SAFETY DATA SHEET

Based upon Regulation (EC) No 1907/2006, as amended by Regulation (EU) No 2015/830

NOVA POWER GRIP 401 2-K prepolymer

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

1.1. Product identifier

Product name : NOVA POWER GRIP 401 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@tec7.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 (respiratory system) 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-ethanediyl)]; 4,4'-methylenediphenyl diisocyanate; 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl); reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate; isocyanic acid, polymethylenpolyphenylene ester, polymer with alpha, alpha, alpha-1,2,3-propanetriyltris[omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with glycerol, propoxylated.

Signal word Danger
H-statements

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 (respiratory system) 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.

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	Conc. (C)	Classification according to CLP	Note	Remark
polymethylene polyphenyl isocyanate	9016-87-9	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	(1)(2)(8)(10)(V)	Constituent
4,4'-methylenediphenyl diisocyanate, oligomers 01-2119457013-49	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	(10)	Constituent
isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly[oxy (methyl-1,2-ethanediyl)]	53862-89-8	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
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	(1)(2)(8)(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)	Constituent

reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate 01-2119457015-45		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
isocyanic acid, polymethylenpolyphenylene ester, polymer with alpha, alpha, alpha-1,2,3-propanetriyltris[omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]	57029-46-6	3%≤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)(8)	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 ($Mg_3H_2(SiO_3)_4$)	14807-96-6 238-877-9	5%≤C<10%		(2)	Constituent

(1) For H-statements in full: see heading 16
(2) Substance with a Community workplace exposure limit
(8) Specific concentration limits, see heading 16
(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)

SECTION 4: First aid measures

4.1. Description of first aid measures

General:

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact:

Wash immediately with lots of water. Do not apply (chemical) neutralizing agents without medical advice. Take victim to a doctor if irritation persists.

After eye contact:

Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply (chemical) neutralizing agents without medical advice. Take victim to an ophthalmologist if irritation persists.

After ingestion:

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Do not apply (chemical) neutralizing agents without medical advice. Consult a doctor/medical service if you feel unwell.

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. Face shield. Protective clothing. Heat/fire exposure: compressed air/oxygen apparatus.

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 heading 8.2

6.1.2 Protective equipment for emergency responders

Gloves. Face shield. Protective clothing.

Suitable protective clothing

See heading 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, e.g.: sand, saw dust. 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 heading 13.

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. Ventilation at floor level. Keep only in the original container. Meet the legal requirements.

7.2.2 Keep away from:

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

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/m³
Talc (sans fibre d'amiante)	Time-weighted average exposure limit 8 h	2 mg/m³

The Netherlands

Talk (respirabel)	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.25 mg/m³

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/m³
	Short time value (VL: Valeur non réglementaire indicative)	0.02 ppm
	Short time value (VL: Valeur non réglementaire indicative)	0.2 mg/m³

Germany

4,4'-Methylendiphenyldiisocyanat	Time-weighted average exposure limit 8 h (TRGS 900)	0.05 mg/m³
pMDI (als MDI berechnet)	Time-weighted average exposure limit 8 h (TRGS 900)	0.05 mg/m³

UK

Isocyanates, all (as -NCO) Except methyl isocyanate	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.02 mg/m³
	Short time value (Workplace exposure limit (EH40/2005))	0.07 mg/m³
Talc, respirable dust	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	1 mg/m³

USA (TLV-ACGIH)

Methylene bisphenyl isocyanate (MDI)	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.005 ppm
Talc (containing no asbestos fibers)	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	2 mg/m³ (R,E)

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
Isocyanates	NIOSH	5521
Isocyanates	NIOSH	5522
Methylene Bisphenyl Isocyanate - (MDI)	OSHA	18
Methylene Bisphenyl Isocyanate (MDI)	OSHA	47
Methylene Bisphenyl Isocyanate	OSHA	33

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 systemic effects inhalation	0.05 mg/m³	
	Acute systemic effects inhalation	0.1 mg/m³	
	Long-term local effects inhalation	0.05 mg/m³	
	Acute local effects inhalation	0.1 mg/m³	
	Acute systemic effects dermal	50 mg/kg bw/day	
	Acute local effects dermal	28.7 mg/cm³	

