'-methylenediphenyl diisocyanate 101-68-8	aqua (intermittent releases)		0,037 mg/l				
4,4'-methylenediphenyl diisocyanate 101-68-8	aqua (marine water)		0,00037 mg/l				
4,4'-methylenediphenyl diisocyanate 101-68-8	sediment (freshwater)				11,7 mg/kg		
4,4'-methylenediphenyl diisocyanate 101-68-8	sediment (freshwater)				1,17 mg/kg		
4,4'-methylenediphenyl diisocyanate 101-68-8	Soil				2,33 mg/kg		
4,4'-methylenediphenyl diisocyanate 101-68-8	Predator						no potential for bioaccumulation
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	aqua (marine water)		0,1 mg/l				
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	sewage treatment plant (STP)		1 mg/l				
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	aqua (intermittent releases)		10 mg/l				
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	aqua (freshwater)		1 mg/l				
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	Soil				1 mg/kg		
2,2'-Methylenediphenyl diisocyanate 2536-05-2	aqua (freshwater)		1 mg/l				
2,2'-Methylenediphenyl diisocyanate 2536-05-2	aqua (marine water)		0,1 mg/l				
2,2'-Methylenediphenyl diisocyanate 2536-05-2	Soil				1 mg/kg		
2,2'-Methylenediphenyl diisocyanate 2536-05-2	sewage treatment plant (STP)		1 mg/l				
2,2'-Methylenediphenyl diisocyanate 2536-05-2	aqua (intermittent releases)		10 mg/l				

**Derived No-Effect Level (DNEL):**

Name on list	Application Area	Route of Exposure	Health Effect	Exposure Time	Value	Remarks
4,4'- methylenediphenyl diisocyanate 101-68-8	Workers	inhalation	Long term exposure - local effects		0,05 mg/m3	no potential for bioaccumulation
4,4'- methylenediphenyl diisocyanate 101-68-8	Workers	inhalation	Acute/short term exposure - local effects		0,1 mg/m3	no potential for bioaccumulation
4,4'- methylenediphenyl diisocyanate 101-68-8	General population	inhalation	Long term exposure - local effects		0,025 mg/m3	no potential for bioaccumulation
4,4'- methylenediphenyl diisocyanate 101-68-8	General population	inhalation	Acute/short term exposure - local effects		0,05 mg/m3	no potential for bioaccumulation
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	Workers	inhalation	Acute/short term exposure - local effects		0,1 mg/m3	
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	Workers	inhalation	Long term exposure - local effects		0,05 mg/m3	
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	General population	inhalation	Acute/short term exposure - local effects		0,05 mg/m3	
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	General population	inhalation	Long term exposure - local effects		0,025 mg/m3	
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	Workers	dermal	Long term exposure - local effects			
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	Workers	dermal	Acute/short term exposure - local effects			
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	General population	dermal	Long term exposure - local effects			
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	General population	dermal	Acute/short term exposure - local effects			
2,2'-Methylenediphenyl diisocyanate 2536-05-2	Workers	inhalation	Acute/short term exposure - local effects		0,1 mg/m3	
2,2'-Methylenediphenyl diisocyanate 2536-05-2	Workers	inhalation	Long term exposure - local effects		0,05 mg/m3	
2,2'-Methylenediphenyl diisocyanate 2536-05-2	General population	inhalation	Acute/short term exposure - local effects		0,05 mg/m3	
2,2'-Methylenediphenyl diisocyanate 2536-05-2	General population	inhalation	Long term exposure - local effects		0,025 mg/m3	
2,2'-Methylenediphenyl diisocyanate 2536-05-2	Workers	dermal	Long term exposure - local effects			
2,2'-Methylenediphenyl diisocyanate 2536-05-2	Workers	dermal	Acute/short term exposure - local effects			
2,2'-Methylenediphenyl diisocyanate 2536-05-2	General population	dermal	Long term exposure - local effects			
2,2'-Methylenediphenyl diisocyanate 2536-05-2	General population	dermal	Acute/short term exposure - local effects			



**Biological Exposure Indices:**

Ingredient [Regulated substance]	Parameters	Biological specimen	Sampling time	Conc.	Basis of biol. exposure index	Remark	Additional Information
4,4'-Methylenediphenyl diisocyanate 101-68-8	4,4-Diaminodiphenylmethane	Creatinine in urine	Sampling time: End of shift.	10 µg/g	DE BAT	BAT values reflect the total physical load of workplace substances absorbed through inhalation, dermally, etc. With occupational exposure to MDI, parameter 4,4'-Diaminodiphenylmethane (MDA) in the urine covers all components of a complex MDI mixture, since both monomers and oligomers of the MDI are degraded independent of the exposure path of the monomeric MDI. In contrast, the MAK value for MDI takes into account only the monomer MDI portion.	

