

**Safety Data Sheet**  
according to Regulation (EC) No. 1907/2006 (REACH)  
according to Regulation (EU) 2020/878



Article No.: 2 05701 B0000 epple 5701  
Print date 15.03.2023 Revision date 15.03.2023  
Version 8.0 Issue date 15.03.2023

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

**1.1. Product identifier**

Article No. (manufacturer/supplier): 2 05701 B0000  
Trade name/designation epple 5701  
Adhesive  
Component B  
UFI: 6S20-C0UT-4007-0XRR

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

**Relevant identified uses**

Adhesive for the gluing of most diverse substrates.

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

**supplier (manufacturer/importer/downstream user/distributor)**

E. Epple & Co. GmbH  
Hertzstr. 8  
71083 Herrenberg

Telephone: +49 7032 / 9771-17  
Telefax: +49 7032 / 9771-60  
www.epple-chemie.de

**Department responsible for information:**

laboratory

E-mail (competent person)

labor@epple-chemie.de

**1.4. Emergency telephone number**

Information center against poisoning Bonn

+49 (0) 228 / 19 240 (Advice in German)

**SECTION 2: Hazards identification**

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

**Classification according to Regulation (EC) No 1272/2008 [CLP]**

The mixture is classified as hazardous according to regulation (EC) No 1272/2008 [CLP].

Skin Irrit. 2 / H315

Skin corrosion/irritation

Causes skin irritation.

Eye Irrit. 2 / H319

Serious eye damage/eye irritation

Causes serious eye irritation.

Resp. Sens. 1 / H334

Respiratory or skin sensitisation

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

Skin Sens. 1 / H317

Respiratory or skin sensitisation

May cause an allergic skin reaction.

Carc. 2 / H351

Carcinogenicity

Suspected of causing cancer.

STOT SE 3 / H335

STOT-single exposure

May cause respiratory irritation.

STOT RE 2 / H373

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure.

**2.2. Label elements**

The product is classified and labelled according to EC directives or corresponding national laws.

**Labelling according to Regulation (EC) No. 1272/2008 [CLP]**

**Hazard pictograms**



**Danger**

**Hazard statements**

H315

Causes skin irritation.

H319

Causes serious eye irritation.

H334

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

H317

May cause an allergic skin reaction.

H351

Suspected of causing cancer.

H335

May cause respiratory irritation.

H373

May cause damage to organs through prolonged or repeated exposure.

**Precautionary statements**

P260

Do not breathe vapour.

P280

Wear protective gloves.

P302 + P352

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

P333 + P313

If skin irritation or rash occurs: Get medical advice/attention.

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P362 + P364 Take off contaminated clothing and wash it before reuse.  
P501 Dispose of contents/container in accordance with local/regional/ national/international regulations.

**Hazard components for labelling**

Diphenylmethane Diisocyanate, isomers and homologues  
2,2'-methylenediphenyl diisocyanate  
diphenylmethane-4,4'-diisocyanate  
diphenylmethane-2,4'-diisocyanate

**Supplemental hazard information**

EUH204 Contains isocyanates. May produce an allergic reaction.

**Use restriction according to REACH annex XVII, no.:**

Restrictions on use

As from 24 August 2023 adequate training is required before industrial or professional use.

2.3. **Other hazards**

No information available.

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

3.2. **Mixtures** \*

**Description** aromatic polyisocyanates

**Hazardous ingredients**

**Classification according to Regulation (EC) No 1272/2008 [CLP]**

EC No. CAS No. Index No.	REACH No. Designation classification: // Remark	weight-%
618-498-9 9016-87-9	Diphenylmethane Diisocyanate, isomers and homologues Acute Tox. 4 H332 / Skin Irrit. 2 H315 / Eye Irrit. 2 H319 / Resp. Sens. 1 H334 / Skin Sens. 1 H317 / Carc. 2 H351 / STOT SE 3 H335 / STOT RE 2 H373 Specific concentration limit (SCL): Eye Irrit. 2 H319 >= 5 / Skin Irrit. 2 H315 >= 5 / Resp. Sens. 1 H334 >= 0,1 / STOT SE 3 H335 >= 5	74,9 - 100
202-966-0 101-68-8 615-005-00-9	01-2119457014-47 diphenylmethane-4,4'-diisocyanate Acute Tox. 4 H332 / Skin Irrit. 2 H315 / Eye Irrit. 2 H319 / Resp. Sens. 1 H334 / Skin Sens. 1 H317 / Carc. 2 H351 / STOT SE 3 H335 / STOT RE 2 H373 Specific concentration limit (SCL): Eye Irrit. 2 H319 >= 5 / Skin Irrit. 2 H315 >= 5 / Resp. Sens. 1 H334 >= 0,1 / STOT SE 3 H335 >= 5 Acute toxicity estimate (ATE): ATE (inhalation, dust/mist): 0,36 mg/L	9,9 - 19,9
227-534-9 5873-54-1 615-005-00-9	01-2119480143-45 diphenylmethane-2,4'-diisocyanate Carc. 2 H351 / Acute Tox. 4 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 Specific concentration limit (SCL): Eye Irrit. 2 H319 >= 5 / Skin Irrit. 2 H315 >= 5 / Resp. Sens. 1 H334 >= 0,1 / STOT SE 3 H335 >= 5 Acute toxicity estimate (ATE): ATE (inhalation, dust/mist): 0,38 mg/L	9,9 - 19,9
219-799-4 2536-05-2 615-005-00-9	01-2119927323-43 2,2'-methylenediphenyl diisocyanate Carc. 2 H351 / Acute Tox. 4 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 Specific concentration limit (SCL): Eye Irrit. 2 H319 >= 5 / Skin Irrit. 2 H315 >= 5 / Resp. Sens. 1 H334 >= 0,1 / STOT SE 3 H335 >= 5 Acute toxicity estimate (ATE): ATE (inhalation, dust/mist): 0,52 mg/L	< 0,1