4,4'-methylenediphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.05 mg/m³	
	Acute local effects inhalation	0.1 mg/m³	

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

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.05 mg/m³	
	Acute local effects inhalation	0.1 mg/m³	

Talc (Mg3H2(SiO3)4)

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	2.16 mg/m³	
	Acute systemic effects inhalation	2.16 mg/m³	
	Long-term local effects inhalation	3.6 mg/m³	
	Acute local effects inhalation	3.6 mg/m³	
	Long-term systemic effects dermal	3.2 mg/kg bw/day	
	Long-term local effects dermal	4.54 mg/cm²	

DNEL/DMEL - General population

4,4'-methylenediphenyl diisocyanate, oligomers

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	0.025 mg/m³	
	Acute systemic effects inhalation	0.05 mg/m³	
	Long-term local effects inhalation	0.025 mg/m³	
	Acute local effects inhalation	0.05 mg/m³	
	Acute systemic effects dermal	25 mg/kg bw/day	
	Acute local effects dermal	17.2 mg/cm³	
	Acute systemic effects oral	20 mg/kg bw/day	

4,4'-methylenediphenyl diisocyanate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.025 mg/m³	
	Acute systemic effects inhalation	0.05 mg/m³	

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

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.025 mg/m³	
	Acute local effects inhalation	0.05 mg/m³	

Talc ($Mg_3H_2(SiO_3)_4$)

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	1.08 mg/m³	
	Acute systemic effects inhalation	1.08 mg/m³	
	Long-term local effects inhalation	1.8 mg/m³	
	Acute local effects inhalation	1.8 mg/m³	
	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	

PNEC

4,4'-methylenediphenyl diisocyanate, oligomers

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

4,4'-methylenediphenyl diisocyanate

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

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

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

Talc ($Mg_3H_2(SiO_3)_4$)

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/m³	

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.

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
nitrile rubber	> 480 minutes	> 0.5 mm	Class 6

c) Eye protection:

Face shield.

d) Skin protection:

Protective clothing.

8.2.3 Environmental exposure controls:

See headings 6.2, 6.3 and 13

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical form	Liquid
Odour	No data available on odour
Odour threshold	No data available
Colour	Beige
Particle size	Not applicable (liquid)
Explosion limits	No data available
Flammability	Not classified as flammable
Log Kow	Not applicable (mixture)
Dynamic viscosity	20000 mPa.s ; 20 °C
Kinematic viscosity	No data available
Melting point	No data available
Boiling point	> 200 °C
Evaporation rate	< 1 ; Butyl acetate
Relative vapour density	> 1
Vapour pressure	< 0.01 hPa ; 25 °C
Solubility	Water ; insoluble
Relative density	1.3
Decomposition temperature	No data available
Auto-ignition temperature	No data available
Flash point	203 °C
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	No data available

9.2. Other information

Absolute density	1288 kg/m³

SECTION 10: Stability and reactivity

10.1. Reactivity

Temperature above flashpoint: higher fire/explosion 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, water/moisture, metals.

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).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

11.1.1 Test results

Acute toxicity

NOVA POWER GRIP 401 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 (vapours)	LD50		10 mg/l - 20 mg/l	4 h	Rat	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)	Read-across	
Dermal	LD50	Equivalent to OECD 402	> 9400 mg/kg bw	24 h	Rabbit (male / female)	Read-across	
Inhalation (aerosol)	LC50	OECD 403	310 mg/m³ 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 (mist)	LC50		0.49 mg/lcategory 4	4 h	Rat	Literature study	

4,4'-methylenediphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	> 7616 mg/kg		Rat (female)	Read-across	
Dermal	LD50	Equivalent to OECD 402	> 9400 mg/kg bw	24 h	Rabbit (male / female)	Read-across	
Inhalation (aerosol)	LC50	Equivalent to OECD 403	0.49 mg/l air	4 h	Rat (male / female)	Read-across	
Inhalation			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	

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

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Other	> 2000 mg/kg bw		Rat (male / female)	Data waiving	
Dermal	LD50	Equivalent to OECD 402	> 9400 mg/kg bw	24 h	Rabbit (male / female)	Read-across	
Inhalation (aerosol)	LC50	OECD 403	0.368 mg/l	4 h	Rat (male / female)	Experimental value	
Inhalation			category 4			Expert judgement	