**8.2. Exposure controls:**

Engineering controls:

Use only in well ventilated areas.

Draw off vapors and fumes directly at the point of generation or release. In the case of regular work use bench-mounted extraction equipment.

Respiratory protection:

In case of aerosol formation, we recommend wearing of appropriate respiratory protection equipment with ABEK P2 filter (EN 14387).

This recommendation should be matched to local conditions.

**Hand protection:**

Chemical-resistant protective gloves (EN 374).

Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to > 30 minutes permeation time as per EN 374):

nitrile rubber (NBR;  $\geq 0.4$  mm thickness)

Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374):

nitrile rubber (NBR;  $\geq 0.4$  mm thickness)

This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

**Eye protection:**

Goggles which can be tightly sealed.

Protective eye equipment should conform to EN166.

**Skin protection:**

Wear protective equipment.

Protective clothing that covers arms and legs.

Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

**Advices to personal protection equipment:**

Use only personal protection that's CE-labelled according to Directive 89/686/EEC (Europe) or to Regulation No. 819 of 19 August 1994 (Norway), or equivalent.

The information provided on personal protective equipment is for guidance purposes only. A full risk assessment should be conducted prior to using this product to determine the appropriate personal protective equipment to suit local conditions.

Personal protective equipment should conform to the relevant EN standard.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Delivery form	liquid
Colour	brown
Odor	aromatic
Physical state	liquid
Melting point	Not applicable, Product is a liquid
Solidification temperature	$< 10\text{ }^{\circ}\text{C}$ ( $< 50\text{ }^{\circ}\text{F}$ )
Initial boiling point	$> 300\text{ }^{\circ}\text{C}$ ( $> 572\text{ }^{\circ}\text{F}$ )
Flammability	Not applicable Non flammable product (flash point is greater than $93^{\circ}\text{C}$ )
Explosive limits	Not applicable, The product is not flammable.
Flash point	$> 200\text{ }^{\circ}\text{C}$ ( $> 392\text{ }^{\circ}\text{F}$ )
Auto-ignition temperature	$> 500\text{ }^{\circ}\text{C}$ ( $> 932\text{ }^{\circ}\text{F}$ )
Decomposition temperature	$> 250\text{ }^{\circ}\text{C}$ ( $> 482\text{ }^{\circ}\text{F}$ );
pH	Not applicable, Product reacts with water.
Viscosity (kinematic) ( $40\text{ }^{\circ}\text{C}$ ( $104\text{ }^{\circ}\text{F}$ ); )	$> 20,5\text{ mm}^2/\text{s}$
Viscosity, dynamic (Brookfield; Instrument: RVT; $20\text{ }^{\circ}\text{C}$ ( $68\text{ }^{\circ}\text{F}$ ); speed of rotation: 20 min-1; Spindle No: 2)	150 - 350 mPa.s TE1002-208; Viscosity by Brookfield
Solubility (qualitative) ( $20\text{ }^{\circ}\text{C}$ ( $68\text{ }^{\circ}\text{F}$ ); Solvent: Water)	Reacts slowly with water to liberate carbon dioxide gas.
Solubility (qualitative) ( $20\text{ }^{\circ}\text{C}$ ( $68\text{ }^{\circ}\text{F}$ ); Solvent: Water)	Insoluble
Partition coefficient: n-octanol/water	Not applicable Mixture
Vapour pressure ( $20\text{ }^{\circ}\text{C}$ ( $68\text{ }^{\circ}\text{F}$ ))	$< 0,00001\text{ hPa}$
Vapour pressure ( $50\text{ }^{\circ}\text{C}$ ( $122\text{ }^{\circ}\text{F}$ ))	$< 0,0005\text{ hPa}$
Density ( $20\text{ }^{\circ}\text{C}$ ( $68\text{ }^{\circ}\text{F}$ ))	1,17 - 1,27 g/cm <sup>3</sup> DIN/EN ISO 2811-1
Relative vapour density:	$> 1$

(20 °C)  
Particle characteristics

Not applicable  
Product is a liquid

## 9.2. Other information

Other information not applicable for this product

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Reaction with water, alcohols, amines.

