Safety Data Sheet

According to Annex II to REACH - Regulation (EU) 2020/878

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

1.1. Product identifier

Code: **831**
Product name **FONDO IGRO SL**

UFI : **N0D0-60A2-R007-PPJ3**

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

Intended use **ADHESION PRIMER FOR BITUMINOUS MEMBRANES.**

1.3. Details of the supplier of the safety data sheet

Name **NORD RESINE S.p.A.**
Full address **Via Fornace Vecchia, 79**
District and Country **31058 Susegana (TV)**
Italia
Tel. +39 0438-437511
Fax +39 0438-435155

e-mail address of the competent person responsible for the Safety Data Sheet **annabreda@nordresine.com**

Supplier: **NORD RESINE S.p.A.**

1.4. Emergency telephone number

For urgent inquiries refer to

Ireland
National Poisons Information Centre
+353 018092166
+353 018092566

Malta
Malta Competition and Consumer Affairs Authority (MCCAA)
+356 2395 2000

Belgium
Centre Antipoisons: +32 022649636

Germany
BfR Bundesinstitut für Risikobewertung: +49 30184120

Netherlands
National Poisons Information Center / University Medical Center Utrecht
+31 88 75 585 61

Croatia
Croatian Institute of Public Health, Division for Toxicology: +38514686910

Sveden
Swedish Poisons Information Centre: +46104566750

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in (EC) Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of (EU) Regulation 2020/878.
Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

SECTION 2. Hazards identification ... / >>

Hazard classification and indication:

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

2.2. Label elements

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms:

Signal words: Danger

Hazard statements:

H351	Suspected of causing cancer.
H332	Harmful if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H319	Causes serious eye irritation.
H315	Causes skin irritation.
H335	May cause respiratory irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.

Precautionary statements:

P261	Avoid breathing dust.
P280	Wear protective gloves/ protective clothing / eye protection / face protection.
P342+P311	If experiencing respiratory symptoms: call a POISON CENTER / doctor.
P304+P340	IF INHALED: remove person to fresh air and keep comfortable for breathing.
P201	Obtain special instructions before use.
P308+P313	IF exposed or concerned: Get medical advice / attention.

Contains: DIPHENYLMETHANE-4,4'-DIISOCYANATE
POLYMETHYLENE POLYPHENYL ISOCYANATE
2,2'-methylenediphenyl diisocyanate
diphenylmethane-2,2'-diisocyanate
PREPOLYMER BASED ON AROMATIC POLYISOCYANATE

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

VOC (Directive 2004/42/EC) :
Binding primers.
VOC given in g/litre of product in a ready-to-use condition : 0,00
Limit value: 750,00

2.3. Other hazards

On the basis of available data, the product does not contain any PBT or vPvB in percentage ≥ than 0,1%.

SECTION 2. Hazards identification ... / >>

The product does not contain substances with endocrine disrupting properties in concentration ≥ 0.1%.

In case of hypersensitivity (asthma, chronic bronchitis), it is not recommended to handle the product. Even several hours after any potential overexposure, symptoms of respiratory distress may manifest. Dust, vapors, and aerosols pose the main danger to the respiratory tract.

SECTION 3. Composition/information on ingredients

3.2. Mixtures

Contains:

Identification		**x = Conc. %**	**Classification (EC) 1272/2008 (CLP)**
PREPOLYMER BASED ON AROMATIC POLYISOCYANATE			
INDEX		30 ≤ x < 35	**Acute Tox. 4 H332, STOT RE 2 H373, Eye Irrit. 2 H319, Skin Irrit. 2 H315, STOT SE 3 H335, Resp. Sens. 1 H334, Skin Sens. 1 H317**
EC			**LC50 Inhalation mists/powders: 1,5 mg/l/4h**
CAS	*67815-87-6*		
DIPHENYLMETHANE-4,4'-DIISOCYANATE			
INDEX	*615-005-00-9*	30 ≤ x < 35	**Carc. 2 H351, Acute Tox. 4 H332, STOT RE 2 H373, Eye Irrit. 2 H319, Skin Irrit. 2 H315, STOT SE 3 H335, Resp. Sens. 1 H334, Skin Sens. 1 H317, Classification note according to Annex VI to the CLP Regulation: 2, C**
EC	*202-966-0*		**Skin Irrit. 2 H315: ≥ 5%, Eye Irrit. 2 H319: ≥ 5%, Resp. Sens. 1 H334: ≥ 0,1%, STOT SE 3 H335: ≥ 5%**
CAS	*101-68-8*		**LC50 Inhalation mists/powders: 2,24 mg/l**
REACH Reg.	*01-2119457014-47*		
2,2'-methylenediphenyl diisocyanate			
INDEX	*615-005-00-9*	20 ≤ x < 25	**Carc. 2 H351, Acute Tox. 4 H332, STOT RE 2 H373, Eye Irrit. 2 H319, Skin Irrit. 2 H315, STOT SE 3 H335, Resp. Sens. 1 H334, Skin Sens. 1 H317, Classification note according to Annex VI to the CLP Regulation: 2, C**
EC	*227-534-9*		**Skin Irrit. 2 H315: ≥ 5%, Eye Irrit. 2 H319: ≥ 5%, Resp. Sens. 1 H334: ≥ 0,1%, STOT SE 3 H335: ≥ 5%**
CAS	*5873-54-1*		**LC50 Inhalation mists/powders: 1,5 mg/l/4h**
REACH Reg.	*01-2119480143-45*		
POLYMETHYLENE POLYPHENYL ISOCYANATE			
INDEX	*615-005-01-6*	11 ≤ x < 15	**Carc. 2 H351, Acute Tox. 4 H332, STOT RE 2 H373, Eye Irrit. 2 H319, Skin Irrit. 2 H315, STOT SE 3 H335, Resp. Sens. 1 H334, Skin Sens. 1 H317, Classification note according to Annex VI to the CLP Regulation: 2, C**
EC			**Skin Irrit. 2 H315: ≥ 5%, Eye Irrit. 2 H319: ≥ 5%, Resp. Sens. 1 H334: ≥ 0,1%, STOT SE 3 H335: ≥ 5%**
CAS	*9016-87-9*		**ATE Inhalation mists/powders: 1,5 mg/l, ATE Inhalation vapours: 11 mg/l**
diphenylmethane-2,2'-diisocyanate			
INDEX	*615-005-00-9*	1 ≤ x < 3	**Carc. 2 H351, Acute Tox. 4 H332, STOT RE 2 H373, Eye Irrit. 2 H319, Skin Irrit. 2 H315, STOT SE 3 H335, Resp. Sens. 1 H334, Skin Sens. 1 H317, Classification note according to Annex VI to the CLP Regulation: 2, C**
EC	*219-799-4*		**Skin Irrit. 2 H315: ≥ 5%, Eye Irrit. 2 H319: ≥ 5%, Resp. Sens. 1 H334: ≥ 0,1%, STOT SE 3 H335: ≥ 5%**
CAS	*2536-05-2*		**ATE Inhalation mists/powders: 1,5 mg/l**
REACH Reg.	*01-2119927323-43*		

The full wording of hazard (H) phrases is given in section 16 of the sheet.

SECTION 4. First aid measures

4.1. Description of first aid measures

In case of doubt or in the presence of symptoms contact a doctor and show him this document.
In case of more severe symptoms, ask for immediate medical aid.
EYES: Remove, if present, contact lenses if the situation allows you to do so easily. Wash immediately with plenty of water for at least 15 minutes, opening the eyelids fully. Get medical advice/attention.
SKIN: Take off immediately all contaminated clothing. Wash immediately and thoroughly with running water (and soap if possible). Get medical advice/attention. Avoid further contact with contaminated clothing.
INGESTION: Do not induce vomiting unless explicitly authorised by a doctor. Do not give anything by mouth to an unconscious person. Get medical advice/attention.
INHALATION: Remove victim to fresh air, away from the accident scene. In the event of respiratory symptoms (coughing, wheezing, breathing difficulty, asthma) keep the victim in a comfortable position for breathing. If necessary administer oxygen. If the subject stops breathing, administer artificial respiration. Get medical advice/attention.

SECTION 4. First aid measures ... / >>

Rescuer protection

It is good practice for rescuers lending support to a person who has been exposed to a chemical substance or to a mixture to wear personal protective equipment. The nature of such protection depends on the hazard level of the substance or mixture, on the type of exposure and on the extent of the contamination. In the absence of other more specific indications, use of disposable gloves in the event of possible contact with body fluids is recommended. For the type of PPE suitable for the characteristics of the substance or mixture, see section 8.

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

Specific information on symptoms and effects caused by the product are unknown.

DELAYED EFFECTS: Based on the information currently available, there are no known cases of delayed effects following exposure to this product.

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

IF exposed or concerned: Get medical advice / attention.
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
Treatment: see section 4.1

Means to have available in the workplace for specific and immediate treatment

Running water for skin and eye wash.

SECTION 5. Firefighting measures

5.1. Extinguishing media

SUITABLE EXTINGUISHING EQUIPMENT
The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.
UNSUITABLE EXTINGUISHING EQUIPMENT
None in particular.

5.2. Special hazards arising from the substance or mixture

HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE
Do not breathe combustion products.

5.3. Advice for firefighters

GENERAL INFORMATION
Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.
SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS
Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Block the leakage if there is no hazard.
Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

6.2. Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

6.3. Methods and material for containment and cleaning up

Collect the leaked product into a suitable container. Evaluate the compatibility of the container to be used, by checking section 10. Absorb the remainder with inert absorbent material.
Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

SECTION 6. Accidental release measures ... / >>

6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Before handling the product, consult all the other sections of this material safety data sheet. Avoid leakage of the product into the environment. Do not eat, drink or smoke during use. Remove any contaminated clothes and personal protective equipment before entering places in which people eat.