**Additional information**

Full text of classification: see section 16

**SECTION 4: First aid measures**

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#### 4.1. Description of first aid measures

##### General information

In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness give nothing by mouth, place in recovery position and seek medical advice.

##### In case of inhalation

Remove casualty to fresh air and keep warm and at rest. In case of irregular breathing or respiratory arrest provide artificial respiration.

##### Following skin contact

Take off immediately all contaminated clothing. After contact with skin, wash immediately with plenty of water and soap. Do not use solvents or thinners.

##### After eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical advice immediately.

##### Following ingestion

If swallowed, rinse mouth with water (only if the person is conscious). Seek medical advice immediately. Keep victim calm. Do NOT induce vomiting.

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

In all cases of doubt, or when symptoms persist, seek medical advice.

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

First Aid, decontamination, treatment of symptoms.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

##### Suitable extinguishing media

alcohol resistant foam, carbon dioxide, Powder, spray mist, (water)

##### Unsuitable extinguishing media

strong water jet

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

Dense black smoke occurs during fire. Inhaling hazardous decomposing products can cause serious health damage.

#### 5.3. Advice for firefighters

Provide a conveniently located respiratory protective device.

##### Additional information

Cool closed containers that are near the source of the fire. Do not allow water used to extinguish fire to enter drains, ground or waterways.

### SECTION 6: Accidental release measures

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

Do not breathe vapours.

#### 6.2. Environmental precautions

Do not allow to enter into surface water or drains. If the product contaminates lakes, rivers or sewages, inform competent authorities in accordance with local regulations.

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

Isolate leaked material using non-flammable absorption agent (e.g. sand, earth, vermiculit, diatomaceous earth) and collect it for disposal in appropriate containers in accordance with the local regulations (see section 13). Use appropriate container to avoid environmental contamination. Fouled surfaces must be immediately cleaned with suitable solvents, Useable as such (flammable): water 45 vol.% ethanol or i-propanol 50 vol. % ammonia solution (density= 0.88) 5 vol.%  
Alternative (non-flammable): sodium carbonate 5 vol.% water 95 vol.%.

Take up spilled residuals with the same agent and leave them for a few days in unclosed containers until there is no further reaction. Then, close the containers and dispose of them in accordance with the regulations for waste removal (refer to section 13).

#### 6.4. Reference to other sections

Observe protective provisions (see section 7 and 8).

### SECTION 7: Handling and storage

People who suffer from skin sensitization problems, asthma, allergies, chronic or recurring respiratory illnesses should not be deployed in any process using this mixture.

People who spray this preparation should have regular pulmonary function tests.

#### 7.1. Precautions for safe handling

##### Advices on safe handling

Only use the material in places where open light, fire and other flammable sources can be kept away. Electrical equipment must be protected meeting the accepted standard.

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

##### Requirements for storage rooms and vessels

Storage in accordance with the Ordinance on Industrial Safety and Health (BetrSiVO). Keep container tightly closed. Do not empty containers with pressure - no pressure vessel! Smoking is forbidden. Access only for authorised persons. Store carefully closed containers upright to prevent any leaks.

##### Hints on joint storage

Keep away from strongly acidic and alkaline materials as well as oxidizers. Keep away from amines, alcohols and water.

##### Further information on storage conditions

Take care of instructions on label. Store in a well-ventilated and dry room at temperatures between 5 °C and 30 °C. Protect from heat and direct sunlight. Keep container tightly closed. Remove all sources of ignition. Smoking is forbidden. Access only for authorised persons. Store carefully closed containers upright to prevent any leaks.

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

Observe technical data sheet. Observe instructions for use.

### SECTION 8: Exposure controls/personal protection

People who suffer from skin sensitization problems, asthma, allergies, chronic or recurring respiratory illnesses should not be deployed in any process using this mixture.