Reacts with water: Pressure built up in closed vessel (CO<sub>2</sub>).

### 10.2. Chemical stability

Stable under recommended storage conditions.

### 10.3. Possibility of hazardous reactions

See section reactivity

### 10.4. Conditions to avoid

Humidity

### 10.5. Incompatible materials

See section reactivity.

### 10.6. Hazardous decomposition products

At higher temperatures isocyanate may be released.

Carbon dioxide is generated under contact with moisture, leading to pressure in the cans. Danger of cans bursting!

## SECTION 11: Toxicological information

### General toxicological information:

An allergic reaction cannot be excluded after repeated skin contact.

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Acute oral toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	LD50	> 2.000 mg/kg	rat	OECD Guideline 401 (Acute Oral Toxicity)
4,4'-methylenediphenyl diisocyanate 101-68-8	LD50	> 2.000 mg/kg	rat	other guideline:
o-(p- Isocyanatobenzyl)phenyl isocyanate 5873-54-1	LD50	> 2.000 mg/kg	rat	other guideline:
2,2'-Methylenediphenyl diisocyanate 2536-05-2	LD50	> 2.000 mg/kg	rat	EU Method B.1 (Acute Toxicity (Oral))

**Acute dermal toxicity:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	LD50	> 9.400 mg/kg	rat	OECD Guideline 402 (Acute Dermal Toxicity)
4,4'-methylenediphenyl diisocyanate 101-68-8	LD50	> 9.400 mg/kg	rabbit	OECD Guideline 402 (Acute Dermal Toxicity)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	LD50	> 9.400 mg/kg	rabbit	OECD Guideline 402 (Acute Dermal Toxicity)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	LD50	> 9.400 mg/kg	rabbit	OECD Guideline 402 (Acute Dermal Toxicity)

**Acute inhalative toxicity:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Test atmosphere	Exposure time	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	Acute toxicity estimate (ATE)	1,5 mg/l	dust/mist	4 h		Expert judgement

**Skin corrosion/irritation:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	irritating		rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
4,4'-methylenediphenyl diisocyanate 101-68-8	irritating	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	irritating		rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

**Serious eye damage/irritation:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	irritating		human	Weight of evidence
4,4'-methylenediphenyl diisocyanate 101-68-8	irritating		human	Weight of evidence

**Respiratory or skin sensitization:**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Test type	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	sensitising	Skin sensitisation	guinea pig	OECD Guideline 406 (Skin Sensitisation)
4,4'-methylenediphenyl diisocyanate 101-68-8	sensitising	Buehler test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
4,4'-methylenediphenyl diisocyanate 101-68-8	sensitising	Respiratory sensitisation	guinea pig	not specified
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	sensitising	Respiratory sensitisation	guinea pig	not specified
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	not sensitising	Buehler test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	sensitising	Mouse local lymphnode assay (LLNA)	mouse	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	sensitising	Mouse local lymphnode assay (LLNA)	mouse	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	sensitising	Respiratory sensitisation	guinea pig	not specified

**Germ cell mutagenicity:**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Type of study / Route of administration	Metabolic activation / Exposure time	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		EU Method B.13/14 (Mutagenicity)
4,4'-methylenediphenyl diisocyanate 101-68-8	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		EU Method B.13/14 (Mutagenicity)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
4,4'-methylenediphenyl diisocyanate 101-68-8	negative	inhalation		rat	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	negative	inhalation		rat	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	negative	inhalation		rat	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)

**Carcinogenicity**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous components CAS-No.	Result	Route of application	Exposure time / Frequency of treatment	Species	Sex	Method
4,4'-methylenediphenyl diisocyanate 101-68-8	carcinogenic	inhalation: aerosol	2 y 6 h/d	rat	male/female	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	carcinogenic	inhalation: aerosol	2 y 6 h/d, 5 d/w	rat	male/female	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	carcinogenic	inhalation: aerosol	2 y 6 h/d, 5 d/w	rat	male/female	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

**Reproductive toxicity:**

No data available.

**STOT-single exposure:**

No data available.

