

# SAFETY DATA SHEET

Based upon Regulation (EC) No 1907/2006, as amended by Regulation (EU) No 2020/878



## NOVA POWER GRIP 403 2-K PREPOLYMER

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

#### 1.1. Product identifier

**Product name** : NOVA POWER GRIP 403 2-K PREPOLYMER  
**Registration number REACH** : Not applicable (mixture)  
**Product type REACH** : Mixture

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

##### 1.2.1 Relevant identified uses

Adhesive

##### 1.2.2 Uses advised against

No uses advised against known

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

##### Supplier of the safety data sheet

Novatio\*  
Industrielaan 5B  
B-2250 Olen  
☎ +32 14 25 76 40  
☎ +32 14 22 02 66  
info@novatio.be  
\*NOVATIO is a registered trademark of Novatech International N.V.

##### Manufacturer of the product

Novatech International N.V.  
Industrielaan 5B  
B-2250 Olen  
☎ +32 14 85 97 37  
☎ +32 14 85 97 38  
info@novatech.be

#### 1.4. Emergency telephone number

24h/24h (Telephone advice: English, French, German, Dutch) :  
+32 14 58 45 45 (BIG)

### SECTION 2: Hazards identification

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

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Class	Category	Hazard statements
Carc.	category 2	H351: Suspected of causing cancer.
Resp. Sens.	category 1	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin Sens.	category 1	H317: May cause an allergic skin reaction.
Acute Tox.	category 4	H332: Harmful if inhaled.
STOT RE	category 2	H373: May cause damage to organs through prolonged or repeated exposure if inhaled.
Skin Irrit.	category 2	H315: Causes skin irritation.
Eye Irrit.	category 2	H319: Causes serious eye irritation.
STOT SE	category 3	H335: May cause respiratory irritation.

#### 2.2. Label elements



Contains: polymethylene polyphenyl isocyanate; 4,4'-methylenediphenyl diisocyanate, oligomers; isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly[oxy(methyl-1,2-ethanediy)]]; 4,4'-methylenediphenyl diisocyanate; 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with alpha-hydro-omega-hydroxypoly[oxy(methyl-1,2-ethanediy)]; reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate; isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha, alpha, alpha-1,2,3-propanetriyltris[omega-hydroxypoly[oxy(methyl-1,2-ethanediy)]]; 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with glycerol, propoxylated.

**Signal word** Danger  
**H-statements**

Created by: Brandweerinformatiecentrum voor gevaarlijke stoffen vzw (BIG)  
Technische Schoolstraat 43 A, B-2440 Geel  
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H351	Suspected of causing cancer.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H332	Harmful if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure if inhaled.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

**P-statements**

P280	Wear protective gloves, protective clothing and eye protection/face protection.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P342 + P311	IF experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.

**Supplemental information**

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

**2.3. Other hazards**

No other hazards known

## SECTION 3: Composition/information on ingredients

**3.1. Substances**

Not applicable

**3.2. Mixtures**

Name REACH Registration No	CAS No EC No List No	Conc. (C)	Classification according to CLP	Note	Remark	M-factors and ATE
polymethylene polyphenyl isocyanate	9016-87-9 618-498-9	15% ≤C<20%	Carc. 2; H351 Resp. Sens. 1; H334 Skin Sens. 1; H317 Acute Tox. 4; H332 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 Resp. Sens. 1; H334: C≥0.1%, (analogous to Annex VI) Skin Irrit. 2; H315: C≥5%, (analogous to Annex VI) Eye Irrit. 2; H319: C≥5%, (analogous to Annex VI) STOT SE 3; H335: C≥5%, (analogous to Annex VI)	(1)(2)(10)(V)	Constituent	
4,4'-methylenediphenyl diisocyanate, oligomers	25686-28-6 500-040-3	10% ≤C<15%	Carc. 2; H351 Resp. Sens. 1; H334 Skin Sens. 1; H317 Acute Tox. 4; H332 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335	(1)(10)	Constituent	
isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega- hydroxypoly[oxy(methyl-1,2-ethanediy)]	53862-89-8 670-234-1	10% ≤C<15%	Carc. 2; H351 Resp. Sens. 1; H334 Skin Sens. 1; H317 Acute Tox. 4; H332 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335	(1)(10)	Constituent	

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4,4'-methylenediphenyl diisocyanate 01-2119457014-47	101-68-8 202-966-0	10% ≤C<15%	Carc. 2; H351 Resp. Sens. 1; H334 Skin Sens. 1; H317 Acute Tox. 4; H332 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 Resp. Sens. 1; H334: C≥0.1%, (CLP Annex VI (ATP 1)) Skin Irrit. 2; H315: C≥5%, (CLP Annex VI (ATP 1)) Eye Irrit. 2; H319: C≥5%, (CLP Annex VI (ATP 1)) STOT SE 3; H335: C≥5%, (CLP Annex VI (ATP 1))	(1)(2)(10)	Constituent	
4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with alpha- hydro-omega-hydroxypoly(oxy- 1,2-ethanediyl)	9048-57-1 500-028-8	5%≤C<10%	Carc. 2; H351 Resp. Sens. 1; H334 Skin Sens. 1; H317 Acute Tox. 4; H332 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335	(1)(10)	Constituent	
reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl) phenyl isocyanate / methylene diphenyl diisocyanate 01-2119457015-45	905-806-4	5%≤C<10%	Carc. 2; H351 Resp. Sens. 1; H334 Skin Sens. 1; H317 Acute Tox. 4; H332 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 Resp. Sens. 1; H334: C≥0.1%, (ECHA) Skin Irrit. 2; H315: C≥5%, (ECHA) Eye Irrit. 2; H319: C≥5%, (ECHA) STOT SE 3; H335: C≥5%, (ECHA)	(1)(2)(10)	Constituent	
isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha, alpha, alpha- 1,2,3-propanetriyltris[omega-hydroxypoly [oxy(methyl-1,2-ethanediyl)]]	57029-46-6 695-185-3	2.5%≤C<5%	Carc. 2; H351 Resp. Sens. 1; H334 Skin Sens. 1; H317 Acute Tox. 4; H332 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335	(1)	Constituent	
4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with glycerol, propoxylated	52409-10-6 500-115-0	1%≤C<2.5%	Carc. 2; H351 Resp. Sens. 1; H334 Skin Sens. 1; H317 Acute Tox. 4; H332 STOT RE 2; H373 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335	(1)	Constituent	
Talc (Mg3H2(SiO3)4)	14807-96-6 238-877-9	5%≤C<10%		(2)	Constituent	
zeolites	1318-02-1 215-283-8	10% ≤C<15%		(2)	Constituent	

(1) For H- and EUH-statements in full: see section 16  
(2) Substance with a Community workplace exposure limit  
(10) Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006  
(V) Exempted from registration under REACH (Regulation (EC) No 1907/2006, article 2 (9), polymers)  
Note: numbers 9xx-xxx-x are provisional list numbers assigned by Echa pending an official EC inventory number

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

**General:**

Observe (own) safety. If possible, approach victim and check vital functions. In case of injury and/or intoxication, call the European emergency number 112. Treat symptoms starting with most life-threatening injuries and disorders. Keep victim under observation, possibility of delayed symptoms.

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## After inhalation:

Remove victim into fresh air. In case of respiratory problems, consult a doctor/medical service.

## After skin contact:

If possible, wipe up/dry remove chemical. Then rinse/shower immediately with (lukewarm) water. If irritation persists, consult a doctor/medical service.

## After eye contact:

Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation persists, consult a doctor/medical service.

## After ingestion:

Rinse mouth with water. If you feel unwell, consult a doctor/medical service. Do not wait for symptoms to occur to consult Poison Center.

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

### 4.2.1 Acute symptoms

#### After inhalation:

Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Headache. FOLLOWING SYMPTOMS MAY APPEAR LATER: Risk of lung oedema.

#### After skin contact:

Tingling/irritation of the skin.

#### After eye contact:

Irritation of the eye tissue.

#### After ingestion:

Irritation of the gastric/intestinal mucosa. Nausea. Vomiting. Diarrhoea.

### 4.2.2 Delayed symptoms

No effects known.

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

If applicable and available it will be listed below.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### 5.1.1 Suitable extinguishing media:

Small fire: Quick-acting ABC powder extinguisher, Quick-acting BC powder extinguisher, Quick-acting class B foam extinguisher, Quick-acting CO2 extinguisher. Major fire: Class B foam (not alcohol-resistant).

#### 5.1.2 Unsuitable extinguishing media:

Small fire: Water (quick-acting extinguisher, reel); risk of puddle expansion.