7.2. Conditions for safe storage, including any incompatibilities

Store only in the original container. Store the containers sealed, in a well ventilated place, away from direct sunlight. Keep containers away from any incompatible materials, see section 10 for details.

7.3. Specific end use(s)

Information not available

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

Regulatory references:

CZE	Česká Republika	NAŘÍZENÍ VLÁDY ze dne 10. května 2021, kterým se mění nařízení vlády č. 361/2007 Sb., kterým se stanoví podmínky ochrany zdraví při práci
DEU	Deutschland	Forschungsgemeinschaft MAK- und BAT-Werte-Liste 2022 Ständige Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe Mitteilung 58
ESP	España	Límites de exposición profesional para agentes químicos en España 2023
FRA	France	Valeurs limites d'exposition professionnelle aux agents chimiques en FranceDécret n° 2021-1849 du 28 décembre 2021
GRC	Ελλάδα	Π.Δ. 26/2020 (ΦΕΚ 50/Α` 6.3.2020) Εναρμόνιση της ελληνικής νομοθεσίας προς τις διατάξεις των οδηγιών 2017/2398/ΕΕ, 2019/130/ΕΕ και 2019/983/ΕΕ «για την τροποποίηση της οδηγίας 2004/37/ΕΚ ''σχετικά με την προστασία των εργαζομένων από τους κινδύνους που συνδέονται με την έκθεση σε καρκινογόνους ή μεταλλαξιγόνους παράγοντες κατά την εργασία''»
HUN	Magyarország	Az innovációért és technológiáért felelős miniszter 5/2020. (II. 6.) ITM rendelete a kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
POL	Polska	Rozporządzenie ministra rozwoju, pracy i technologii z dnia 18 lutego 2021 r. Zmieniające rozporządzenie w sprawie najwyższych dopuszczalnych stężeń i natężeń czynników szkodliwych dla zdrowia w środowisku pracy
ROU	România	Hotărârea nr. 53/2021 pentru modificarea hotărârii guvernului nr. 1.218/2006, precum și pentru modificarea și completarea hotărârii guvernului nr. 1.093/2006
RUS	Россия	ПОСТАНОВЛЕНИЕ от 13 февраля 2018 г. N 25 ОБ УТВЕРЖДЕНИИ ГИГИЕНИЧЕСКИХ НОРМАТИВОВ ГН 2.2.5.3532-18 "ПРЕДЕЛЬНО ДОПУСТИМЫЕ КОНЦЕНТРАЦИИ (ПДК) ВРЕДНЫХ ВЕЩЕСТВ В ВОЗДУХЕ РАБОЧЕЙ ЗОНЫ"
SVN	Slovenija	Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu (Uradni list RS, št. 100/01, 39/05, 53/07, 102/10, 43/11 – ZVZD-1, 38/15, 78/18 in 78/19)
EU	OEL EU	Directive (EU) 2022/431; Directive (EU) 2019/1831; Directive (EU) 2019/130; Directive (EU) 2019/983; Directive (EU) 2017/2398; Directive (EU) 2017/164; Directive 2009/161/EU; Directive 2006/15/EC; Directive 2004/37/EC; Directive 2000/39/EC; Directive 98/24/EC; Directive 91/322/EEC.
	TLV-ACGIH	ACGIH 2023

SECTION 8. Exposure controls/personal protection ... / >>

DIPHENYLMETHANE-4,4'-DIISOCYANATE

Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations	
		mg/m3	ppm	mg/m3	ppm		
TLV	CZE	0,05		0,1			
AGW	DEU	0,05		0,05		INHAL	11
AGW	DEU	0,05		0,05		SKIN	11
MAK	DEU	0,05		0,05 (C)		INHAL	C = 0,1 mg/m3
MAK	DEU	0,05		0,05		SKIN	C = 0,1 mg/m3
VLA	ESP	0,052	0,005				
VLEP	FRA	0,1	0,01	0,2	0,02		
TLV	GRC	0,2		0,2			
AK	HUN	0,05	0,005	0,05	0,005		
NDS/NDSCh	POL	0,03		0,09			
TLV	ROU			0,15			
ПДК	RUS			0,5			п + а, А
MV	SVN	0,05		0,05		INHAL	
MV	SVN		0,005		0,005	SKIN	
OEL	EU	0,01		0,02		SKIN	As NCO
TLV-ACGIH		0,051	0,005				