Classification of this substance is debatable as it does not correspond to the conclusion from the test

isocyanic acid, polymethylenpolyphenylene 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	

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	

Talc (Mg3H2(SiO3)4)

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	

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 401 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	Not irritating	OECD 405	24 h	24; 48; 72 hours	Rabbit	Read-across	
Skin	Irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Read-across	
Skin	Corrosive	OECD 404	4 h	24; 48; 72 hours	Rabbit	Read-across	
Skin	Irritating; category 2					Annex VI	

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					Literature study	
Skin	Irritating					Literature study	
Inhalation	Irritating					Literature study	

4,4'-methylenediphenyl diisocyanate

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

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	
Skin	Irritating; category 2					Literature	
Inhalation	Irritating; STOT SE cat.3					Literature	

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

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Not irritating	OECD 405	24 h		Rabbit	Read-across	Single treatment with rinsing
Eye	Irritating; category 2					Literature	
Skin	Irritating	OECD 404	4 h	24; 48; 72 hours	Rabbit	Read-across	
Inhalation (aerosol)	Irritating		4 h		Mouse	Experimental value	

Classification of this substance is debatable as it does not correspond to the conclusion from the test

isocyanic acid, polymethylenpolyphenylene 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	
Skin	Irritating; category 2					Literature	
Inhalation	Irritating; STOT SE cat.3					Literature	

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	
Not applicable (in vitro test)	Not irritating	EU Method B.46			Reconstructed human epidermis	Experimental value	

Conclusion

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

Respiratory or skin sensitisation

NOVA POWER GRIP 401 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	

4,4'-methylenediphenyl diisocyanate, oligomers

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Sensitizing	OECD 406		24; 48 hours	Guinea pig (male / female)	Read-across	
Inhalation	Sensitizing	Other			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					Literature study	
Inhalation	Sensitizing					Literature study	

4,4'-methylenediphenyl diisocyanate

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin	Not sensitizing	Equivalent to OECD 406	12 h	24; 48 hours	Guinea pig (male / female)	Experimental value	
Inhalation	Sensitizing				Rat (male)	Experimental value	
Inhalation	Sensitizing				Guinea pig (female)	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	
Inhalation	Sensitizing; category 1					Literature	

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

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Dermal (on the ears)	Sensitizing		6 day(s)		Mouse	Experimental value	
Inhalation	Sensitizing				Rat (male)	Read-across	

isocyanic acid, polymethylenpolyphenylene 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	
Inhalation	Sensitizing; category 1					Literature	

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 ($Mg_3H_2(SiO_3)_4$)

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	

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 401 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	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/m³	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/m³	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/m³ air	Lungs	Lung tissue affection/degeneration	≤ 104 weeks (17h / 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

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

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation (aerosol)	NOAEC	Equivalent to OECD 453	0.2 mg/m³ air		No effect	104 weeks (6h / day, 5 days / week)	Rat (male / female)	Read-across
Inhalation (aerosol)	LOAEC	Equivalent to OECD 453	1.0 mg/m³ air	Nose	Impairment/degeneration	104 weeks (6h / day, 5 days / week)	Rat (male / female)	Read-across

isocyanic acid, polymethylenpolyphenylene 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

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 ($Mg_3H_2(SiO_3)_4$)

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/m³ air		No effect	52 weeks (7h / day, 5 days / week)	Rat (male / female)	Experimental value

Conclusion

May cause damage to organs (respiratory system) 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 401 2-K prepolymer

No (test)data on the mixture available

4,4'-methylenediphenyl diisocyanate, oligomers

Result	Method	Test substrate	Effect	Value determination	Remark
Negative	OECD 471	Bacteria (S.typhimurium)	No effect	Read-across	

4,4'-methylenediphenyl diisocyanate

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

Talc ($Mg_3H_2(SiO_3)_4$)

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	

Mutagenicity (in vivo)