Major fire: Water; risk of puddle expansion.

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

On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). On heating: release of toxic/combustible gases/vapours (hydrogen cyanide, isocyanates). Decomposes on exposure to water (moisture).

### 5.3. Advice for firefighters

#### 5.3.1 Instructions:

If exposed to fire cool the closed containers by spraying with water. Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water.

#### 5.3.2 Special protective equipment for fire-fighters:

Gloves (EN 374). Face shield (EN 166). Protective clothing (EN 14605 or EN 13034). Heat/fire exposure: self-contained breathing apparatus (EN 136 + EN 137).

## SECTION 6: Accidental release measures

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

No naked flames.

#### 6.1.1 Protective equipment for non-emergency personnel

See section 8.2

#### 6.1.2 Protective equipment for emergency responders

Gloves (EN 374). Face shield (EN 166). Protective clothing (EN 14605 or EN 13034).

#### Suitable protective clothing

See section 8.2

### 6.2. Environmental precautions

Contain released product. Dam up the liquid spill. Prevent spreading in sewers.

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

Take up liquid spill into inert absorbent material. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

### 6.4. Reference to other sections

See section 13.

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## SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

### 7.1. Precautions for safe handling

Keep away from naked flames/heat. Gas/vapour heavier than air at 20°C. Observe very strict hygiene - avoid contact. Remove contaminated clothing immediately. Do not discharge the waste into the drain. Keep container tightly closed.

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

#### 7.2.1 Safe storage requirements:

Store in a cool area. Store in a dry area. Protect against frost. Keep container in a well-ventilated place. Keep only in the original container. Meet the legal requirements.

#### 7.2.2 Keep away from:

Heat sources, (strong) acids, (strong) bases, oxidizing agents, metals, water/moisture.

#### 7.2.3 Suitable packaging material:

No data available

#### 7.2.4 Non suitable packaging material:

Aluminium, copper, iron, zinc.

### 7.3. Specific end use(s)

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### 8.1.1 Occupational exposure

##### a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

#### Belgium

4,4'-Diisocyanate de diphénylméthane (MDI)	Time-weighted average exposure limit 8 h	0.005 ppm
	Time-weighted average exposure limit 8 h	0.052 mg/m <sup>3</sup>
Particules non classifiées autrement (fraction alvéolaire)	Time-weighted average exposure limit 8 h	3 mg/m <sup>3</sup>
Particules non classifiées autrement (fraction inhalable)	Time-weighted average exposure limit 8 h	10 mg/m <sup>3</sup>
Talc (sans fibre d'amiant)	Time-weighted average exposure limit 8 h	2 mg/m <sup>3</sup>

#### The Netherlands

Talk (respirabel)	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.016 ppm
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.25 mg/m <sup>3</sup>

#### France

4,4'-Diisocyanate de diphénylméthane	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	0.01 ppm
	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	0.1 mg/m <sup>3</sup>
	Short time value (VL: Valeur non réglementaire indicative)	0.02 ppm
	Short time value (VL: Valeur non réglementaire indicative)	0.2 mg/m <sup>3</sup>
Poussières réputées sans effet spécifique, fraction alvéolaire	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	5 mg/m <sup>3</sup>
Poussières réputées sans effet spécifique	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	10 mg/m <sup>3</sup>

#### Germany

4,4'-Methyldiphenyldiisocyanat	Time-weighted average exposure limit 8 h (TRGS 900)	0.05 mg/m <sup>3</sup>
Allgemeiner Staubgrenzwert: Alveolengängige Fraktion	Time-weighted average exposure limit 8 h (TRGS 900)	1.25 mg/m <sup>3</sup>

#### Austria

Diphenylmethan-diisocyanat (alle Isomeren): Diphenylmethan-4,4'-diisocyanat Diphenylmethan-2,2'- diisocyanat Diphenylmethan-2,4'-diisocyanat	Tagesmittelwert (MAK)	0.005 ppm
	Tagesmittelwert (MAK)	0.05 mg/m <sup>3</sup>
	Kurzzeitwert 5(Mow) 8x (MAK)	0.01 ppm
	Kurzzeitwert 5(Mow) 8x (MAK)	0.1 mg/m <sup>3</sup>

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Talk (asbestfaserfrei)	Tagesmittelwert (MAK)	2 mg/m <sup>3</sup>
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## UK

Inhalable dust	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	10 mg/m <sup>3</sup>
Isocyanates, all (as -NCO) Except methyl isocyanate	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.02 mg/m <sup>3</sup>
	Short time value (Workplace exposure limit (EH40/2005))	0.07 mg/m <sup>3</sup>
Respirable dust	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	4 mg/m <sup>3</sup>
Talc, respirable dust	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	1 mg/m <sup>3</sup>

## USA (TLV-ACGIH)

Methylene bisphenyl isocyanate	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.005 ppm
Particulates (insoluble or poorly soluble) not otherwise specified	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	3 mg/m <sup>3</sup> (R)
Talc: Containing no asbestos fibers	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	2 mg/m <sup>3</sup> (R,E)

(R): Respirable fraction

R,E: Respirable fraction. The value is for particulate matter containing no asbestos and < 1% crystalline silica

### b) National biological limit values

If limit values are applicable and available these will be listed below.

#### 8.1.2 Sampling methods

Product name	Test	Number
4,4'-Methylene Bisphenyl Isocyanate (MDI) (Isocyanates)	NIOSH	5521
4,4'-Methylenebis(phenylisocyanate)	NIOSH	5525
4,4'-Methylenediphenyl isocyanate (MDI)	NIOSH	5522
Dust, Respirable Nuisance (Particulates)	NIOSH	0600
Dust, Respirable	ASTM	D 4532-92
Dust, Total Nuisance (Particulates)	NIOSH	0500
Isocyanates	NIOSH	5521
Isocyanates	NIOSH	5522
Methylene Bisphenyl Isocyanate - (MDI)	OSHA	18
Methylene Bisphenyl Isocyanate (MDI)	OSHA	47
Methylene Bisphenyl Isocyanate	OSHA	33
total aerosol mass	NIOSH	0501

#### 8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

#### 8.1.4 Threshold values

##### DNEL/DMEL - Workers

4,4'-methylenediphenyl diisocyanate, oligomers

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.05 mg/m <sup>3</sup>	
	Acute local effects inhalation	0.1 mg/m <sup>3</sup>	

4,4'-methylenediphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.05 mg/m <sup>3</sup>	
	Acute local effects inhalation	0.1 mg/m <sup>3</sup>	

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.05 mg/m <sup>3</sup>	
	Acute local effects inhalation	0.1 mg/m <sup>3</sup>	

Talc (Mg<sub>3</sub>H<sub>2</sub>(SiO<sub>3</sub>)<sub>4</sub>)

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	2.16 mg/m <sup>3</sup>	
	Acute systemic effects inhalation	2.16 mg/m <sup>3</sup>	
	Long-term local effects inhalation	3.6 mg/m <sup>3</sup>	
	Acute local effects inhalation	3.6 mg/m <sup>3</sup>	
	Long-term systemic effects dermal	43.2 mg/kg bw/day	
	Long-term local effects dermal	4.54 mg/cm <sup>2</sup>	

zeolites

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	3 mg/m <sup>3</sup>	
	Long-term systemic effects dermal	2.5 mg/m <sup>3</sup>	

##### DNEL/DMEL - General population

4,4'-methylenediphenyl diisocyanate, oligomers

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.025 mg/m <sup>3</sup>	
	Acute local effects inhalation	0.05 mg/m <sup>3</sup>	

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## 4,4'-methylenediphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.025 mg/m <sup>3</sup>	
	Acute local effects inhalation	0.05 mg/m <sup>3</sup>	

## reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.025 mg/m <sup>3</sup>	
	Acute local effects inhalation	0.05 mg/m <sup>3</sup>	

## Talc (Mg<sub>3</sub>H<sub>2</sub>(SiO<sub>3</sub>)<sub>4</sub>)

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	1.08 mg/m <sup>3</sup>	
	Acute systemic effects inhalation	1.08 mg/m <sup>3</sup>	
	Long-term local effects inhalation	1.8 mg/m <sup>3</sup>	
	Acute local effects inhalation	1.8 mg/m <sup>3</sup>	
	Long-term systemic effects dermal	21.6 mg/kg bw/day	
	Long-term local effects dermal	2.27 mg/kg bw/day	
	Long-term systemic effects oral	160 mg/kg bw/day	
	Acute systemic effects oral	160 mg/kg bw/day	