**STOT-repeated exposure:**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result / Value	Route of application	Exposure time / Frequency of treatment	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	NOAEL 0,0002 mg/l	inhalation: aerosol	2 y 6 h per d, 5 d per week	rat	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
4,4'-methylenediphenyl diisocyanate 101-68-8	NOAEL 0,0002 mg/l	inhalation: aerosol	main: 2 y; satellite: 1 y 6 h/d; 5 d/w	rat	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	NOAEL 0,2 mg/m <sup>3</sup>	inhalation: aerosol	2 y 6 h/d, 5 d/w	rat	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	NOAEL 0,2 mg/m <sup>3</sup>	inhalation: aerosol	2 y 6 h/d, 5 d/w	rat	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

**Aspiration hazard:**

No data available.

**11.2 Information on other hazards**

not applicable



**SECTION 12: Ecological information****General ecological information:**

Do not empty into drains, soil or bodies of water.

**12.1. Toxicity****Toxicity (Fish):**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	LC50	> 1.000 mg/l	96 h	Brachydanio rerio (new name: Danio rerio)	OECD Guideline 203 (Fish, Acute Toxicity Test)
4,4'-methylenediphenyl diisocyanate 101-68-8	LL50	> 100 mg/l	96 h	Danio rerio	OECD Guideline 203 (Fish, Acute Toxicity Test)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	LC50	Toxicity > Water Solubility	96 h	Danio rerio	OECD Guideline 203 (Fish, Acute Toxicity Test)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	LC50	Toxicity > Water solubility	96 h	Danio rerio	OECD Guideline 203 (Fish, Acute Toxicity Test)

**Toxicity (aquatic invertebrates):**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	EC50	> 1.000 mg/l	24 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
4,4'-methylenediphenyl diisocyanate 101-68-8	EC50	> 100 mg/l	48 h	Daphnia magna	EU Method C.2 (Acute Toxicity for Daphnia)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	EC50	Toxicity > Water Solubility	24 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	EC50	Toxicity > Water solubility	24 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)

**Chronic toxicity (aquatic invertebrates):**

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	NOEC	10 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
4,4'-methylenediphenyl diisocyanate 101-68-8	NOEC	10 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	NOEC	Toxicity > Water solubility	21 day	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)



2,2'-Methylenediphenyl diisocyanate 2536-05-2	NOEC	Toxicity > Water solubility	21 day	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
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**Toxicity (Algae):**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	EC50	> 1.640 mg/l	72 h	Desmodesmus subspicatus	OECD Guideline 201 (Alga, Growth Inhibition Test)
4,4'- methylenediphenyl diisocyanate 101-68-8	EL50	> 100 mg/l	72 h	Desmodesmus subspicatus	OECD Guideline 201 (Alga, Growth Inhibition Test)
4,4'- methylenediphenyl diisocyanate 101-68-8	NOELR	100 mg/l	72 h	Desmodesmus subspicatus	OECD Guideline 201 (Alga, Growth Inhibition Test)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	EC50	Toxicity > Water Solubility	72 h	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	NOELR	Toxicity > Water Solubility	72 h	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	EC50	Toxicity > Water solubility	72 h	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	NOELR	Toxicity > Water solubility	72 h	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)

**Toxicity (microorganisms):**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	EC50	> 100 mg/l	3 h	activated sludge	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
4,4'- methylenediphenyl diisocyanate 101-68-8	EC50	> 1.000 mg/l	3 h	activated sludge of a predominantly domestic sewage	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)

**12.2. Persistence and degradability**

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Test type	Degradability	Exposure time	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	not inherently biodegradable	aerobic	0 %	28 d	OECD Guideline 302 C (Inherent Biodegradability: Modified MITI Test (II))
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	not readily biodegradable.	not specified	0 %	28 d	OECD 301 A - F
4,4'- methylenediphenyl diisocyanate 101-68-8	not readily biodegradable.	aerobic	0 %	28 d	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	not inherently biodegradable	aerobic	0 %	28 d	OECD Guideline 302 C (Inherent Biodegradability: Modified MITI Test (II))
2,2'-Methylenediphenyl diisocyanate 2536-05-2	not inherently biodegradable	aerobic	0 %	28 day	OECD Guideline 302 C (Inherent Biodegradability: Modified MITI Test (II))