Predicted no-effect concentration - PNEC

Normal value in fresh water	1	mg/l
Normal value in marine water	0,1	mg/l

Health - Derived no-effect level - DNEL / DMEL

	Effects on consumers				Effects on workers			
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral	VND	20 mg/kg bw/d						
Inhalation	0,05 mg/m3	0,05 mg/m3	0,025 mg/m3	0,025 mg/m3	0,1 mg/m3	0,1 mg/m3	0,05 mg/m3	0,05 mg/m3
Skin	17,2 mg/cm2	25 mg/kg bw/d			28,7 mg/kg/d	50 mg/kg/d		

POLYMETHYLENE POLYPHENYL ISOCYANATE

Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV-ACGIH		0,051	0	0	0	

2,2'-methylenediphenyl diisocyanate

Predicted no-effect concentration - PNEC

Normal value in fresh water	1	mg/l
Normal value in marine water	0,1	mg/l
Normal value of STP microorganisms	1	mg/l

Health - Derived no-effect level - DNEL / DMEL

	Effects on consumers				Effects on workers			
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral		NPI		NPI				
Inhalation		NPI	25,0 µg/m³	NPI	100,0 µg/m³	NPI	50,0 µg/m³	NPI
Skin		NPI	MED	NPI	MED	NPI	MED	NPI

SECTION 8. Exposure controls/personal protection ... / >>

diphenylmethane-2,2'-diisocyanate		
Predicted no-effect concentration - PNEC		
Normal value in fresh water	3,7	µg/L
Normal value in marine water	37	µg/L
Normal value for fresh water sediment	11,7	mg/kg
Normal value for marine water sediment	1,17	mg/kg
Normal value for marine water, intermittent release	370	ng/L
Normal value of STP microorganisms	NPI	
Normal value for the terrestrial compartment	2,33	mg/kg
Normal value for the atmosphere	NPI	

Health - Derived no-effect level - DNEL / DMEL

	Effects on consumers				Effects on workers			
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral		NPI		NPI				
Inhalation		NPI	25,0 µg/m³	NPI	100,0 µg/m³	NPI	50,0 µg/m³	NPI
Skin		NPI	MED	NPI	MED	NPI	MED	NPI

Legend:
(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.
VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified ; LOW = low hazard ; MED = medium hazard ; HIGH = high hazard.

8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration.
When choosing personal protective equipment, ask your chemical substance supplier for advice.
Personal protective equipment must be CE marked, showing that it complies with applicable standards.
Provide an emergency shower with face and eye wash station.
Exposure levels must be kept as low as possible to avoid significant build-up in the organism. Manage personal protective equipment so as to guarantee maximum protection (e.g. reduction in replacement times).
HAND PROTECTION
Protect hands with category III work gloves.
The following should be considered when choosing work glove material (see standard EN 374): compatibility, degradation, permeability time.
The work gloves' resistance to chemical agents should be checked before use, as it can be unpredictable. The gloves' wear time depends on the duration and type of use.
Protect your hands with gloves of the following type:
Material: Neoprene
Thickness: 0,5 mm
Breakthrough time: 480 min

Material: Nitrile rubber (NBR)
Thickness: 0,35 mm
Breakthrough time: 480 min

Material: Butyl rubber (IIR)
Thickness: 0,5 mm
Breakthrough time: 480 min

Material: Viton or fluoroelastomer (FKM)
Thickness: 0,4 mm
Breakthrough time: 480 min
SKIN PROTECTION
Wear category II professional long-sleeved overalls and safety footwear (see Regulation 2016/425 and standard EN ISO 20344). Wash body with soap and water after removing protective clothing.
EYE PROTECTION
Wear airtight protective goggles (see standard EN ISO 16321).
RESPIRATORY PROTECTION
Respiratory protection devices must be used if the technical measures adopted are not suitable for restricting the worker's exposure to the threshold values considered. Use a mask with a type A filter whose class (1, 2 or 3) must be chosen according to the limit of use concentration. (see standard EN 14387).
If the substance considered is odourless or its olfactory threshold is higher than the corresponding TLV-TWA and in the case of an emergency, wear open-circuit compressed air breathing apparatus (in compliance with standard EN 137) or external air-intake breathing apparatus (in compliance with standard EN 138). For a correct choice of respiratory protection device, see standard EN 529.

SECTION 8. Exposure controls/personal protection ... / >>

ENVIRONMENTAL EXPOSURE CONTROLS
The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties		Value	Information
Appearance		liquid	
Colour		brown	
Odour		aromatic	
Melting point / freezing point	<	0 °C	
Initial boiling point		350 °C	
Flammability		not determined	
Lower explosive limit		not determined	Reason for missing data:not determined
Upper explosive limit		not determined	Reason for missing data:not determined
Flash point		210 °C	
Auto-ignition temperature		not applicable	
Decomposition temperature		not determined	Reason for missing data:not determined
pH		not applicable	Reason for missing data:substance/mixture reacts with water
Kinematic viscosity		not determined	Reason for missing data:not determined
Dynamic viscosity		220 mPa.s	Temperature: 25 °C
Solubility		soluble in organic solvents	
Partition coefficient: n-octanol/water		not applicable	
Vapour pressure		not determined	Reason for missing data:not determined
Density and/or relative density		1,17 kg/l	Temperature: 20 °C
Relative vapour density		not determined	Reason for missing data:not determined
Particle characteristics		not applicable	

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Information not available

9.2.2. Other safety characteristics

VOC (Directive 2010/75/EU)
Information not available

SECTION 10. Stability and reactivity

10.1. Reactivity

There are no particular risks of reaction with other substances in normal conditions of use.