## zeolites

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.003 mg/m <sup>3</sup>	
	Long-term systemic effects dermal	1.25 mg/kg bw/day	
	Long-term systemic effects oral	1.25 mg/kg bw/day	

## PNEC

### 4,4'-methylenediphenyl diisocyanate, oligomers

Compartments	Value	Remark
Fresh water	1 mg/l	
Marine water	0.1 mg/l	
Fresh water (intermittent releases)	10 mg/l	
STP	1 mg/l	
Soil	1 mg/kg soil dw	

### 4,4'-methylenediphenyl diisocyanate

Compartments	Value	Remark
Fresh water	3.7 µg/l	
Marine water	0.37 µg/l	
Fresh water (intermittent releases)	37 µg/l	
Fresh water (intermittent releases)	11.7 mg/kg sediment dw	
Marine water (intermittent releases)	1.17 mg/kg sediment dw	
Soil	2.33 mg/kg soil dw	

## reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Compartments	Value	Remark
Fresh water	1 mg/l	
Marine water	0.1 mg/l	
Fresh water (intermittent releases)	10 mg/l	
STP	1 mg/l	
Soil	1 mg/kg soil dw	

## Talc (Mg<sub>3</sub>H<sub>2</sub>(SiO<sub>3</sub>)<sub>4</sub>)

Compartments	Value	Remark
Fresh water	597.97 mg/l	
Fresh water (intermittent releases)	597.97 mg/l	
Marine water	141.26 mg/l	
Marine water (intermittent releases)	141.26 mg/l	
Fresh water sediment	31.33 mg/kg sediment dw	
Marine water sediment	3.13 mg/kg sediment dw	
Air	10 mg/m <sup>3</sup>	

## zeolites

Compartments	Value	Remark
Fresh water	3.2 mg/l	
Marine water	0.32 mg/l	
STP	95 mg/l	
Soil	600 mg/kg soil dw	

### 8.1.5 Control banding

If applicable and available it will be listed below.

### 8.2. Exposure controls

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

#### 8.2.1 Appropriate engineering controls

Keep away from naked flames/heat. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

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## 8.2.2 Individual protection measures, such as personal protective equipment

Observe very strict hygiene - avoid contact. Do not eat, drink or smoke during work.

### a) Respiratory protection:

Full face mask with filter type A at conc. in air > exposure limit.

### b) Hand protection:

Protective gloves against chemicals (EN 374), Change gloves frequently.

Materials	Measured breakthrough time	Thickness	Protection index	Remark
butyl rubber	> 480 minutes	> 0.5 mm	Class 6	
nitrile rubber	> 480 minutes	> 0.5 mm	Class 6	

### c) Eye protection:

Face shield (EN 166).

### d) Skin protection:

Protective clothing (EN 14605 or EN 13034).

## 8.2.3 Environmental exposure controls:

See sections 6.2, 6.3 and 13

## SECTION 9: Physical and chemical properties

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

Physical form	Liquid
Viscosity	Viscous
Odour	Hydrocarbon odour
Odour threshold	No data available in the literature
Colour	Beige
Particle size	Not applicable (liquid)
Explosion limits	No data available in the literature
Flammability	Not classified as flammable
Log Kow	Not applicable (mixture)
Dynamic viscosity	20000 mPa.s ; 20 °C
Kinematic viscosity	No data available in the literature
Melting point	No data available in the literature
Boiling point	> 200 °C
Relative vapour density	> 1
Vapour pressure	< 0.013 hPa ; 25 °C
Solubility	Water ; insoluble
Relative density	1.29 ; 20 °C
Absolute density	1288 kg/m <sup>3</sup> ; 20 °C
Decomposition temperature	No data available in the literature
Auto-ignition temperature	No data available in the literature
Flash point	203 °C
pH	Not applicable (non-soluble in water)

### 9.2. Other information

Evaporation rate	< 1 ; Butyl acetate
------------------	---------------------

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Heating increases the fire hazard.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

Decomposes on exposure to water (moisture).

### 10.4. Conditions to avoid

#### Precautionary measures

Keep away from naked flames/heat.

### 10.5. Incompatible materials

(strong) acids, (strong) bases, oxidizing agents, metals, water/moisture.

### 10.6. Hazardous decomposition products

On heating: release of toxic/combustible gases/vapours (hydrogen cyanide, isocyanates). On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide).



# NOVA POWER GRIP 403 2-K PREPOLYMER

## SECTION 11: Toxicological information

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

#### 11.1.1 Test results

##### Acute toxicity

###### NOVA POWER GRIP 403 2-K PREPOLYMER

No (test)data on the mixture available

Classification is based on the relevant ingredients

polymethylene polyphenyl isocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50		> 10000 mg/kg		Rat	Literature study	
Dermal	LD50		> 5000 mg/kg		Rabbit	Literature study	
Inhalation			category 4			Literature study	

###### 4,4'-methylenediphenyl diisocyanate, oligomers

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 425	> 5000 mg/kg bw		Rat (female)	Experimental value	
Dermal	LD50	Equivalent to OECD 402	> 9400 mg/kg bw	24 h	Rabbit (male / female)	Read-across	
Inhalation (aerosol)			category 4			Literature study	
Inhalation (aerosol)	LC50	Equivalent to OECD 403	0.49 mg/l air	4 h	Rat (male / female)	Read-across	

###### isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Inhalation			category 4			Literature study	

###### 4,4'-methylenediphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50		> 2000 mg/kg bw		Rat (male / female)	Read-across	
Dermal	LD50	Equivalent to OECD 402	> 9400 mg/kg bw	24 h	Rabbit (male / female)	Read-across	
Inhalation (aerosol)	LD50	Equivalent to OECD 403	0.42 mg/l	4 h	Rat (male / female)	QSAR	
Inhalation (aerosol)			category 4			Annex VI	

###### 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Inhalation			category 4			Literature study	

###### reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50		> 2000 mg/kg bw		Rat (male / female)	Experimental value	
Dermal	LD50	Equivalent to OECD 402	> 9400 mg/kg bw	24 h	Rabbit (male / female)	Read-across	
Inhalation (aerosol)	LC50	OECD 403	0.37 mg/l - 0.56 mg/l	4 h	Rat (male / female)	Experimental value	
Inhalation (aerosol)			category 4			Literature study	

###### isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha, alpha, alpha-1,2,3-propanetriyltris[omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Inhalation			category 4			Literature study	

###### 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with glycerol, propoxylated

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Inhalation			category 4			Literature study	

# NOVA POWER GRIP 403 2-K PREPOLYMER

## Talc (Mg<sub>3</sub>H<sub>2</sub>(SiO<sub>3</sub>)<sub>4</sub>)

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 423	> 5000 mg/kg bw		Rat (male)	Experimental value	
Dermal	LD50	OECD 402	> 2000 mg/kg bw	24 h	Rat (male / female)	Experimental value	
Inhalation (aerosol)	LC50	OECD 403	> 2.1 mg/l	4 h	Rat (male / female)	Experimental value	(maximum achievable concentration)

## zeolites

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	OECD 401	> 5110 mg/kg bw		Rat (male / female)	Experimental value	
Dermal	LD50	Equivalent to OECD 402	> 2000 mg/kg bw		Rabbit (female)	Experimental value	
Inhalation (dust)	LC50		> 3.35 mg/l air	4 h	Rat (male / female)	Experimental value	

## Conclusion

Harmful if inhaled.