NOVA POWER GRIP 401 2-K prepolymer

No (test)data on the mixture available

Classification is based on the relevant ingredients

4,4'-methylenediphenyl diisocyanate, oligomers

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative	OECD 474	3 weeks (1h / day, 1 day / week)	Rat (male)		Read-across

4,4'-methylenediphenyl diisocyanate

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

Talc ($Mg_3H_2(SiO_3)_4$)

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

Conclusion

Not classified for mutagenic or genotoxic toxicity

Carcinogenicity

NOVA POWER GRIP 401 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

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/m³ 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/m³ air	104 weeks (6h / day, 5 days / week)	Rat (male / female)	Tumor formation	Respiratory tract	Read-across

4,4'-methylenediphenyl diisocyanate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	NOAEC	Other	0.7 mg/m³ air	104 weeks (17h / day, 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

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

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	NOAEC	Equivalent to OECD 453	1 mg/m³	104 weeks (6h / day, 5 days / week)	Rat (male / female)	No effect		Read-across
Inhalation (aerosol)	LOAEC	Equivalent to OECD 453	6 mg/m³ air	104 weeks (6h / day, 5 days / week)	Rat (male / female)	Tumor formation	Lungs	Read-across

isocyanic acid, polymethylenpolyphenylene 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

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 (Mg3H2(SiO3)4)

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	NOAEC	Carcinogenic toxicity study	8.1 mg/m³ air	30 day(s)	Hamster (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

Conclusion

Suspected of causing cancer.

Reproductive toxicity

NOVA POWER GRIP 401 2-K prepolymer

No (test)data on the mixture available

Classification is based on the relevant ingredients

4,4'-methylenediphenyl diisocyanate, oligomers

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity	NOAEL	OECD 414	4 mg/m³ air	10 days (6h / day)	Rat	No effect	Foetus	Read-across
Maternal toxicity	NOAEL	OECD 414	4 mg/m³ air	10 days (6h / day)	Rat	No effect	General	Read-across

4,4'-methylenediphenyl diisocyanate

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity	NOAEL	OECD 414	3 mg/m³ air	10 days (6h / day)	Rat (female)	No effect		Experimental value
	LOAEL	OECD 414	9 mg/m³ air	10 days (6h / day)	Rat (female)	Embryotoxicity		Experimental value
Maternal toxicity	NOAEL	OECD 414	4 mg/kg bw/day	10 day(s)	Rat (female)	No effect		Read-across
Effects on fertility								Data waiving

Talc (Mg3H2(SiO3)4)

	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

Conclusion

Not classified for reprotoxic or developmental toxicity

Toxicity other effects

NOVA POWER GRIP 401 2-K prepolymer

No (test)data on the mixture available

4,4'-methylenediphenyl diisocyanate

Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
LD50		100 mg/kg bw				Mouse (male)	Experimental value Intraperitoneal

Chronic effects from short and long-term exposure

NOVA POWER GRIP 401 2-K prepolymer

Skin rash/inflammation. Respiratory difficulties.

SECTION 12: Ecological information

12.1. Toxicity

NOVA POWER GRIP 401 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

4,4'-methylenediphenyl diisocyanate, oligomers

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC0	Other	> 3000 mg/l	96 h	Oryzias latipes	Semi-static system	Fresh water	Experimental value; Lethal
Acute toxicity crustacea	EC50	OECD 202	129.7 mg/l	24 h	Daphnia magna	Static system	Fresh water	Experimental value; Locomotor effect
Toxicity algae and other aquatic plants	EC50	OECD 201	> 1640 mg/l	3 day(s)	Scenedesmus 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

	Parameter	Method	Value	Duration	Species	Value determination
Toxicity soil macro-organisms	NOEC	OECD 207	≥ 1000 mg/kg soil dw	14 day(s)	Eisenia fetida	Read-across
Toxicity terrestrial plants	EC50	Equivalent to OECD 208	> 1000 mg/l	14 day(s)	Avena sativa	Read-across

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	EC50	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; 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

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: Inherent Biodegradability: Modified MITI Test (II)	< 60 %		Experimental value

Phototransformation air (DT50 air)

Method	Value	Conc. OH-radicals	Value determination
AOPWIN v1.92	3.221 h	1500000 /cm³	Calculated value