People who spray this preparation should have regular pulmonary function tests.

#### 8.1. Control parameters

##### Occupational exposure limit values

not applicable

##### DNEL:

diphenylmethane-4,4'-diisocyanate

Index No. 615-005-00-9 / EC No. 202-966-0 / CAS No. 101-68-8

DNEL short-term oral (acute), Workers:

DNEL acute dermal, short-term (local), Workers: 28,7 mg/kg

DNEL acute dermal, short-term (systemic), Workers: 50 mg/kg

DNEL acute inhalative (local), Workers: 0,1 mg/m<sup>3</sup>

DNEL acute inhalative (systemic), Workers: 0,1 mg/m<sup>3</sup>

DNEL long-term inhalative (local), Workers: 0,05 mg/m<sup>3</sup>

DNEL long-term inhalative (systemic), Workers: 0,05 mg/m<sup>3</sup>

diphenylmethane-2,4'-diisocyanate

Index No. 615-005-00-9 / EC No. 227-534-9 / CAS No. 5873-54-1

DNEL short-term oral (acute), Workers:

DNEL long-term oral (repeated), Workers:

DNEL acute dermal, short-term (local), Workers: 28,7 mg/kg

DNEL acute dermal, short-term (systemic), Workers: 50 mg/kg

DNEL acute inhalative (local), Workers: 0,1 mg/m<sup>3</sup>

DNEL acute inhalative (systemic), Workers: 0,1 mg/m<sup>3</sup>

DNEL long-term inhalative (local), Workers: 0,05 mg/m<sup>3</sup>

DNEL long-term inhalative (systemic), Workers: 0,05 mg/m<sup>3</sup>

2,2'-methylenediphenyl diisocyanate

Index No. 615-005-00-9 / EC No. 219-799-4 / CAS No. 2536-05-2

DNEL acute dermal, short-term (local), Workers: 28,7 mg/cm<sup>2</sup>

DNEL acute dermal, short-term (systemic), Workers: 50 mg/kg bw/day

DNEL acute inhalative (local), Workers: 0,1 mg/m<sup>3</sup>

DNEL acute inhalative (systemic), Workers: 0,1 mg/m<sup>3</sup>

DNEL long-term inhalative (local), Workers: 0,05 mg/m<sup>3</sup>

DNEL long-term inhalative (systemic), Workers: 0,05 mg/m<sup>3</sup>

**PNEC:**

diphenylmethane-4,4'-diisocyanate  
Index No. 615-005-00-9 / EC No. 202-966-0 / CAS No. 101-68-8

PNEC aquatic, freshwater: 1 mg/L  
PNEC aquatic, marine water: 0,1 mg/L  
PNEC, soil: 1 mg/kg dry weight  
PNEC sewage treatment plant (STP): 1 mg/L

diphenylmethane-2,4'-diisocyanate  
Index No. 615-005-00-9 / EC No. 227-534-9 / CAS No. 5873-54-1

PNEC aquatic, freshwater: > 1 mg/L  
PNEC aquatic, marine water: > 0,1 mg/L  
PNEC, soil: > 1 mg/kg  
PNEC sewage treatment plant (STP): > 1 mg/L

2,2'-methylenediphenyl diisocyanate  
Index No. 615-005-00-9 / EC No. 219-799-4 / CAS No. 2536-05-2

PNEC aquatic, freshwater: > 1 mg/L  
PNEC, soil: > 1 mg/kg  
PNEC sewage treatment plant (STP): > 1 mg/L

8.2. **Exposure controls**

**Personal protection equipment**

**Respiratory protection**

Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190). Use only respiratory protection equipment with CE-symbol including four digit test number.

**Hand protection**

For prolonged or repeated handling the following glove material must be used: NBR (Nitrile rubber)

Thickness of the glove material > 0,4 mm ; Breakthrough time: > 480 min.

Observe the instructions and details for use, storage, maintenance and replacement provided by the protective glove manufacturer. Penetration time of glove material depending on intensity and duration of exposure to skin. Recommended glove articles EN ISO 374

Barrier creams can help protecting exposed skin areas. In no case should they be used after contact.

**Eye/face protection**

Wear closely fitting protective glasses in case of splashes.

**Protective measures**

After contact clean skin thoroughly with water and soap or use appropriate cleanser.

**Environmental exposure controls**

Do not allow to enter into surface water or drains. See section 7. No additional measures necessary.