Not classified as acute toxic in contact with skin

Not classified as acute toxic if swallowed

## Corrosion/irritation

### NOVA POWER GRIP 403 2-K PREPOLYMER

No (test) data on the mixture available

Classification is based on the relevant ingredients

polymethylene polyphenyl isocyanate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating; category 2					Literature study	
Skin	Irritating; category 2					Literature study	
Inhalation	Irritating; STOT SE cat.3					Literature study	

### 4,4'-methylenediphenyl diisocyanate, oligomers

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating; category 2					Literature study	
Eye	Not irritating	OECD 405	24 h	24; 48; 72 hours	Rabbit	Read-across	
Skin	Irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	
Inhalation	Irritating; STOT SE cat.3					Literature study	

### isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating; category 2					Literature study	
Skin	Irritating; category 2					Literature study	
Inhalation	Irritating; STOT SE cat.3					Literature study	

### 4,4'-methylenediphenyl diisocyanate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating	OECD 405		24; 48; 72 hours	Rabbit	Experimental value	Single treatment
Eye	Irritating	Human observation			Human	Weight of evidence	
Skin	Irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Read-across	
Inhalation	Irritating	Human observation			Human	Experimental value	

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# NOVA POWER GRIP 403 2-K PREPOLYMER

## 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating; category 2					Literature study	
Skin	Irritating; category 2					Literature study	
Inhalation	Irritating; STOT SE cat.3					Literature study	

## reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405	24 h	24; 48; 72 hours	Rabbit	Experimental value	Single treatment with rinsing
Eye	Irritating	Human observation			Human	Weight of evidence	
Skin	Irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Experimental value	
Inhalation	Irritating	Human observation			Human	Weight of evidence	

## isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha, alpha, alpha-1,2,3-propanetriyltris[omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating; category 2					Literature study	
Skin	Irritating; category 2					Literature study	
Inhalation	Irritating; STOT SE cat.3					Literature study	

## 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with glycerol, propoxylated

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Irritating; category 2					Literature study	
Skin	Irritating; category 2					Literature study	
Inhalation	Irritating; STOT SE cat.3					Literature study	

## Talc (Mg3H2(SiO3)4)

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405		1; 24; 48; 72 hours	Rabbit	Experimental value	Single treatment without rinsing
Not applicable (in vitro test)	Not irritating	EU Method B.46			Reconstructed human epidermis	Experimental value	

## zeolites

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405		24; 72 hours	Rabbit	Experimental value	Single treatment without rinsing
Skin	Not irritating	OECD 404	4 h	1; 24; 48; 72 hours	Rabbit	Experimental value	

### **Conclusion**

Causes skin irritation.  
Causes serious eye irritation.  
May cause respiratory irritation.

### **Respiratory or skin sensitisation**

#### NOVA POWER GRIP 403 2-K PREPOLYMER

No (test)data on the mixture available  
Classification is based on the relevant ingredients  
polymethylene polyphenyl isocyanate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing; category 1					Literature study	
Inhalation	Sensitizing; category 1					Literature study	

Reason for revision: 2.3, 3, 8, 12

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# NOVA POWER GRIP 403 2-K PREPOLYMER

## 4,4'-methylenediphenyl diisocyanate, oligomers

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing	OECD 406			Guinea pig (male / female)	Experimental value	
Inhalation	Sensitizing	OECD GD-39			Rat (male)	Experimental value	

## isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing; category 1					Literature study	
Inhalation	Sensitizing; category 1					Literature study	

## 4,4'-methylenediphenyl diisocyanate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing	Equivalent to OECD 406			Guinea pig (male / female)	Experimental value	
Skin	Sensitizing	Patch test			Human	Experimental value	
Inhalation	Sensitizing	Equivalent to OECD 403			Guinea pig	Experimental value	

## 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with alpha-hydro-omega-hydroxypoly[oxy-1,2-ethanediyl]

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing; category 1					Literature study	
Inhalation	Sensitizing; category 1					Literature study	

## reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal	Sensitizing	Equivalent to OECD 406			Guinea pig (male / female)	Experimental value	
Skin	Sensitizing; category 1					Literature study	
Inhalation	Sensitizing	OECD GD-39			Guinea pig	Experimental value	

## isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha, alpha, alpha-1,2,3-propanetriyltris[omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing; category 1					Literature study	
Inhalation	Sensitizing; category 1					Literature study	

## 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with glycerol, propoxylated

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing; category 1					Literature study	
Inhalation	Sensitizing; category 1					Literature study	

## Talc (Mg3H2(SiO3)4)

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	OECD 406			Guinea pig (female)	Experimental value	
Inhalation	Not sensitizing				Rat (male)	Experimental value	

## zeolites

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	OECD 406			Guinea pig	Experimental value	

### Conclusion

May cause an allergic skin reaction.  
May cause allergy or asthma symptoms or breathing difficulties if inhaled.

### Specific target organ toxicity

#### NOVA POWER GRIP 403 2-K PREPOLYMER

No (test) data on the mixture available  
Classification is based on the relevant ingredients

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# NOVA POWER GRIP 403 2-K PREPOLYMER

## polymethylene polyphenyl isocyanate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation			STOT RE cat.2					Literature study

## 4,4'-methylenediphenyl diisocyanate, oligomers

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation (aerosol)	NOAEC	Equivalent to OECD 453	0.2 mg/m <sup>3</sup>	Respiratory tract	No effect	104 weeks (6h / day, 5 days / week)	Rat (male / female)	Read-across
Inhalation (aerosol)	LOAEC	Equivalent to OECD 453	1 mg/m <sup>3</sup>	Respiratory tract	Histopathology	104 weeks (6h / day, 5 days / week)	Rat (male / female)	Read-across

## isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation			STOT RE cat.2					Literature study

## 4,4'-methylenediphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation (aerosol)	LOAEC		0.23 mg/m <sup>3</sup> air	Respiratory tract	Impairment/deneration	104 weeks (6h / day, 5 days / week)	Rat (female)	Experimental value

## 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with alpha-hydro-omega-hydroxypoly[oxy-1,2-ethanediyl]

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation			STOT RE cat.2					Literature study

## reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation (aerosol)	NOAEC	Equivalent to OECD 453	0.2 mg/m <sup>3</sup> air		No effect		Rat (male / female)	Read-across
Inhalation (aerosol)	LOAEC	Equivalent to OECD 453	1 mg/m <sup>3</sup> air		Histopathology		Rat (male / female)	Read-across

## isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha, alpha, alpha-1,2,3-propanetriyltris[omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation			STOT RE cat.2					Literature study

## 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with glycerol, propoxylated

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation			STOT RE cat.2	Respiratory tract				Literature study

## Talc (Mg<sub>3</sub>H<sub>2</sub>(SiO<sub>3</sub>)<sub>4</sub>)

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (diet)	NOAEL	Equivalent to OECD 452	100 mg/kg bw/day		No effect	101 day(s)	Rat (male / female)	Experimental value
Dermal								Data waiving
Inhalation (aerosol)	NOAEC	Equivalent to OECD 452	10.8 mg/m <sup>3</sup> air		No effect	52 weeks (7h / day, 5 days / week)	Rat (male / female)	Experimental value

## zeolites

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (diet)	NOAEL	Subchronic toxicity test	5000 ppm		No effect	90 day(s)	Rat (male)	Experimental value
Oral (diet)	NOAEL	Subchronic toxicity test	10000 ppm		No effect	90 day(s)	Rat (female)	Experimental value
Dermal								Data waiving
Inhalation (dust)	NOAEL		> 20 mg/m <sup>3</sup> air		No effect	4 weeks (3 times / week)	Rat (male / female)	

### Conclusion

May cause damage to organs through prolonged or repeated exposure if inhaled.  
 Not classified as sub-chronically toxic in contact with skin  
 Not classified as sub-chronically toxic if swallowed

### Mutagenicity (in vitro)

#### NOVA POWER GRIP 403 2-K PREPOLYMER

No (test) data on the mixture available  
 Judgement is based on the relevant ingredients

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# NOVA POWER GRIP 403 2-K PREPOLYMER

## 4,4'-methylenediphenyl diisocyanate, oligomers

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	OECD 471	Bacteria (S.typhimurium)	No effect	Experimental value	

## 4,4'-methylenediphenyl diisocyanate

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	EU Method B.13/14	Bacteria (S.typhimurium)	No effect	Experimental value	

## reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	EU Method B.13/14	Bacteria (S.typhimurium)		Experimental value	

## Talc (Mg<sub>3</sub>H<sub>2</sub>(SiO<sub>3</sub>)<sub>4</sub>)

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (S.typhimurium)		Experimental value	

## zeolites

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (S. typhimurium and E. coli)		Experimental value	
Negative with metabolic activation, negative without metabolic activation	OECD 476	Mouse (lymphoma L5178Y cells)		Experimental value	

## Mutagenicity (in vivo)

### NOVA POWER GRIP 403 2-K PREPOLYMER

No (test)data on the mixture available

Judgement is based on the relevant ingredients

#### 4,4'-methylenediphenyl diisocyanate, oligomers

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Inhalation (aerosol))	OECD 489	6 h	Rat (male)		Experimental value

#### 4,4'-methylenediphenyl diisocyanate

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Inhalation (dust))	OECD 474	3 weeks (1h / day, 1 day / week)	Rat (male)		Experimental value

#### reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Inhalation (aerosol))	OECD 474	3 week(s)	Rat (male)		Read-across

#### Talc (Mg<sub>3</sub>H<sub>2</sub>(SiO<sub>3</sub>)<sub>4</sub>)

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Oral (stomach tube))	Equivalent to OECD 478	5 days (1x / day)	Rat (male)		Experimental value