4,4'-methylenediphenyl diisocyanate, oligomers

Biodegradation water

Method	Value	Duration	Value determination
OECD 302C: Inherent Biodegradability: Modified MITI Test (II)	0 %	28 day(s)	Read-across

Phototransformation air (DT50 air)

Method	Value	Conc. OH-radicals	Value determination
AOPWIN v1.92	0.92 day(s)		QSAR

Half-life water (t1/2 water)

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

4,4'-methylenediphenyl diisocyanate

Biodegradation water

Method	Value	Duration	Value determination
OECD 302C: Inherent Biodegradability: Modified MITI Test (II)	0 %	28 day(s)	Read-across

Phototransformation air (DT50 air)

Method	Value	Conc. OH-radicals	Value determination
AOPWIN v1.92	0.92 day(s)		QSAR

Half-life water (t1/2 water)

Method	Value	Primary degradation/mineralisation	Value determination
	20 h		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 /cm³	QSAR

Conclusion

Contains non readily biodegradable component(s)

12.3. Bioaccumulative potential

NOVA POWER GRIP 401 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		1		Pisces	Literature study

Log Kow

Method	Remark	Value	Temperature	Value determination
KOWWIN		10.46		Calculated

4,4'-methylenediphenyl diisocyanate, oligomers

BCF fishes

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

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

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

Conclusion

Does not contain bioaccumulative component(s)

12.4. Mobility in soil

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

Volatility (Henry's Law constant H)

Value	Method	Temperature	Remark	Value determination
8.95E-7 atm m³/mol		25 °C		Estimated value

Talc (Mg3H2(SiO3)4)

(log) Koc

Parameter	Method	Value	Value determination
log Koc	SRC PCKOCWIN v2.0	1.50	QSAR

Volatility (Henry's Law constant H)

Value	Method	Temperature	Remark	Value determination
5.539E-29 atm m³/mol	SRC HENRYWIN v3.20	25 °C		QSAR

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

Conclusion

Contains component(s) that adsorb(s) into the soil
Contains component(s) with potential for mobility in the soil

12.5. Results of PBT and vPvB assessment

Due to insufficient data no statement can be made whether the component(s) fulfil(s) the criteria of PBT and vPvB according to Annex XIII of Regulation (EC) No 1907/2006.

12.6. Other adverse effects

NOVA POWER GRIP 401 2-K prepolymer

Fluorinated greenhouse gases (Regulation (EU) No 517/2014)

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)

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

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

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

14.6. Special precautions for user

Special provisions	
Limited quantities	

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Annex II of MARPOL 73/78	Not applicable, based on available data

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
	Insufficient data

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,	Liquid substances or mixtures fulfilling the criteria for any of the following hazard	1. Shall not be used in: — ornamental articles intended to produce light or colour effects by means of different

oligomers · isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly[oxy(methyl-1,2-ethanediyl)] · reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl) phenyl isocyanate	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.	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. 6. No later than 1 June 2014, the Commission shall request the European Chemicals Agency to prepare a dossier, in accordance with Article 69 of the present Regulation with a view to ban, if appropriate, grill lighter fluids and fuel for decorative lamps, labelled H304, intended for supply to the general public. 7. Natural or legal persons placing on the market for the first time lamp oils and grill lighter fluids, labelled with H304, shall by 1 December 2011, and annually thereafter, provide data on alternatives to lamp oils and grill lighter fluids labelled H304 to the competent authority in the Member State concerned. Member States shall make those data available to the Commission.'
· 4,4'-methylenediphenyl diisocyanate, oligomeric reaction products with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl) · reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl) phenyl isocyanate	Methylenediphenyl diisocyanate (MDI) including the following specific isomers: 4,4’-Methylenediphenyl diisocyanate; 2,4’-Methylenediphenyl diisocyanate; 2,2’-Methylenediphenyl diisocyanate	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 the general public, unless suppliers shall ensure before the placing on the market that the packaging: (a) contains protective gloves which comply with the requirements of Council Directive 89/686/EEC; (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: “— Persons already sensitised to diisocyanates may develop allergic reactions when using this product. — Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. — 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. 2. By way of derogation, paragraph 1(a) shall not apply to hot melt adhesives.
· 4,4'-methylenediphenyl diisocyanate	Methylenediphenyl diisocyanate (MDI) including the following specific isomers: 4,4’-Methylenediphenyl diisocyanate; 2,4’-Methylenediphenyl diisocyanate; 2,2’-Methylenediphenyl diisocyanate	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 the general public, unless suppliers shall ensure before the placing on the market that the packaging: (a) contains protective gloves which comply with the requirements of Council Directive 89/686/EEC; (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: “— Persons already sensitised to diisocyanates may develop allergic reactions when using this product. — Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. — 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. 2. By way of derogation, paragraph 1(a) shall not apply to hot melt adhesives.