**SECTION 9: Physical and chemical properties**

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

<b>Physical state:</b>	<b>Liquid</b>
<b>Appearance:</b>	<b>Liquid</b>
<b>Colour:</b>	<b>brown</b>
<b>Odour:</b>	<b>earthy</b>
<b>Odour threshold:</b>	<b>not applicable</b>
<b>Melting point/freezing point:</b>	<b>-24 °C</b> Source: Diphenylmethane Diisocyanate, isomers and homologues
<b>Initial boiling point and boiling range:</b>	<b>not applicable</b>
<b>Flammability:</b>	<b>Combustible liquid.</b>
<b>Lower and upper explosion limit:</b>	
<b>Lower explosion limit:</b>	<b>not applicable</b>
<b>Upper explosion limit:</b>	<b>not applicable</b>
<b>Flash point:</b>	<b>&gt; 200 °C</b>
<b>Auto-ignition temperature:</b>	<b>not applicable</b>
<b>Decomposition temperature:</b>	<b>not applicable</b>

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<b>pH at 20 °C:</b>	<b>not applicable</b>
<b>Cinematic viscosity (40°C):</b>	<b>106,56 mm<sup>2</sup>/s</b>
<b>Viscosity at 20 °C:</b>	<b>0,1 - 0,2 Pa*s</b>
<b>Solubility(ies):</b>	
<b>Water solubility at 20 °C:</b>	<b>insoluble</b>
<b>Partition coefficient: n-octanol/water:</b>	<b>see section 12</b>
<b>Vapour pressure at 20 °C:</b>	<b>not applicable</b>
<b>Density and/or relative density:</b>	
<b>Density at 20 °C:</b>	<b>1,22 g/cm<sup>3</sup></b>
<b>Relative vapour density:</b>	<b>not applicable</b>
<b>particle characteristics:</b>	<b>not applicable</b>
<b>9.2. Other information</b>	
<b>Solid content:</b>	<b>100 weight-%</b>
<b>solvent content:</b>	
<b>Organic solvents:</b>	<b>0 weight-%</b>
<b>Water:</b>	<b>0 weight-%</b>
<b>Solvent separation test:</b>	<b>&lt; 3 weight-% (ADR/RID)</b>

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No information available.

### 10.2. Chemical stability

Stable when applying the recommended regulations for storage and handling. Further information on correct storage: refer to section 7.

### 10.3. Possibility of hazardous reactions

Keep away from strongly acidic and alkaline materials as well as oxidizers. Keep away from amines, alcohols and water. Reacts with water, forming carbon dioxide, producing bursting hazard in closed containers due to build-up of pressure.

### 10.4. Conditions to avoid

Stable when applying the recommended regulations for storage and handling. Further information on correct storage: refer to section 7. Hazardous decomposition byproducts may form with exposure to high temperatures. Thermal decomposition: at > 260 °C:.

### 10.5. Incompatible materials

not applicable

### 10.6. Hazardous decomposition products

Hazardous decomposition byproducts may form with exposure to high temperatures, e.g.: carbon dioxide, carbon monoxide, smoke, nitrogen oxides.

## SECTION 11: Toxicological information

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

\*

#### Acute toxicity

diphenylmethane-4,4'-diisocyanate

oral, LD50, Rat: > 2000 mg/kg

Method: Directive 84/449/EWG, B.1

Toxicological study on a comparable product

dermal, LD50, Rabbit: > 9400 mg/kg

Method: OECD 402

Investigation on a comparable product

inhalative (dust and mist), LC50, Rat: 0,368 mg/L (4 h); Evaluation Harmful if inhaled.

Method: OECD 403

diphenylmethane-2,4'-diisocyanate

oral, LD50, Rat: > 2000 mg/kg

Method: Directive 84/449/EWG, B.1

Toxicological study on a comparable product

dermal, LD50, Rabbit: > 9400 mg/kg



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Method: OECD 402  
Investigation on a comparable product  
inhalative (dust and mist), LC50, Rat: 0,387 mg/L (4 h); Evaluation Harmful if inhaled.

2,2'-methylenediphenyl diisocyanate  
oral, LD50, Rat: > 2000 mg/kg  
Method: Directive 84/449/EWG, B.1  
Toxicological study on a comparable product  
dermal, LD50, Rabbit: > 9400 mg/kg  
Method: OECD 402  
Investigation on a comparable product  
inhalative (dust and mist), LC50, Rat: 0,527 mg/L (4 h); Evaluation Harmful if inhaled.  
Method: OECD 403

Diphenylmethane Diisocyanate, isomers and homologues  
oral, LD50, Rat: > 2000 mg/kg  
Method: OECD 401  
Investigation on a comparable product  
dermal, LD50, Rabbit: > 9400 mg/kg  
Method: OECD 402  
inhalative (dust and mist), LC50, Rat: 0,31 mg/L (4 h)  
Method: OECD 403

**Skin corrosion/irritation; Serious eye damage/eye irritation**

Causes skin irritation.