#### zeolites

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Oral (stomach tube))	Equivalent to OECD 475		Rat (male)		Experimental value

## Conclusion

Not classified for mutagenic or genotoxic toxicity

## Carcinogenicity

### NOVA POWER GRIP 403 2-K PREPOLYMER

No (test)data on the mixture available

Classification is based on the relevant ingredients

#### polymethylene polyphenyl isocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Unknown			category 2					Literature study

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# NOVA POWER GRIP 403 2-K PREPOLYMER

## 4,4'-methylenediphenyl diisocyanate, oligomers

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	NOAEC	Equivalent to OECD 453	1 mg/m <sup>3</sup> air	104 weeks (6h / day, 5 days / week)	Rat (male / female)	No carcinogenic effect	Respiratory tract	Read-across
Inhalation (aerosol)	LOAEC	Equivalent to OECD 453	6 mg/m <sup>3</sup> air	104 weeks (6h / day, 5 days / week)	Rat (male / female)	Tumor formation	Respiratory tract	Read-across

## isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation			category 2					Literature study

## 4,4'-methylenediphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	NOAEC	Carcinogenic toxicity study	0.7 mg/m <sup>3</sup> air	104 weeks (5 days / week)	Rat (female)	No carcinogenic effect		Experimental value

## 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with alpha-hydro-omega-hydroxypoly[oxy-1,2-ethanediyl]

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Unknown			category 2					Literature study

## reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	NOAEC	Equivalent to OECD 453	1 mg/m <sup>3</sup> air	2 year(s) (6h / day, 5 days / week)	Rat (male / female)	No carcinogenic effect		Read-across
Inhalation (aerosol)	LOAEC	Equivalent to OECD 453	6 mg/m <sup>3</sup> air		Rat (male / female)	Carcinogenicity		Read-across

## isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha, alpha, alpha-1,2,3-propanetriyltris[omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Unknown			category 2					Literature study

## 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with glycerol, propoxylated

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
			category 2				Respiratory tract	Literature study

## Talc (Mg<sub>3</sub>H<sub>2</sub>(SiO<sub>3</sub>)<sub>4</sub>)

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	NOAEC	OECD 453	18 mg/m <sup>3</sup> air	113 weeks (6h / day, 5 days / week) - 122 weeks (6h / day, 5 days / week)	Rat (male / female)	No carcinogenic effect		Experimental value
Oral (diet)	NOAEL	OECD 453	100 mg/kg bw/day	101 day(s)	Rat (male / female)	No carcinogenic effect		Experimental value

## zeolites

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Oral (diet)	NOAEL	Carcinogenic toxicity study	≥ 60 mg/kg bw/day	104 week(s)	Rat (male / female)	No carcinogenic effect		Experimental value

## Conclusion

Suspected of causing cancer.

## Reproductive toxicity

### NOVA POWER GRIP 403 2-K PREPOLYMER

No (test) data on the mixture available

Judgement is based on the relevant ingredients

### 4,4'-methylenediphenyl diisocyanate, oligomers

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Inhalation (aerosol))	NOAEL	OECD 414	4 mg/m <sup>3</sup> air	10 days (6h / day)	Rat	No effect	Foetus	Read-across
Maternal toxicity (Inhalation (aerosol))	NOAEL	OECD 414	4 mg/m <sup>3</sup> air	10 days (6h / day)	Rat	No effect	General	Read-across
Effects on fertility (Inhalation (vapours))	NOEL	OECD 422	2.03 mg/kg bw/day	28 weeks (6h / day, 7 days / week) - 50 weeks (6h / day, 7 days / week)	Rat (male / female)	No effect		Read-across

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# NOVA POWER GRIP 403 2-K PREPOLYMER

## 4,4'-methylenediphenyl diisocyanate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Inhalation (aerosol))	NOAEC	Equivalent to OECD 414	3 mg/m <sup>3</sup> air	10 days (gestation, daily)	Rat	No effect	Foetus	Experimental value
	Dose level	Equivalent to OECD 414	9 mg/kg bw/day	10 days (gestation, daily)	Rat	Minor skeletal variations	Foetus	Experimental value
Maternal toxicity (Inhalation (aerosol))	LOAEC	Equivalent to OECD 414	≥ 9 mg/m <sup>3</sup> air	10 days (gestation, daily)	Rat	Body weight, organ weight		Experimental value
Effects on fertility (Inhalation (vapours))	NOAEC	Equivalent to OECD 416	0.3 ppm		Rat (male / female)	No effect		Experimental value

## reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Inhalation (aerosol))	NOAEC	OECD 414	4 mg/m <sup>3</sup> air	10 days (gestation, daily)	Rat	No effect		Read-across
Maternal toxicity (Inhalation (aerosol))	NOAEC	OECD 414	4 mg/m <sup>3</sup> air	10 days (gestation, daily)	Rat	No effect		Read-across
Effects on fertility (Inhalation (vapours))	NOAEC	Equivalent to OECD 416	0.3 ppm		Rat (male / female)	No effect		Experimental value

## Talc (Mg<sub>3</sub>H<sub>2</sub>(SiO<sub>3</sub>)<sub>4</sub>)

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (stomach tube))	NOAEL	Developmental toxicity study	1600 mg/kg bw/day	10 days (1x / day)	Rat	No effect		Experimental value
Maternal toxicity (Oral (stomach tube))	NOAEL	Developmental toxicity study	≥ 1600 mg/kg bw/day	10 days (1x / day)	Rat	No effect		Experimental value
Effects on fertility (Oral (stomach tube))	NOAEL	Equivalent to OECD 416	> 900 mg/kg bw/day	13 days (1x / day)	Rabbit (female)	No effect		Experimental value

## zeolites

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 414	> 1600 mg/kg bw/day	10 days (gestation, daily)	Rat	No effect		Experimental value
Maternal toxicity (Oral (stomach tube))	NOAEL	Equivalent to OECD 414	> 1600 mg/kg bw/day	10 days (gestation, daily)	Rat	No effect		Experimental value
Effects on fertility (Oral (diet))	NOAEL		≥ 2 %		Rat (male)	No effect	Testes	Experimental value

## Conclusion

Not classified for reprotoxic or developmental toxicity

## Toxicity other effects

### NOVA POWER GRIP 403 2-K PREPOLYMER

No (test)data on the mixture available

## Chronic effects from short and long-term exposure

### NOVA POWER GRIP 403 2-K PREPOLYMER

Skin rash/inflammation. Respiratory difficulties.

## 11.2. Information on other hazards

No evidence of endocrine disrupting properties

## SECTION 12: Ecological information

### 12.1. Toxicity

#### NOVA POWER GRIP 403 2-K PREPOLYMER

No (test)data on the mixture available

Judgement of the mixture is based on the relevant ingredients

#### polymethylene polyphenyl isocyanate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity other aquatic organisms	LC50		> 1000 mg/l	96 h				Literature study
Toxicity aquatic micro-organisms	EC50	OECD 209	> 100 mg/l		Activated sludge			Literature study

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## 4,4'-methylenediphenyl diisocyanate, oligomers

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	> 1000 mg/l	96 h	Danio rerio	Static system	Fresh water	Read-across; Nominal concentration
Acute toxicity crustacea	EC50	OECD 202	> 1000 mg/l	24 h	Daphnia magna	Static system	Fresh water	Read-across; Nominal concentration
Toxicity algae and other aquatic plants	ErC50	OECD 201	> 1640 mg/l	3 day(s)	Desmodesmus subspicatus	Static system	Fresh water	Read-across; GLP
	NOELR	OECD 201	1640 mg/l	3 day(s)	Desmodesmus subspicatus	Static system	Fresh water	Read-across; Growth rate
Long-term toxicity fish								Data waiving
Long-term toxicity aquatic crustacea	NOEC	OECD 211	≥ 10 mg/l	21 day(s)	Daphnia magna	Semi-static system	Fresh water	Read-across; Nominal concentration

## 4,4'-methylenediphenyl diisocyanate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	> 1000 mg/l	96 h	Danio rerio	Static system	Fresh water	Read-across; Nominal concentration
Acute toxicity crustacea	EC50	OECD 202	129.7 mg/l	24 h	Daphnia magna	Static system	Fresh water	Read-across; Locomotor effect
Toxicity algae and other aquatic plants	ErC50	OECD 201	> 1640 mg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Read-across; GLP
	NOELR	OECD 201	1640 mg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Read-across; Growth rate
Long-term toxicity aquatic crustacea	NOEC	OECD 211	≥ 10 mg/l	21 day(s)	Daphnia magna	Semi-static system	Fresh water	Read-across; Reproduction
Toxicity aquatic micro-organisms	EC50	OECD 209	> 100 mg/l	3 h	Activated sludge	Static system	Fresh water	Read-across; Respiration

## reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	> 1000 mg/l	96 h	Danio rerio	Static system	Fresh water	Read-across; Nominal concentration
Acute toxicity crustacea	EC50	OECD 202	> 1000 mg/l	24 h	Daphnia magna	Static system	Fresh water	Read-across; Nominal concentration
Toxicity algae and other aquatic plants	ErC50	OECD 201	> 1640 mg/l	3 day(s)	Desmodesmus subspicatus	Static system	Fresh water	Read-across; Nominal concentration
	NOELR	OECD 201	1640 mg/l	3 day(s)	Desmodesmus subspicatus	Static system	Fresh water	Read-across; Growth rate
Long-term toxicity fish								Data waiving
Long-term toxicity aquatic crustacea	NOEC	OECD 211	≥ 10 mg/l	21 day(s)	Daphnia magna	Semi-static system	Fresh water	Read-across; Nominal concentration

## Talc (Mg3H2(SiO3)4)

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	ECOSAR v1.00	89581 mg/l	96 h	Pisces		Fresh water	QSAR
Acute toxicity crustacea	LC50	ECOSAR v1.00	36812 mg/l	48 h	Daphnia sp.		Fresh water	QSAR
Toxicity algae and other aquatic plants	EC50	ECOSAR v1.00	7203 mg/l	96 h	Algae		Fresh water	QSAR
	NOEC	ECOSAR v1.00	918 mg/l	30 day(s)	Algae		Fresh water	QSAR
Long-term toxicity fish	NOEC	ECOSAR v1.00	5980 mg/l	30 day(s)	Pisces		Fresh water	QSAR
Long-term toxicity aquatic crustacea	NOEC	ECOSAR v1.00	1460 mg/l	30 day(s)	Daphnia sp.		Fresh water	QSAR

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## zeolites

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	NOEC	EPA 660/3 - 75/009	> 680 mg/l	96 h	Pimephales promelas	Static system	Fresh water	Experimental value; Nominal concentration
Acute toxicity crustacea	EC50	OECD 202	2808 mg/l	24 h	Daphnia magna	Static system	Fresh water	Read-across; Nominal concentration
Toxicity algae and other aquatic plants	ErC50	OECD 201	18 mg/l - 34 mg/l	96 h	Desmodesmus subspicatus	Static system	Fresh water	Read-across; Nominal concentration
	NOEC	OECD 201	10 mg/l	96 h	Desmodesmus subspicatus	Static system	Fresh water	Read-across; Nominal concentration
Long-term toxicity fish	NOEC	US EPA	> 86.7 mg/l	30 day(s)	Pimephales promelas	Flow-through system	Fresh water	Experimental value
Long-term toxicity aquatic crustacea	NOEC	OECD 211	32 mg/l	21 day(s)	Daphnia magna	Semi-static system	Fresh water	Experimental value; Nominal concentration

## Conclusion

Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008

## 12.2. Persistence and degradability

### polymethylene polyphenyl isocyanate

#### Biodegradation water

Method	Value	Duration	Value determination
OECD 302C	< 60 %		Experimental value

### 4,4'-methylenediphenyl diisocyanate, oligomers

#### Biodegradation water

Method	Value	Duration	Value determination
OECD 302C	0 %	28 day(s)	Read-across

### 4,4'-methylenediphenyl diisocyanate

#### Biodegradation water

Method	Value	Duration	Value determination
OECD 302C	0 %; Oxygen consumption	28 day(s)	Read-across

#### Half-life water (t1/2 water)

Method	Value	Primary degradation/mineralisation	Value determination
	20 h		Read-across

### reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

#### Biodegradation water

Method	Value	Duration	Value determination
OECD 302C	0 %; Oxygen consumption	28 day(s)	Read-across

### Talc (Mg3H2(SiO3)4)

#### Phototransformation air (DT50 air)

Method	Value	Conc. OH-radicals	Value determination
AOPWIN v1.92	18.602 h	1.5E6 /cm <sup>3</sup>	QSAR

## Conclusion

### Water

Contains non readily biodegradable component(s)

## 12.3. Bioaccumulative potential

### NOVA POWER GRIP 403 2-K PREPOLYMER

#### Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (mixture)			

### polymethylene polyphenyl isocyanate

#### BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF	BCFBAF v3.01	268.1 l/kg; Fresh weight			Estimated value

#### Log Kow

Method	Remark	Value	Temperature	Value determination
KOWWIN		10.46		Calculated

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## 4,4'-methylenediphenyl diisocyanate, oligomers

### BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF	OECD 305	92 - 200; GLP	28 day(s)	Cyprinus carpio	Experimental value

### Log Kow

Method	Remark	Value	Temperature	Value determination
		8.56		Estimated value

## isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]

### Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available in the literature			

## 4,4'-methylenediphenyl diisocyanate

### BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF	OECD 305	92 - 200; GLP	4 week(s)	Cyprinus carpio	Experimental value

### Log Kow

Method	Remark	Value	Temperature	Value determination
OECD 117		4.51	22 °C	Experimental value

## 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)

### Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available in the literature			

## reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

### BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF	OECD 305	92 - 200; GLP	28 day(s)	Cyprinus carpio	Experimental value

### Log Kow

Method	Remark	Value	Temperature	Value determination
OECD 117		4.51	22 °C	Experimental value

## isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha, alpha, alpha-1,2,3-propanetriyltris[omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]

### Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available in the literature			

## 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with glycerol, propoxylated

### Log Kow

Method	Remark	Value	Temperature	Value determination
	No data available in the literature			

## Talc (Mg3H2(SiO3)4)

### BCF other aquatic organisms

Parameter	Method	Value	Duration	Species	Value determination
BCF	BCFBAF v3.01	3.162 l/kg			QSAR

### Log Kow

Method	Remark	Value	Temperature	Value determination
KOWWIN		-9.4	25 °C	QSAR

## zeolites

### BCF other aquatic organisms

Parameter	Method	Value	Duration	Species	Value determination
BCF		0.59 - 0.95; Fresh weight	28 day(s)		Experimental value

### Log Kow

Method	Remark	Value	Temperature	Value determination
	Not applicable (inorganic)			

## Conclusion

Does not contain bioaccumulative component(s)

## 12.4. Mobility in soil

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polymethylene polyphenyl isocyanate

(log) Koc

Parameter	Method	Value	Value determination
log Koc	SRC PCKOCWIN v2.0	9.078 - 10.597	Calculated value

Percent distribution

Method	Fraction air	Fraction biota	Fraction sediment	Fraction soil	Fraction water	Value determination
Fugacity Model Level III	0.0387 %		64.4 %	34.2 %	1.32 %	Calculated value

4,4'-methylenediphenyl diisocyanate, oligomers

(log) Koc

Parameter	Method	Value	Value determination
Koc		8200	Estimated value
log Koc		3.9	Calculated value

4,4'-methylenediphenyl diisocyanate

(log) Koc

Parameter	Method	Value	Value determination
log Koc	SRC PCKOCWIN v2.0	4.530 - 5.455	Calculated value

reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

(log) Koc

Parameter	Method	Value	Value determination
			Data waiving

Talc (Mg<sub>3</sub>H<sub>2</sub>(SiO<sub>3</sub>)<sub>4</sub>)

Percent distribution

Method	Fraction air	Fraction biota	Fraction sediment	Fraction soil	Fraction water	Value determination
Mackay level III	0 %	0 %	39.3 %	56 %	4.72 %	QSAR

zeolites

(log) Koc

Parameter	Method	Value	Value determination
			Data waiving

Percent distribution

Method	Fraction air	Fraction biota	Fraction sediment	Fraction soil	Fraction water	Value determination
	0.00 %		0.31 %	59.79 %	39.9 %	Calculated value

## Conclusion

Contains component(s) that adsorb(s) into the soil

## 12.5. Results of PBT and vPvB assessment

Does not contain component(s) that meet(s) the criteria of PBT and/or vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006.

## 12.6. Endocrine disrupting properties

No evidence of endocrine disrupting properties

## 12.7. Other adverse effects

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### Greenhouse gases

None of the known components is included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014)

### Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

Talc (Mg<sub>3</sub>H<sub>2</sub>(SiO<sub>3</sub>)<sub>4</sub>)

### Water ecotoxicity pH

pH shift

## SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

### 13.1. Waste treatment methods

#### 13.1.1 Provisions relating to waste

##### European Union

Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.

Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).