DIPHENYLMETHANE-4,4'-DIISOCYANATE
Decomposes at 274°C/525°F.
With water it develops carbon dioxide and forms an insoluble solid polymer and consequently any wet material recovered must be stored in open containers.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

10.3. Possibility of hazardous reactions

No hazardous reactions are foreseeable in normal conditions of use and storage.

DIPHENYLMETHANE-4,4'-DIISOCYANATE
May react dangerously with: alcohols,amines,ammonia,sodium hydroxide,acids,water,strong acids,strong bases.

SECTION 10. Stability and reactivity ... / >>

10.4. Conditions to avoid

None in particular. However the usual precautions used for chemical products should be respected.

10.5. Incompatible materials

Information not available

10.6. Hazardous decomposition products

DIPHENYLMETHANE-4,4'-DIISOCYANATE
May develop: nitric oxide,carbon oxides,hydrogen cyanide.

SECTION 11. Toxicological information

In the absence of experimental data for the product itself, health hazards are evaluated according to the properties of the substances it contains, using the criteria specified in the applicable regulation for classification.
It is therefore necessary to take into account the concentration of the individual hazardous substances indicated in section 3, to evaluate the toxicological effects of exposure to the product.

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

Metabolism, toxicokinetics, mechanism of action and other information

Information not available

Information on likely routes of exposure

DIPHENYLMETHANE-4,4'-DIISOCYANATE
WORKERS: inhalation; contact with the skin.
POPULATION: inhalation of ambient air; contact with the skin of products containing the substance.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

DIPHENYLMETHANE-4,4'-DIISOCYANATE
Causes symptoms of irritation of the eye mucous membranes, upper respiratory and digestive tract and also to the skin; lung irritation of the bronchitis type (chest pains, cough, asthmatic wheezing), neurological symptoms (dizziness, balance disorders, headaches and consciousness disturbances). In severe cases, may give rise to delayed pulmonary edema (INRS, 2009). May cause hypersensitivity pneumonia which, in the event of continuous exposure, may progress to interstitial fibrosis (INRS, 2009).

Interactive effects

DIPHENYLMETHANE-4,4'-DIISOCYANATE
Cross sensitisations with other isocyanates are possible, in particular with TDI (toluene diisocyanate).

ACUTE TOXICITY

ATE (Inhalation - mists / powders) of the mixture:	1,50 mg/l
ATE (Inhalation - vapours) of the mixture:	> 20 mg/l
ATE (Oral) of the mixture:	Not classified (no significant component)
ATE (Dermal) of the mixture:	Not classified (no significant component)

DIPHENYLMETHANE-4,4'-DIISOCYANATE

LD50 (Dermal):	> 9400 mg/kg Rabbit
LC50 (Inhalation mists/powders):	2,24 mg/l Rat

POLYMETHYLENE POLYPHENYL ISOCYANATE

ATE (Inhalation mists/powders):	1,5 mg/l estimate from table 3.1.2 of Annex I of the CLP (figure used for calculation of the acute toxicity estimate of the mixture)
ATE (Inhalation vapours):	11 mg/l estimate from table 3.1.2 of Annex I of the CLP (figure used for calculation of the acute toxicity estimate of the mixture)

2,2'-methylenediphenyl diisocyanate

LD50 (Dermal):	> 9400 mg/kg Rabbit
LD50 (Oral):	> 2000 mg/kg Rat
LC50 (Inhalation mists/powders):	1,5 mg/l/4h

SECTION 11. Toxicological information ... / >>

diphenylmethane-2,2'-diisocyanate
ATE (Inhalation mists/powders): 1,5 mg/l estimate from table 3.1.2 of Annex I of the CLP
(figure used for calculation of the acute toxicity estimate of the mixture)

PREPOLYMER BASED ON AROMATIC POLYISOCYANATE
LD50 (Dermal): > 9400 mg/kg Rabbit
LD50 (Oral): > 2000 mg/kg Rat
LC50 (Inhalation mists/powders): 1,5 mg/l/4h

SKIN CORROSION / IRRITATION

Causes skin irritation

2,2'-methylenediphenyl diisocyanate
Species: rabbit
Result: irritating
Classification: Causes skin irritation.
Method: OECD Test Guideline 404
Toxicological tests on a comparable product.

diphenylmethane-2,2'-diisocyanate
Species: on rabbit
Result: slightly irritating
Method: Guidelines 404 for the OECD test
Toxicological exams on the product
Classification: causes skin irritation.

SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye irritation

2,2'-methylenediphenyl diisocyanate
Species: rabbit
Result: non-irritating
Method: OECD Test Guideline 405
Toxicological tests on a comparable product.
Species: Human experience
Result: irritating

diphenylmethane-2,2'-diisocyanate
Species: on rabbit
Result: slightly irritating
Method: Guidelines 405 for the OECD test
Toxicological exams on the product
Classification: causes serious eye irritation.

RESPIRATORY OR SKIN SENSITISATION

Sensitising for the skin
Sensitising for the respiratory system

Respiratory sensitization

2,2'-methylenediphenyl diisocyanate
Species: Guinea pig
Result: positive
Classification: May cause sensitization by inhalation.
Toxicological tests on a comparable product.

diphenylmethane-2,2'-diisocyanate
Species: Guinea pig
Result: positive
Classification: May cause sensitization by inhalation.
Toxicological tests on a comparable product.

PREPOLYMER BASED ON AROMATIC POLYISOCYANATE
Respiratory sensitization
Species: Guinea pig
Result: positive

SECTION 11. Toxicological information ... / >>

Classification: May cause sensitization by inhalation.
Studies on a similar product.

Skin sensitization

2,2'-methylenediphenyl diisocyanate
Skin sensitization according to Buehler (skin test):
Species: Guinea pig
Result: negative
Classification: Does not cause skin sensitization.
Method: OECD Test Guideline 406
Toxicological tests on a comparable product.

Skin sensitization (LLNA (Local Lymph Node Assay)):
Species: Mouse
Result: positive
Classification: May cause sensitization by skin contact.
Method: OECD TG 429
Toxicological tests on a comparable product.

diphenylmethane-2,2'-diisocyanate
Skin sensitization (LLNA (Local Lymph Node Assay)):
Species: mouse
Result: positive
Classification: it can cause awareness of contact with the skin.
Method: Oecd Tg 429
Product studies.

PREPOLYMER BASED ON AROMATIC POLYISOCYANATE
Skin sensitization (LLNA (Local Lymph Node Assay)):
Species: Mouse
Result: positive
Classification: May cause sensitization by skin contact.
Method: OECD TG 429
Studies on a similar product.

GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

CARCINOGENICITY

Suspected of causing cancer

DIPHENYLMETHANE-4,4'-DIISOCYANATE
Classified in Group 3 (not classifiable as a human carcinogen) by the International Agency for Research on Cancer (IARC) - (IARC, 1999).

diphenylmethane-2,2'-diisocyanate
Species: rat, male/female
Method of application: inhalation
Dosage levels: 0 - 0.2 - 1 - 6 mg/m3
Substance to be submitted to the test: as aerosol
Duration of the exhibition: 2 years
Treatment frequency: 6 hours/day 5 days/week
Method: Guidelines 453 for the OECD test
REQUIENCE OF TUTERS IN THE HIGH DOSE DOSAGE.
Studies on a similar product.

REPRODUCTIVE TOXICITY

Does not meet the classification criteria for this hazard class

PREPOLYMER BASED ON AROMATIC POLYISOCYANATE
NOAEL (teratogenicity): 12 mg/m³
NOAEL (maternal): 4 mg/m³
NOAEL (developmental toxicity): 4 mg/m³
Species: Rat, female

SECTION 11. Toxicological information ... / >>

Application method: Inhalation
Dosage levels: 0 - 1 - 4 - 12 mg/m³
Treatment frequency: 6 hours/day (Exposure duration 10 days (day 6 - 15 p.c.))
Duration of the experiment: 20 d
Substance to be tested: as aerosol
Method: OECD TG 414
NOAEL (developmental toxicity): 4 mg/m3
It did not show teratogenic effects in animal experiments.
Studies on a similar product.

Adverse effects on development of the offspring

diphenylmethane-2,2'-diisocyanate
Noael (teratogenicity): 12 mg/m³
Noael (maternal): 4 mg/m³
Noael (development toxicity): 4 mg/m³
Species: rat, female
Method of application: inhalation
Dosage levels: 0 - 1 - 4 - 12 mg/m3
Treatment frequency: 6 hours/day (duration of the exposure 10 days (day 6 - 15 p.c.))
Duration of the experiment: 20 D
Substance to be submitted to the test: as aerosol
Method: Oecd Tg 414
He has not shown teratogenic effects in animal experiments.
Studies on a similar product.

STOT - SINGLE EXPOSURE

May cause respiratory irritation

PREPOLYMER BASED ON AROMATIC POLYISOCYANATE
May irritate the respiratory tract.