Causes serious eye irritation.

diphenylmethane-4,4'-diisocyanate  
Skin, Rabbit: Evaluation Causes skin irritation.  
Method: OECD 404  
Toxicological study on a comparable product  
eyes, Rabbit.: Evaluation non-irritant.  
Method: OECD 405  
Toxicological study on a comparable product

diphenylmethane-2,4'-diisocyanate  
Skin, Rabbit: Evaluation irritant.  
Method: OECD 404  
Toxicological study on a comparable product

2,2'-methylenediphenyl diisocyanate  
Skin, Rabbit: Evaluation mild irritant.  
Method: OECD 404

Diphenylmethane Diisocyanate, isomers and homologues  
Skin., Rabbit: Evaluation mild irritant.  
Method: OECD 404

**Respiratory or skin sensitisation**

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

May cause an allergic skin reaction.

diphenylmethane-4,4'-diisocyanate  
Skin, Mouse: ; Evaluation positive  
Method: OECD 429  
Respiratory system, Guinea pig: ; Evaluation positive

diphenylmethane-2,4'-diisocyanate  
Skin, Mouse: ; Evaluation positive  
Method: OECD 429  
Toxicological study on a comparable product  
Respiratory system, Guinea pig: ; Evaluation positive  
Toxicological study on a comparable product

2,2'-methylenediphenyl diisocyanate  
Skin, Mouse: ; Evaluation positive.  
Method: OECD 429

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May cause sensitization by skin contact.  
Respiratory system, Guinea pig: ; Evaluation positive  
May cause sensitization by inhalation.; Toxicological study on a comparable product

Diphenylmethane Diisocyanate, isomers and homologues

Skin, Mouse: ; Evaluation positive  
Method: OECD 429  
May cause sensitization by skin contact.  
Respiratory system, Rat: ; Evaluation positive  
May cause sensitization by skin contact.

**CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

Suspected of causing cancer.

diphenylmethane-4,4'-diisocyanate

Carcinogenicity; Evaluation Occurrence of tumors in the highest dose group  
Method: OECD 453  
inhalative; Investigation on a comparable product  
Reproductive toxicity; Evaluation Does not show teratogenic effects in animal experiments  
Method: OECD 414  
rat, female; inhalative; Investigation on a comparable product  
genotoxicity; Evaluation negative  
Method: OECD 471 (Ames test).  
in-vitro; Salmonella typhimurium; Toxicological study on a comparable product  
genotoxicity; Evaluation negative  
Method: OECD 474  
in-vivo; rat, male; inhalative  
genotoxicity; Evaluation negative  
Method: OECD 489  
in-vivo; rat, male; inhalative

diphenylmethane-2,4'-diisocyanate

Carcinogenicity; Evaluation Occurrence of tumors in the highest dose group  
Method: OECD 453  
inhalative; Investigation on a comparable product  
Reproductive toxicity; Evaluation Does not show teratogenic effects in animal experiments  
Method: OECD 414  
rat, female; inhalative; Investigation on a comparable product  
genotoxicity; Evaluation negative  
Method: OECD 471 (Ames test).  
in-vitro  
genotoxicity; Evaluation negative  
Method: OECD 474  
in-vivo; rat, male; inhalative

2,2'-methylenediphenyl diisocyanate

Carcinogenicity; Evaluation Occurrence of tumors in the highest dose group  
Method: OECD 453  
Investigation on a comparable product  
Reproductive toxicity; Evaluation Does not show teratogenic effects in animal experiments  
Method: OECD 414  
Investigation on a comparable product  
genotoxicity; Evaluation negative  
Method: OECD 471 (Ames test).  
in-vitro  
genotoxicity; Evaluation negative  
Method: OECD 474  
in-vivo; rat, male; Toxicological study on a comparable product

Diphenylmethane Diisocyanate, isomers and homologues

Carcinogenicity; Evaluation Occurrence of tumors in the highest dose group  
Method: OECD 453  
Rat; inhalative  
Reproductive toxicity; Evaluation Does not show teratogenic effects in animal experiments  
Method: OECD 414



rat, female; inhalative  
genotoxicity; Evaluation negative  
Method: OECD 471 (Ames test)  
in-vitro  
genotoxicity; Evaluation negative  
Method: OECD 474  
in-vivo; rat, male; Investigation on a comparable product

#### **STOT-single exposure; STOT-repeated exposure**

May cause respiratory irritation.

May cause damage to organs through prolonged or repeated exposure.

diphenylmethane-4,4'-diisocyanate

Specific target organ toxicity (single exposure), Irritation Evaluation May cause respiratory irritation.

Specific target organ toxicity (repeated exposure) Evaluation May cause damage to organs through prolonged or repeated exposure.

diphenylmethane-2,4'-diisocyanate

Specific target organ toxicity (single exposure), Irritation Evaluation May cause respiratory irritation.

inhalative; Respiratory system

Specific target organ toxicity (repeated exposure) Evaluation May cause damage to organs through prolonged or repeated exposure if inhaled

inhalative; Respiratory system

2,2'-methylenediphenyl diisocyanate

Specific target organ toxicity (single exposure), Irritation Evaluation May cause respiratory irritation.

inhalative; Respiratory system

Specific target organ toxicity (repeated exposure) Evaluation May cause damage to organs through prolonged or repeated exposure.

inhalative; Respiratory system

Diphenylmethane Diisocyanate, isomers and homologues

Specific target organ toxicity (single exposure), Irritation Evaluation May cause respiratory irritation.