National legislation Belgium

NOVA POWER GRIP 401 2-K prepolymer

No data available

National legislation The Netherlands

NOVA POWER GRIP 401 2-K prepolymer

Waterbezwaarlijkheid	B (4); Algemene Beoordelingsmethodiek (ABM)

National legislation France

NOVA POWER GRIP 401 2-K prepolymer

No data available

4,4'-methylenediphenyl diisocyanate

Catégorie cancérogène	4,4'-Diisocyanate de diphénylméthane; C2

National legislation Germany

NOVA POWER GRIP 401 2-K prepolymer

WGK	1; Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV) - 18. April 2017

polymethylene polyphenyl isocyanate

TA-Luft	5.2.5/I
TRGS900 - Risiko der Fruchtschädigung	pMDI (als MDI berechnet); Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
Sensibilisierende Stoffe	pMDI (als MDI berechnet); Sa; Atemwegssensibilisierende Stoffe
TRGS905 - Krebserzeugend	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); -
Hautresorptive Stoffe	pMDI (als MDI berechnet); H; Hautresorptiv

4,4'-methylenediphenyl diisocyanate, oligomers

TA-Luft	5.2.5/I

4,4'-methylenediphenyl diisocyanate

TA-Luft	5.2.5/I
TRGS900 - Risiko der Fruchtschädigung	4,4'-Methylendiphenyldiisocyanat; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
Sensibilisierende Stoffe	4,4'-Methylendiphenyldiisocyanat; Sah; Atemwegssensibilisierende Stoffe Und Hautsensibilisierende Stoffe, an beiden Zielorganen Allergien auslösende
Hautresorptive Stoffe	4,4'-Methylendiphenyldiisocyanat; H; Hautresorptiv

Talc (Mg3H2(SiO3)4)

TA-Luft	5.2.1

National legislation United Kingdom

NOVA POWER GRIP 401 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

Other relevant data

NOVA POWER GRIP 401 2-K prepolymer

No data available

polymethylene polyphenyl isocyanate

IARC - classification	3; Polymethylene polyphenyl isocyanate

4,4'-methylenediphenyl diisocyanate

IARC - classification	3; 4,4'-methylenediphenyl diisocyanate and polymeric 4,4'-methylenediphenyl diisocyanate

Talc (Mg3H2(SiO3)4)

IARC - classification	3; Talc
TLV - Carcinogen	Talc (containing no asbestos fibers); A4

15.2. Chemical safety assessment

No chemical safety assessment has been conducted for the mixture.

SECTION 16: Other information

Full text of any H-statements referred to under heading 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
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	EC50 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

Specific concentration limits CLP

polymethylene polyphenyl isocyanate	C ≥ 0.1 %	Resp. Sens. 1; H334	analogous to Annex VI
	C ≥ 5 %	Skin Irrit. 2; H315	analogous to Annex VI
	C ≥ 5 %	Eye Irrit. 2; H319	analogous to Annex VI
	C ≥ 5 %	STOT SE 3; H335	analogous to Annex VI
4,4'-methylenediphenyl diisocyanate	C ≥ 5%	Eye Irrit. 2; H319	CLP Annex VI (ATP 0)
	C ≥ 5 %	Skin Irrit. 2; H315	CLP Annex VI (ATP 0)
	C ≥ 5 %	STOT SE 3; H335	CLP Annex VI (ATP 0)
reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	C ≥ 5 %	STOT SE 3; H335	ECHA
	C ≥ 0.1 %	Resp. Sens. 1; H334	ECHA

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.