### 12.3. Bioaccumulative potential

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Bioconcentration factor (BCF)	Exposure time	Temperature	Species	Method
Diphenylmethane diisocyanate, isomers and homologues 9016-87-9	200			Cyprinus carpio	OECD Guideline 305 (Bioconcentration: Flow-through Fish Test)
4,4'- methylenediphenyl diisocyanate 101-68-8	92 - 200	28 d		Cyprinus carpio	OECD Guideline 305 E (Bioaccumulation: Flow-through Fish Test)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	200	28 day		Cyprinus carpio	OECD Guideline 305 E (Bioaccumulation: Flow-through Fish Test)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	200	28 day		Cyprinus carpio	OECD Guideline 305 E (Bioaccumulation: Flow-through Fish Test)

#### 12.4. Mobility in soil

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	LogPow	Temperature	Method
4,4'-methylenediphenyl diisocyanate 101-68-8	4,51	22 °C	OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	5,22		QSAR (Quantitative Structure Activity Relationship)
2,2'-Methylenediphenyl diisocyanate 2536-05-2	5,22		QSAR (Quantitative Structure Activity Relationship)

#### 12.5. Results of PBT and vPvB assessment

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	PBT / vPvB
4,4'-methylenediphenyl diisocyanate 101-68-8	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
o-(p-Isocyanatobenzyl)phenyl isocyanate 5873-54-1	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
2,2'-Methylenediphenyl diisocyanate 2536-05-2	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.

#### 12.6. Endocrine disrupting properties

not applicable

#### 12.7. Other adverse effects

No data available.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Product disposal:

In consultation with the responsible local authority, must be subjected to special treatment.

Waste code

The valid EWC waste code numbers are source-related. The manufacturer is therefore unable to specify EWC waste codes for the articles or products used in the various sectors. The EWC codes listed are intended as a recommendation for users. We will be happy to advise you.

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**SECTION 14: Transport information****14.1. UN number or ID number**

ADR	Not dangerous goods
RID	Not dangerous goods
ADN	Not dangerous goods
IMDG	Not dangerous goods
IATA	Not dangerous goods

**14.2. UN proper shipping name**

ADR	Not dangerous goods
RID	Not dangerous goods
ADN	Not dangerous goods
IMDG	Not dangerous goods
IATA	Not dangerous goods

**14.3. Transport hazard class(es)**

ADR	Not dangerous goods
RID	Not dangerous goods
ADN	Not dangerous goods
IMDG	Not dangerous goods
IATA	Not dangerous goods

**14.4. Packing group**

ADR	Not dangerous goods
RID	Not dangerous goods
ADN	Not dangerous goods
IMDG	Not dangerous goods
IATA	Not dangerous goods

**14.5. Environmental hazards**

ADR	not applicable
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

**14.6. Special precautions for user**

ADR	not applicable
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

**14.7. Maritime transport in bulk according to IMO instruments**

not applicable

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Ozone Depleting Substance (ODS) (Regulation (EC) No 1005/2009):	Not applicable
Prior Informed Consent (PIC) (Regulation (EU) No 649/2012):	Not applicable
Persistent organic pollutants (Regulation (EU) 2019/1021):	Not applicable
VOC content	0 %

(2010/75/EU)

#### 15.2. Chemical safety assessment

A chemical safety assessment has not been carried out.

#### National regulations/information (Germany):

WGK: WGK 1: slightly hazardous to water (Ordinance on facilities for handling substances that are hazardous to water (AwSV) )  
Classification according to AwSV, Annex 1 (5.2)

BG regulations, rules, infos: BG data sheet: BGI 524 Hazardous substances: polyurethane production and processing / isocyanates (M 044)

Storage class according to TRGS 510: 10

### SECTION 16: Other information

The labelling of the product is indicated in Section 2. The full text of all abbreviations indicated by codes in this safety data sheet are as follows:

H315 Causes skin irritation.  
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.  
H335 May cause respiratory irritation.  
H351 Suspected of causing cancer.  
H373 May cause damage to organs through prolonged or repeated exposure.

ED: Substance identified as having endocrine disrupting properties  
EU OEL: Substance with a Union workplace exposure limit  
EU EXPLD 1: Substance listed in Annex I, Reg (EC) No. 2019/1148  
EU EXPLD 2: Substance listed in Annex II, Reg (EC) No. 2019/1148  
SVHC: Substance of very high concern (REACH Candidate List)  
PBT: Substance fulfilling persistent, bioaccumulative and toxic criteria  
PBT/vPvB: Substance fulfilling persistent, bioaccumulative and toxic plus very persistent and very bioaccumulative criteria  
vPvB: Substance fulfilling very persistent and very bioaccumulative criteria

#### Further information:

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