Respiratory system; inhalative

Specific target organ toxicity (repeated exposure) Evaluation May cause damage to organs through prolonged or repeated exposure if inhaled

Respiratory system; inhalative

#### **Aspiration hazard**

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

#### **Practical experience/human evidence**

Because of the isocyanate components' properties of this and with consideration of similar preparations the following applies: This mixture may cause acute irritation and/or sensitization of airways which lead to tightness in thorax, short-breath and asthmatic complaints. After sensitization even concentrations below the exposure limit values may cause asthma. Repeated inhaling can lead to permanent illness of the respiratory tract. Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in non-allergic contact dermatitis and/or absorption through skin.

#### **Overall assessment on CMR properties**

The ingredients in this mixture do not meet the criteria for classification as CMR category 1A or 1B according to CLP.

#### **Remark**

There is no information available on the preparation itself . The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and classified according to the toxicological dangers. See chapters 2 and 15 for details.

#### **11.2. Information on other hazards**

##### **Endocrine disrupting properties**

No information available.

### **SECTION 12: Ecological information**

Classification according to Regulation (EC) No 1272/2008 [CLP]

Do not allow to enter into surface water or drains.

#### **12.1. Toxicity**

diphenylmethane-4,4'-diisocyanate

\*

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Fish toxicity, LC50, Danio rerio : > 1000 mg/L (96 h)  
Method: OECD 203  
Investigation on a comparable product  
Algae toxicity, ErC50, Scenedesmus subspicatus: > 1640 mg/L (72 h)  
Method: OECD 201  
Investigation on a comparable product  
Daphnia toxicity, EC50, Daphnia magna (Big water flea): > 1000 mg/L (24 h)  
Method: OECD 202  
Investigation on a comparable product  
Bacteria toxicity, EC50, Activated sludge: > 100 mg/L (3 h)  
Method: OECD 209  
Investigation on a comparable product  
diphenylmethane-2,4'-diisocyanate  
Fish toxicity, LC50, Danio rerio : > 1000 mg/L (96 h)  
Method: OECD 203  
Investigation on a comparable product  
Algae toxicity, ErC50, Scenedesmus subspicatus: > 1640 mg/L (72 h)  
Method: OECD 201  
Investigation on a comparable product  
Daphnia toxicity, EC50, Daphnia magna (Big water flea): > 1000 mg/L (24 h)  
Method: OECD 202  
Investigation on a comparable product  
Bacteria toxicity, EC50, Activated sludge: > 100 mg/L (3 h)  
Method: OECD 209  
Investigation on a comparable product  
2,2'-methylenediphenyl diisocyanate  
Fish toxicity, LC50, Danio rerio : > 1000 mg/L (96 h)  
Method: OECD 203  
Investigation on a comparable product  
Algae toxicity, ErC50, Scenedesmus subspicatus: > 1640 mg/L (72 h)  
Method: OECD 201  
Investigation on a comparable product  
Daphnia toxicity, EC50, Daphnia magna (Big water flea): > 1000 mg/L (24 h)  
Method: OECD 202  
Investigation on a comparable product  
Bacteria toxicity, EC50, Activated sludge: > 100 mg/L (3 h)  
Method: OECD 209  
Investigation on a comparable product  
Diphenylmethane Diisocyanate, isomers and homologues  
Fish toxicity, LC50, Danio rerio : > 1000 mg/L (96 h)  
Method: OECD 203  
Algae toxicity, ErC50, Scenedesmus subspicatus: > 1640 mg/L (72 h)  
Method: OECD 201  
Daphnia toxicity, EC50, Daphnia magna (Big water flea): > 1000 mg/L (24 h)  
Method: OECD 202  
Bacteria toxicity, EC50, Activated sludge: > 100 mg/L (3 h)  
Method: OECD 209

**Long-term Ecotoxicity**

diphenylmethane-4,4'-diisocyanate  
Fish toxicity, LC50 (96 h)  
Method: OECD 202  
Investigation on a comparable product  
Daphnia toxicity, NOEC, Daphnia magna (Big water flea): > 10 mg/L (21 d)  
Method: OECD 202  
Toxicity to soil macroorganisms, NOEC, Eisenia fetida: > 1000 mg/kg (14 d)  
Method: OECD 207  
Investigation on a comparable product  
Terrestrial toxicity, NOEC, Avena sativa: > 1000 mg/kg (14 d)  
Method: OECD 208  
Investigation on a comparable product