Target organs

2,2'-methylenediphenyl diisocyanate
Target organs: Respiratory tract
May irritate the respiratory tract.

diphenylmethane-2,2'-diisocyanate
Target organs: Respiratory tract
May irritate the respiratory tract.

PREPOLYMER BASED ON AROMATIC POLYISOCYANATE
Target organs: Respiratory tract

Route of exposure

2,2'-methylenediphenyl diisocyanate
Inhalation

diphenylmethane-2,2'-diisocyanate
Mode of exposure: Inhalation

PREPOLYMER BASED ON AROMATIC POLYISOCYANATE
Mode of exposure: Inhalation

STOT - REPEATED EXPOSURE

May cause damage to organs

PREPOLYMER BASED ON AROMATIC POLYISOCYANATE
May cause damage to organs through prolonged or repeated exposure.

Target organs

SECTION 11. Toxicological information ... / >>

2,2'-methylenediphenyl diisocyanate
Target organs: Respiratory tract
May cause damage to organs through prolonged or repeated exposure.

diphenylmethane-2,2'-diisocyanate
Target organs: Respiratory tract
May cause damage to organs through prolonged or repeated exposure.

PREPOLYMER BASED ON AROMATIC POLYISOCYANATE
Target organs: Respiratory tract

Route of exposure

2,2'-methylenediphenyl diisocyanate
Inhalation

diphenylmethane-2,2'-diisocyanate
Mode of exposure: Inhalation

PREPOLYMER BASED ON AROMATIC POLYISOCYANATE
Inhalation

ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

11.2. Information on other hazards

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with human health effects under evaluation.

SECTION 12. Ecological information

Use this product according to good working practices. Avoid littering. Inform the competent authorities, should the product reach waterways or contaminate soil or vegetation.

12.1. Toxicity

DIPHENYLMETHANE-4,4'-DIISOCYANATE	
LC50 - for Fish	> 1000 mg/l/96h Danio rerio
2,2'-methylenediphenyl diisocyanate	
LC50 - for Fish	> 1000 mg/l/96h Daphnia magna
Chronic NOEC for Crustacea	10 mg/l
diphenylmethane-2,2'-diisocyanate	
Chronic NOEC for Crustacea	10 mg/l
PREPOLYMER BASED ON AROMATIC POLYISOCYANATE	
LC50 - for Fish	> 1000 mg/l/96h Danio rerio
Chronic NOEC for Crustacea	> 10 mg/l Daphnia magna - 21 d

12.2. Persistence and degradability

DIPHENYLMETHANE-4,4'-DIISOCYANATE	
Solubility in water	0,1 - 100 mg/l
NOT rapidly degradable	
2,2'-methylenediphenyl diisocyanate	
Solubility in water	30 g/l
NOT rapidly degradable	
diphenylmethane-2,2'-diisocyanate	
Solubility in water	30 g/l
NOT rapidly degradable	

SECTION 12. Ecological information ... / >>

PREPOLYMER BASED ON AROMATIC POLYISOCYANATE
NOT rapidly degradable

12.3. Bioaccumulative potential

DIPHENYLMETHANE-4,4'-DIISOCYANATE
Partition coefficient: n-octanol/water 4,51

2,2'-methylenediphenyl diisocyanate
Partition coefficient: n-octanol/water 4,52

diphenylmethane-2,2'-diisocyanate
Partition coefficient: n-octanol/water 4,52

12.4. Mobility in soil

Information not available

12.5. Results of PBT and vPvB assessment

On the basis of available data, the product does not contain any PBT or vPvB in percentage ≥ than 0,1%.

12.6. Endocrine disrupting properties

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with environmental effects under evaluation.

12.7. Other adverse effects

Information not available

SECTION 13. Disposal considerations

13.1. Waste treatment methods

Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.
Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.
The management of waste arising from the use or dispersal of this product must be organised in accordance with occupational safety regulations. See section 8 for possible need for PPE.
CONTAMINATED PACKAGING
Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

SECTION 14. Transport information

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

14.1. UN number or ID number

not applicable

14.2. UN proper shipping name

not applicable

14.3. Transport hazard class(es)

not applicable

SECTION 14. Transport information ... / >>

14.4. Packing group

not applicable

14.5. Environmental hazards

not applicable

14.6. Special precautions for user

not applicable

14.7. Maritime transport in bulk according to IMO instruments

Information not relevant

SECTION 15. Regulatory information

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

Seveso Category - Directive 2012/18/EU: None

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006

Product		
Point	3	
Contained substance		
Point	75	
Point	56	2,2'-methylenediphenyl diisocyanate REACH Reg.: 01-2119480143-45
Point	56	diphenylmethane-2,2'-diisocyanate REACH Reg.: 01-2119927323-43
Point	56	DIPHENYLMETHANE-4,4'-DIISOCYANATE REACH Reg.: 01-2119457014-47
Point	74	DIISOCYANATES

Regulation (EU) 2019/1148 - on the marketing and use of explosives precursors
not applicable

Substances in Candidate List (Art. 59 REACH)
On the basis of available data, the product does not contain any SVHC in percentage ≥ than 0,1%.