08 05 01\* (wastes not otherwise specified in 08: waste isocyanates). Depending on branch of industry and production process, also other waste codes may be applicable.

#### 13.1.2 Disposal methods

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Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Do not discharge into drains or the environment. Dispose of at authorized waste collection point.

## 13.1.3 Packaging/Container

### European Union

Waste material code packaging (Directive 2008/98/EC).

15 01 10\* (packaging containing residues of or contaminated by dangerous substances).

## SECTION 14: Transport information

### Road (ADR), Rail (RID), Inland waterways (ADN), Sea (IMDG/IMSBC), Air (ICAO-TI/IATA-DGR)

#### 14.1. UN number

Transport	Not subject
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#### 14.2. UN proper shipping name

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

Hazard identification number	
Class	
Classification code	

#### 14.4. Packing group

Packing group	
Labels	

#### 14.5. Environmental hazards

Environmentally hazardous substance mark	no
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#### 14.6. Special precautions for user

Special provisions	
Limited quantities	

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

Annex II of MARPOL 73/78	Not applicable, based on available data
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## SECTION 15: Regulatory information

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

#### European legislation:

VOC content Directive 2010/75/EU

VOC content	Remark
0 %	

Directive 2012/18/EU (Seveso III)

Not subject to registration according to Directive 2012/18/EU (Seveso III)

REACH Annex XVII - Restriction

Contains component(s) subject to restrictions of Annex XVII of Regulation (EC) No 1907/2006: restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

	Designation of the substance, of the group of substances or of the mixture	Conditions of restriction
· polymethylene polyphenyl isocyanate · 4,4'-methylenediphenyl diisocyanate, oligomers · isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)] · reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl) phenyl isocyanate / methylene diphenyl diisocyanate	Liquid substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: (a) hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F; (b) hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10; (c) hazard class 4.1; (d) hazard class 5.1.	1. Shall not be used in: — ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays, — tricks and jokes, — games for one or more participants, or any article intended to be used as such, even with ornamental aspects, 2. Articles not complying with paragraph 1 shall not be placed on the market. 3. Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they: — can be used as fuel in decorative oil lamps for supply to the general public, and, — present an aspiration hazard and are labelled with H304, 4. Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN). 5. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of dangerous substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met: a) lamp oils, labelled with H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: "Keep lamps filled with this liquid out of the reach of children"; and, by 1 December 2010, "Just a sip of lamp oil — or even sucking the wick of lamps — may lead to life-threatening lung damage"; b) grill lighter fluids, labelled with H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: "Just a sip of grill lighter may lead to life threatening lung damage"; c) lamp oils and grill lighters, labelled with H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.
· 4,4'-methylenediphenyl diisocyanate	Methylenediphenyl diisocyanate (MDI) including the following specific isomers: 4,4'-	1. Shall not be placed on the market after 27 December 2010, as a constituent of mixtures in concentrations equal to or greater than 0,1% by weight of MDI for supply to

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	<p>Methylenediphenyl diisocyanate; 2,4'-Methylenediphenyl diisocyanate; 2,2'-Methylenediphenyl diisocyanate</p>	<p>the general public, unless suppliers shall ensure before the placing on the market that the packaging:</p> <p>(a) contains protective gloves which comply with the requirements of Council Directive 89/686/EEC;</p> <p>(b) is marked visibly, legibly and indelibly as follows, and without prejudice to other Community legislation concerning the classification, packaging and labelling of substances and mixtures:</p> <p>— Persons already sensitised to diisocyanates may develop allergic reactions when using this product.</p> <p>— Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.</p> <p>— This product should not be used under conditions of poor ventilation unless a protective mask with an appropriate gas filter (i.e. type A1 according to standard EN 14387) is used.</p> <p>2. By way of derogation, paragraph 1(a) shall not apply to hot melt adhesives.</p>
<ul style="list-style-type: none"> <li>· 4,4'-methylenediphenyl diisocyanate, oligomers</li> <li>· 4,4'-methylenediphenyl diisocyanate</li> <li>· 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediy)</li> <li>· reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl) phenyl isocyanate / methylene diphenyl diisocyanate</li> </ul>	<p>Diisocyanates, O = C=N-R-N = C=O, with R an aliphatic or aromatic hydrocarbon unit of unspecified length</p>	<p>1. Shall not be used as substances on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) after 24 August 2023, unless:</p> <p>(a) the concentration of diisocyanates individually and in combination is less than 0,1 % by weight, or</p> <p>(b) the employer or self-employed ensures that industrial or professional user(s) have successfully completed training on the safe use of diisocyanates prior to the use of the substance(s) or mixture(s).</p> <p>2. Shall not be placed on the market as substances on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) after 24 February 2022, unless:</p> <p>(a) the concentration of diisocyanates individually and in combination is less than 0,1 % by weight, or</p> <p>(b) the supplier ensures that the recipient of the substance(s) or mixture(s) is provided with information on the requirements referred to in point (b) of paragraph 1 and the following statement is placed on the packaging, in a manner that is visibly distinct from the rest of the label information: "As from 24 August 2023 adequate training is required before industrial or professional use".</p> <p>3. For the purpose of this entry "industrial and professional user(s)" means any worker or self-employed worker handling diisocyanates on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) or supervising these tasks.</p> <p>4. The training referred to in point (b) of paragraph 1 shall include the instructions for the control of dermal and inhalation exposure to diisocyanates at the workplace without prejudice to any national occupational exposure limit value or other appropriate risk management measures at national level. Such training shall be conducted by an expert on occupational safety and health with competence acquired by relevant vocational training. That training shall cover as a minimum:</p> <p>(a) the training elements in point (a) of paragraph 5 for all industrial and professional use(s).</p> <p>(b) the training elements in points (a) and (b) of paragraph 5 for the following uses:</p> <ul style="list-style-type: none"> <li>— handling open mixtures at ambient temperature (including foam tunnels);</li> <li>— spraying in a ventilated booth;</li> <li>— application by roller;</li> <li>— application by brush;</li> <li>— application by dipping and pouring;</li> <li>— mechanical post treatment (e.g. cutting) of not fully cured articles which are not warm anymore;</li> <li>— cleaning and waste;</li> <li>— any other uses with similar exposure through the dermal and/or inhalation route;</li> </ul> <p>(c) the training elements in points (a), (b) and (c) of paragraph 5 for the following uses:</p> <ul style="list-style-type: none"> <li>— handling incompletely cured articles (e.g. freshly cured, still warm);</li> <li>— foundry applications;</li> <li>— maintenance and repair that needs access to equipment;</li> <li>— open handling of warm or hot formulations (&gt; 45 °C);</li> <li>— spraying in open air, with limited or only natural ventilation (includes large industry working halls) and spraying with high energy (e.g. foams, elastomers);</li> <li>— and any other uses with similar exposure through the dermal and/or inhalation route.</li> </ul> <p>5. Training elements:</p> <p>(a) general training, including on-line training, on:</p> <ul style="list-style-type: none"> <li>— chemistry of diisocyanates;</li> <li>— toxicity hazards (including acute toxicity);</li> <li>— exposure to diisocyanates;</li> <li>— occupational exposure limit values;</li> <li>— how sensitisation can develop;</li> <li>— odour as indication of hazard;</li> <li>— importance of volatility for risk;</li> <li>— viscosity, temperature, and molecular weight of diisocyanates;</li> <li>— personal hygiene;</li> <li>— personal protective equipment needed, including practical instructions for its correct use and its limitations;</li> <li>— risk of dermal contact and inhalation exposure;</li> <li>— risk in relation to application process used;</li> <li>— skin and inhalation protection scheme;</li> <li>— ventilation;</li> <li>— cleaning, leakages, maintenance;</li> <li>— discarding empty packaging;</li> <li>— protection of bystanders;</li> <li>— identification of critical handling stages;</li> <li>— specific national code systems (if applicable);</li> <li>— behaviour-based safety;</li> <li>— certification or documented proof that training has been successfully completed</li> </ul>