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Terrestrial toxicity, NOEC, Lactuca sativa: > 1000 mg/kg (14 d)  
Method: OECD 208  
Investigation on a comparable product  
diphenylmethane-2,4'-diisocyanate  
Daphnia toxicity, NOEC, Daphnia magna (Big water flea): > 10 mg/L (21 d)  
Method: OECD 202  
Investigation on a comparable product  
Toxicity to soil macroorganisms, NOEC:, Eisenia fetida: > 1000 mg/kg (14 d)  
Method: OECD 207  
Investigation on a comparable product  
Terrestrial toxicity, NOEC, Avena sativa: > 1000 mg/kg (14 d)  
Method: OECD 208  
Investigation on a comparable product  
Terrestrial toxicity, NOEC, Lactuca sativa: > 1000 mg/kg (14 d)  
Method: OECD 208  
Investigation on a comparable product  
2,2'-methylenediphenyl diisocyanate  
Daphnia toxicity, NOEC, Daphnia magna (Big water flea): > 10 mg/L (21 d)  
Method: OECD 202  
Investigation on a comparable product  
Toxicity to soil macroorganisms, NOEC:, Eisenia fetida: > 1000 mg/kg (14 d)  
Method: OECD 207  
Investigation on a comparable product  
Terrestrial toxicity, NOEC:, Avena sativa: > 1000 mg/kg (14 d)  
Method: OECD 208  
Investigation on a comparable product  
Terrestrial toxicity, NOEC:, Lactuca sativa: > 1000 mg/kg (14 d)  
Method: OECD 208  
Investigation on a comparable product  
Diphenylmethane Diisocyanate, isomers and homologues  
Daphnia toxicity, NOEC, Daphnia magna (Big water flea): > 10 mg/L (21 d)  
Method: OECD 202  
Toxicity to soil macroorganisms, NOEC, Eisenia fetida: > 1000 mg/kg (14 d)  
Method: OECD 207  
Terrestrial toxicity, NOEC, Avena sativa: > 1000 mg/kg (14 d)  
Method: OECD 208  
Terrestrial toxicity, NOEC, Lactuca sativa: > 1000 mg/kg (14 d)  
Method: OECD 208

**12.2. Persistence and degradability**

\*

diphenylmethane-4,4'-diisocyanate  
Biodegradation:: (28 d)Evaluation not potentially degradable  
Method: OECD 302C  
Investigation on a comparable product  
diphenylmethane-2,4'-diisocyanate  
Biodegradation:: (28 d)Evaluation not potentially degradable  
Method: OECD 302C  
Investigation on a comparable product  
2,2'-methylenediphenyl diisocyanate  
Biodegradation:: (28 d)Evaluation not potentially degradable  
Method: OECD 302C  
Investigation on a comparable product  
Diphenylmethane Diisocyanate, isomers and homologues  
Biodegradation:, aerobic: (28 d)Evaluation not biodegradable  
Method: OECD 302C

**12.3. Bioaccumulative potential**

\*

Diphenylmethane Diisocyanate, isomers and homologues  
Partition coefficient: n-octanol/water: < 14 ; Evaluation Accumulation in aquatic organisms is not expected.  
Method: OECD 305 C  
The substance hydrolyzes rapidly in water

### Bioconcentration factor (BCF)

diphenylmethane-4,4'-diisocyanate

Bioconcentration factor (BCF), Cyprinus carpio (Common Carp): 200 ; Evaluation Accumulation in aquatic organisms is not expected.

Method: OECD 305 E

diphenylmethane-2,4'-diisocyanate

Bioconcentration factor (BCF), Cyprinus carpio (Common Carp): 200 ; Evaluation Accumulation in aquatic organisms is not expected.

Method: OECD 305 E

Investigation on a comparable product

2,2'-methylenediphenyl diisocyanate

Bioconcentration factor (BCF), Cyprinus carpio (Common Carp): 200 ; Evaluation Accumulation in aquatic organisms is not expected.

Method: OECD 305 E

Investigation on a comparable product

Diphenylmethane Diisocyanate, isomers and homologues

Bioconcentration factor (BCF), Cyprinus carpio (Common Carp): 92 ; Evaluation Accumulation in aquatic organisms is not expected.

Method: OECD 305 E

### 12.4. Mobility in soil

Toxicological data are not available.

### 12.5. Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

### 12.6. Endocrine disrupting properties

No information available.

### 12.7. Other adverse effects

No information available.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### Appropriate disposal / Product Recommendation

Do not allow to enter into surface water or drains. Handle contaminated packages in the same way as the substance itself. This material and its container must be disposed of in a safe way. Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.

#### List of proposed waste codes/waste designations in accordance with EWC

080501\* Waste isocyanates

\*Hazardous waste according to Directive 2008/98/EC (waste framework directive).

#### Appropriate disposal / Package Recommendation

Non-contaminated packages may be recycled. Vessels not properly emptied are special waste.

## SECTION 14: Transport information

No dangerous good in sense of this transport regulation.