Substances subject to authorisation (Annex XIV REACH)
None

Substances subject to exportation reporting pursuant to Regulation (EU) 649/2012:
None

Substances subject to the Rotterdam Convention:
None

Substances subject to the Stockholm Convention:
None

Healthcare controls
Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

VOC (Directive 2004/42/EC) :
Binding primers.

German regulation on the classification of substances hazardous to water (AwSV, vom 18. April 2017)
WGK 1: Low hazard to waters

Starting from 24 August 2023, the use of the product by professional and industrial users is permitted only after having received adequate training, by participating in and passing a training course compliant with Regulation (EC) 1907/2006 (REACH), annex XVII, item 74 and Legislative Decree 81/2008, art. 227. For more information on training courses, please contact us. The training material is available on the

SECTION 15. Regulatory information ... / >>

www.safeusediisocyanates.eu platform in all the languages of the Member States.

15.2. Chemical safety assessment

A chemical safety assessment has not been performed for the preparation/for the substances indicated in section 3.

SECTION 16. Other information

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

Carc. 2	Carcinogenicity, category 2
Acute Tox. 4	Acute toxicity, category 4
STOT RE 2	Specific target organ toxicity - repeated exposure, category 2
Eye Irrit. 2	Eye irritation, category 2
Skin Irrit. 2	Skin irritation, category 2
STOT SE 3	Specific target organ toxicity - single exposure, category 3
Resp. Sens. 1	Respiratory sensitization, category 1
Skin Sens. 1	Skin sensitization, category 1
H351	Suspected of causing cancer.
H332	Harmful if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H319	Causes serious eye irritation.
H315	Causes skin irritation.
H335	May cause respiratory irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.

LEGEND:
- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- ATE: Acute Toxicity Estimate
- CAS: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE: Identifier in ESIS (European archive of existing substances)
- CLP: Regulation (EC) 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent, bioaccumulative and toxic
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PMT: Persistent, mobile and toxic
- PNEC: Predicted no effect concentration
- REACH: Regulation (EC) 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA: Time-weighted average exposure limit
- TWA STEL: Short-term exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very persistent and very bioaccumulative
- vPvM: Very persistent and very mobile
- WGK: Water hazard classes (German).

GENERAL BIBLIOGRAPHY
1. Regulation (EC) 1907/2006 (REACH) of the European Parliament
2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
3. Regulation (EU) 2020/878 (II Annex of REACH Regulation)
4. Regulation (EC) 790/2009 (I Atp. CLP) of the European Parliament
5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament

SECTION 16. Other information ... / >>

7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
10. Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
11. Regulation (EU) 2016/918 (VIII Atp. CLP) of the European Parliament
12. Regulation (EU) 2016/1179 (IX Atp. CLP)
13. Regulation (EU) 2017/776 (X Atp. CLP)
14. Regulation (EU) 2018/669 (XI Atp. CLP)
15. Regulation (EU) 2019/521 (XII Atp. CLP)
16. Delegated Regulation (UE) 2018/1480 (XIII Atp. CLP)
17. Regulation (EU) 2019/1148
18. Delegated Regulation (UE) 2020/217 (XIV Atp. CLP)
19. Delegated Regulation (UE) 2020/1182 (XV Atp. CLP)
20. Delegated Regulation (UE) 2021/643 (XVI Atp. CLP)
21. Delegated Regulation (UE) 2021/849 (XVII Atp. CLP)
22. Delegated Regulation (UE) 2022/692 (XVIII Atp. CLP)
23. Delegated Regulation (UE) 2023/707
24. Delegated Regulation (UE) 2023/1434 (XIX Atp. CLP)
25. Delegated Regulation (UE) 2023/1435 (XX Atp. CLP)
26. Delegated Regulation (UE) 2024/197 (XXI Atp. CLP)

- The Merck Index. - 10th Edition
- Handling Chemical Safety
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- IFA GESTIS website
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy

Note for users:
The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.
This document must not be regarded as a guarantee on any specific product property.
The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.
Provide appointed staff with adequate training on how to use chemical products.

CALCULATION METHODS FOR CLASSIFICATION
Chemical and physical hazards: Product classification derives from criteria established by the CLP Regulation, Annex I, Part 2. The data for evaluation of chemical-physical properties are reported in section 9.
Health hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 3, unless determined otherwise in Section 11.
Environmental hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 4, unless determined otherwise in Section 12.

Changes to previous review:
The following sections were modified:
02 / 03 / 04 / 08 / 09 / 11 / 12 / 13 / 15.