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		<p>(b) intermediate level training, including on-line training, on:</p> <ul style="list-style-type: none"> <li>— additional behaviour-based aspects;</li> <li>— maintenance;</li> <li>— management of change;</li> <li>— evaluation of existing safety instructions;</li> <li>— risk in relation to application process used;</li> <li>— certification or documented proof that training has been successfully completed</li> </ul> <p>(c) advanced training, including on-line training, on:</p> <ul style="list-style-type: none"> <li>— any additional certification needed for the specific uses covered;</li> <li>— spraying outside a spraying booth;</li> <li>— open handling of hot or warm formulations (&gt; 45 °C);</li> <li>— certification or documented proof that training has been successfully completed</li> </ul> <p>6. The training shall comply with the provisions set by the Member State in which the industrial or professional user(s) operate. Member States may implement or continue to apply their own national requirements for the use of the substance(s) or mixture(s), as long as the minimum requirements set out in paragraphs 4 and 5 are met.</p> <p>7. The supplier referred to in point (b) of paragraph 2 shall ensure that the recipient is provided with training material and courses pursuant to paragraphs 4 and 5 in the official language(s) of the Member State(s) where the substance(s) or mixture(s) are supplied. The training shall take into consideration the specificity of the products supplied, including composition, packaging, and design.</p> <p>8. The employer or self-employed shall document the successful completion of the training referred to in paragraphs 4 and 5. The training shall be renewed at least every five years.</p> <p>9. Member States shall include in their reports pursuant to Article 117(1) the following information:</p> <ul style="list-style-type: none"> <li>(a) any established training requirements and other risk management measures related to the industrial and professional uses of diisocyanates foreseen in national law;</li> <li>(b) the number of cases of reported and recognised occupational asthma and occupational respiratory and dermal diseases in relation to diisocyanates;</li> <li>(c) national exposure limits for diisocyanates, if there are any;</li> <li>(d) information about enforcement activities related to this restriction.</li> </ul> <p>10. This restriction shall apply without prejudice to other Union legislation on the protection of safety and health of workers at the workplace.</p>
· 4,4'-methylenediphenyl diisocyanate	<p>Substances falling within one or more of the following points:</p> <p>(a) substances classified as any of the following in Part 3 of Annex VI to Regulation (EC) No 1272/2008:</p> <ul style="list-style-type: none"> <li>— carcinogen category 1A, 1B or 2, or germ cell mutagen category 1A, 1B or 2, but excluding any such substances classified due to effects only following exposure by inhalation</li> <li>— reproductive toxicant category 1A, 1B or 2 but excluding any such substances classified due to effects only following exposure by inhalation</li> <li>— skin sensitiser category 1, 1A or 1B</li> <li>— skin corrosive category 1, 1A, 1B or 1C or skin irritant category 2</li> <li>— serious eye damage category 1 or eye irritant category 2</li> </ul> <p>(b) substances listed in Annex II to Regulation (EC) No 1223/2009 of the European Parliament and of the Council</p> <p>(c) substances listed in Annex IV to Regulation (EC) No 1223/2009 for which a condition is specified in at least one of the columns g, h and i of the table in that Annex (d) substances listed in Appendix 13 to this Annex.</p> <p>The ancillary requirements in paragraphs 7 and 8 of column 2 of this entry apply to all mixtures for use for tattooing purposes, whether or not they contain a substance falling within points (a) to (d) of this column of this entry.</p>	Mixtures for tattooing purposes are subject to the restrictions of Regulation (EU) 2020/2081

**National legislation Belgium**

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No data available

**National legislation The Netherlands**

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Waterbezwaarlijkheid	A (4); Algemene Beoordelingsmethodiek (ABM)
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**National legislation France**

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No data available

4,4'-methylenediphenyl diisocyanate

Catégorie cancérogène	4,4'-Diisocyanate de diphenylméthane; C2
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**National legislation Germany**

Reason for revision: 2.3, 3, 8, 12	Publication date: 2006-02-02
	Date of revision: 2022-02-21
Revision number: 0500	BIG number: 32189
	23 / 25

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WGK	1; Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV) - 18. April 2017
<u>polymethylene polyphenyl isocyanate</u>	
TA-Luft	5.2.5/I
TRGS905 - Krebs erzeugend	Techn. ("Polymeres") MDI (pMDI) (in Form atembarer Aerosole, A-Fraktion); 2
TRGS905 - Erbgutverändernd	Techn. ("Polymeres") MDI (pMDI) (in Form atembarer Aerosole, A-Fraktion); -
TRGS905 - Fruchtbarkeitsgefährdend	Techn. ("Polymeres") MDI (pMDI) (in Form atembarer Aerosole, A-Fraktion); -
TRGS905 - Fruchtschädigend	Techn. ("Polymeres") MDI (pMDI) (in Form atembarer Aerosole, A-Fraktion); -
<u>4,4'-methylenediphenyl diisocyanate, oligomers</u>	
TA-Luft	5.2.5/I
<u>isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly[oxy(methyl-1,2-ethanediy)]</u>	
TA-Luft	5.2.5/I
<u>4,4'-methylenediphenyl diisocyanate</u>	
TA-Luft	5.2.5/I
TRGS900 - Risiko der Fruchtschädigung	4,4'-Methylenediphenyldiisocyanat; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
Sensibilisierende Stoffe	4,4'-Methylenediphenyldiisocyanat; Sh; Hautsensibilisierende Stoffe
Hautresorptive Stoffe	4,4'-Methylenediphenyldiisocyanat; H; Hautresorptiv
<u>reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate</u>	
TA-Luft	5.2.5/I
<u>Talc (Mg3H2(SiO3)4)</u>	
TA-Luft	5.2.1
<u>zeolites</u>	
TA-Luft	5.2.1

### National legislation Austria

#### NOVA POWER GRIP 403 2-K PREPOLYMER

No data available

#### 4,4'-methylenediphenyl diisocyanate

Krebs erzeugend	Diphenylmethan-diisocyanat (alle Isomeren):Diphenylmethan-4,4'-diisocyanat Diphenylmethan-2,2'-diisocyanat Diphenylmethan-2,4'-diisocyanat; III B
Gefahr der Sensibilisierung der Haut	Diphenylmethan-diisocyanat (alle Isomeren):Diphenylmethan-4,4'-diisocyanat Diphenylmethan-2,2'-diisocyanat Diphenylmethan-2,4'-diisocyanat; Sh
Gefahr der Sensibilisierung der Atemwege	Diphenylmethan-diisocyanat (alle Isomeren):Diphenylmethan-4,4'-diisocyanat Diphenylmethan-2,2'-diisocyanat Diphenylmethan-2,4'-diisocyanat; Sa

### National legislation United Kingdom

#### NOVA POWER GRIP 403 2-K PREPOLYMER

No data available

#### polymethylene polyphenyl isocyanate

Skin Sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen
Respiratory sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen

#### 4,4'-methylenediphenyl diisocyanate

Skin Sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen
Respiratory sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen

#### reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

Skin Sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen
Respiratory sensitisation	Isocyanates, all (as -NCO) Except methyl isocyanate; Sen

### Other relevant data

#### NOVA POWER GRIP 403 2-K PREPOLYMER

No data available

#### polymethylene polyphenyl isocyanate

IARC - classification	3; Polymethylene polyphenyl isocyanate
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#### 4,4'-methylenediphenyl diisocyanate

IARC - classification	3; 4,4'-methylenediphenyl diisocyanate and polymeric 4,4'-methylenediphenyl diisocyanate
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#### Talc (Mg3H2(SiO3)4)

IARC - classification	3; Talc
TLV - Carcinogen	Talc: Containing no asbestos fibers; A4

#### zeolites

IARC - classification	3; Zeolites other than erionite
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## 15.2. Chemical safety assessment

No chemical safety assessment has been conducted for the mixture.

#### reaction mass of 4,4'-methylene diphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate / methylene diphenyl diisocyanate

A chemical safety assessment has been performed.



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## SECTION 16: Other information

### Full text of any H- and EUH-statements referred to under section 3:

- 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 (respiratory system) through prolonged or repeated exposure if inhaled.
- H373 May cause damage to organs through prolonged or repeated exposure if inhaled.
- H373 May cause damage to organs (lungs) through prolonged or repeated exposure if inhaled.

(*)	INTERNAL CLASSIFICATION BY BIG
ADI	Acceptable daily intake
AOEL	Acceptable operator exposure level
ATE	Acute Toxicity Estimate
CLP (EU-GHS)	Classification, labelling and packaging (Globally Harmonised System in Europe)
DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level
EC50	Effect Concentration 50 %
ErC50	ErC50 in terms of reduction of growth rate
LC50	Lethal Concentration 50 %
LD50	Lethal Dose 50 %
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent, Bioaccumulative & Toxic
PNEC	Predicted No Effect Concentration
STP	Sludge Treatment Process
vPvB	very Persistent & very Bioaccumulative

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided and cannot be held liable for any changes by third parties. This safety data sheet is only to be used within the European Union, Switzerland, Iceland, Norway and Liechtenstein. Any use outside of this area is at your own risk. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement or when this is failing the general conditions of BIG. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult the mentioned agreement/conditions for details.