### 14.1. UN number or ID number

not applicable

### 14.2. UN proper shipping name

### 14.3. Transport hazard class(es)

not applicable

### 14.4. Packing group

not applicable

### 14.5. Environmental hazards

Land transport (ADR/RID)

not applicable

Marine pollutant

not applicable

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**14.6. Special precautions for user**

Transport always in closed, upright and safe containers. Make sure that persons transporting the product know what to do in case of an accident or leakage.

Advices on safe handling: see parts 6 - 8

**Further information**

**Land transport (ADR/RID)**

Tunnel restriction code -

**Sea transport (IMDG)**

EmS-No. not applicable

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

No transport as bulk according IBC - Code.

**SECTION 15: Regulatory information**

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

**EU legislation**

**Directive 2010/75/EU on industrial emissions [Industrial Emissions Directive]**

VOC-value (in g/L): 0

**Use restriction according to REACH annex XVII, no.:**

Restrictions on use

As from 24 August 2023 adequate training is required before industrial or professional use.

**National regulations**

**Restrictions of occupation**

Observe employment restrictions under the Maternity Protection Directive 92/85/EEC or stricter national regulations, if applicable.

Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC) or stricter national regulations, if applicable.

**Substance/product listed in the following inventories:**

AICS no information

DSL no information

EHS no information

IECSC no information

KECI no information

MITI no information

NZLoC no information

PICCS no information

TCSI no information

TSCA no information

**15.2. Chemical Safety Assessment**

**For the following substances of this mixture a chemical safety assessment has been carried out:**

\*

EC No. CAS No.	Designation	REACH No.
202-966-0 101-68-8	diphenylmethane-4,4'-diisocyanate	01-2119457014-47
227-534-9 5873-54-1	diphenylmethane-2,4'-diisocyanate	01-2119480143-45
219-799-4 2536-05-2	2,2'-methylenediphenyl diisocyanate	01-2119927323-43

**SECTION 16: Other information**

\*

**Full text of classification in section 3:**

Acute Tox. 4 / H332

Acute toxicity (inhalative)

Harmful if inhaled.

Skin Irrit. 2 / H315

Skin corrosion/irritation

Causes skin irritation.

Eye Irrit. 2 / H319

Serious eye damage/eye irritation

Causes serious eye irritation.

Resp. Sens. 1 / H334

Respiratory or skin sensitisation

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

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Skin Sens. 1 / H317 Carc. 2 / H351	Respiratory or skin sensitisation Carcinogenicity	May cause an allergic skin reaction. Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard).
STOT SE 3 / H335 STOT RE 2 / H373	STOT-single exposure STOT-repeated exposure	May cause respiratory irritation. May cause damage to organs (or state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard).

**Classification procedure**

Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008 [CLP]

Skin Irrit. 2	Skin corrosion/irritation	Calculation method.
Eye Irrit. 2	Serious eye damage/eye irritation	Calculation method.
Resp. Sens. 1	Respiratory or skin sensitisation	Calculation method.
Skin Sens. 1	Respiratory or skin sensitisation	Calculation method.
Carc. 2	Carcinogenicity	Calculation method.
STOT SE 3	STOT-single exposure	Calculation method.
STOT RE 2	STOT-repeated exposure	Calculation method.

**Abbreviations and acronyms**

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
OEL	Occupational Exposure Limit Value
BLV	Biological Limit Value
CAS	Chemical Abstracts Service
CLP	Classification, Labelling and Packaging
CMR	Carcinogenic, Mutagenic and Reprotoxic
DIN	German Institute for Standardization / German industrial standard
DNEL	Derived No-Effect Level
EAKV	European Waste Catalogue Directive
EC	Effective Concentration
EC	European Community
EN	European Standard
IATA-DGR	International Air Transport Association – Dangerous Goods Regulations
IBC Code	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
ICAO-TI	International Civil Aviation Organization Technical Instructions for the Safe Transport of Dangerous Goods by Air
IMDG Code	International Maritime Code for Dangerous Goods
ISO	International Organization for Standardization
LC	Lethal Concentration
LD	Lethal Dose
MARPOL	Maritime Pollution: The International Convention for the Prevention of Pollution from Ships
OECD	Organisation for Economic Cooperation and Development
PBT	persistent, bioaccumulative, toxic
PNEC	Predicted No Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
UN	United Nations
VOC	Volatile Organic Compounds
vPvB	very persistent and very bioaccumulative

**Abbreviations and acronyms**

n.a. = not applicable  
 n.b. = not determined

**Further information**

Classification according to Regulation (EC) No 1272/2008 [CLP]

The information supplied on this safety data sheet complies with our current level of knowledge as well as with national and EU regulations. Without written approval, the product must not be used for purposes different from those mentioned in section 1. It is always the user's duty to take any necessary measures for meeting the requirements laid down by local rules and regulations. The details in this safety data sheet describe the safety requirements of our product and are not to be regarded as guaranteed attributes of the product.

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\* Data changed compared with the previous version