

SAFETY DATA SHEET

Safety data sheet according to Directive (EU) N° 1907/2006

DYNAPUR MRI**1. IDENTIFYING THE SUBSTANCE/MIX AND THE COMPANY****PREPOLIMER POLYURETANC**Commercial name: **DYNAPUR MRI****Identified specific uses of the substance or mix and not recommended uses**

Use: Uses identified on the basis of Directive (EU) N. 1907/2006:

- Production of substance
- Use as intermediate for manufacturing other substances and for the formulation, packaging and distribution
- Industrial use for composite material based on wood/minerals/natural fibres

Name of the producer and related address

Supplier: **EUROCOLLANTI srl** Via S. Antonio 6 31010 ORSAGO (TV)

Tel.0438 992348 Fax 0438 994231

E-Mail: eurocollanti@libero.it**Emergency phone : Centro Antiveneni Ospedale di Niguarda (MI) +39 02 6610 1029****2. IDENTIFICATION OF DANGERS****Classification of substance or mixture****Classification (1272/2008/EC):**

Acute toxicology: Inhalation, Category 4 (H332)

Skin irritation, Category 2 (H315)

Eye irritation, Category 2 (H319)

Sensitisation of the respiratory system, Category 1 (H334)

Skin sensitisation , Category 1 (H317)

Carcinogenicity, Category 2 (H351)

Specific toxicology in target organ (single exposure), Category 3 (H335)

Specific toxicology in target organ (repeated exposure), Inhalation, Category 2 (H373)

Classification (2006/121/EC, 1999/45/EC): Harmful if inhaled. May cause sensitisation due to inhalation and skin contact. Irritant for eyes, respiratory system and the skin. possibility of cancerous effects – insufficient tests. Harmful: serious health hazard in case of prolonged exposure for inhalation.

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DYNAPUR MRI**Information for the label****Dangerous components to be signalled in the label**

Methylene diphenyl diisocyanate, isomers and homologous

Labelling (1272/2008/EC):**Danger****Danger indications:**

H315 Causes skin irritation.

H317 Can cause a skin allergic reaction.

H319 Causes serious eye irritation.

H332 Toxic if inhaled.

H334 If inhaled can cause allergic or asthmatic symptoms or difficulty in breathing.

H335 Can irritate the respiratory system.

H351 Suspected to cause cancer.

H373 In case of prolonged or repeated exposure can cause damages to organs.

Safety advise:

P260 Do not breathe powders/fumes/gas/fog/vapours/spray.

P280 Wear protective gloves/Protect eyes/face.

P302 + P352 IN CASE OF CONTACT WITH THE SKIN: wash with abundant water and soap.

P304 + P340 IN CASE OF INHALING: take the injured person in the open air and rest him/her in a position that helps breathing.

P305 + P351 + P338 IN CASE OF CONTACT WITH THE EYES: accurately rinse for a few minutes. Remove any contact lenses if easy to do so. Continue rinsing.

P308 + P313 IN CASE of exposure or possible exposure, consult a doctor.

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DYNAPUR MRI**Labelling (67/548/EC, 1999/45/EC):**

Labelling according to Directive 1999/45/EC for dangerous preparations and successive modifications

Xn Harmful

Contains:

Methylene diphenyl diisocyanate, isomers and homologous

"R" Phrases

R20 Harmful if inhaled.

R36/37/38 Irritant for eyes, respiratory system and the skin.

R40 Possibility of cancerous effects - insufficient tests.

R42/43 May cause sensitisation due to inhalation and skin contact.

R48/20 Harmful: serious health hazard in case of prolonged exposure.
for inhalation.**"S" Phrases**

S23 Do not breathe vapour.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37 Wear suitable protective clothing and gloves.

S45 In case of accident or if you feel unwell seek medical advice immediately (if possible, show label).

S 60 This material and its container must be disposed of as dangerous waste.

Other dangers

The persons showing hypersensitivity of the respiratory system (e.g. asthma, chronic bronchitis) must not handle the product. Even hours after an eventual overexposure there may be disturbances to the respiratory system. Powder, vapours and aerosols constitute the main danger for the respiratory system.

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DYNAPUR MRI**3. INGREDIENT COMPOSITION/INFORMATION****Type of product: Mix**

Methylene diphenyl diisocyanate, isomers and homologous

Dangerous components

Methylene diphenyl diisocyanate, isomers and homologous

Concentration [% in weight]: approx. > 25 %

N. CAS: 9016-87-9

Classification (1272/2008/EC): Acute Tox. 4 Inhalative H332 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Sens. Resp. 1 H334 Skin Sens. 1 H317 Carc. 2 H351 STOT SE 3 H335 STOT RE 2 Inhalative H373

Classification (67/548/EEC): Carc.Cat.3 R40 Xn R20 R42/43 R48/20 Xi R36/37/38

Specific limit concentrations:

Xn R42 0.1 - < 1 %

Xn R40, R42/43 1 - < 5 %

Xn R36/37/38, R40, R42/43 5 - < 10 %

Xn R36/37/38, R40, R42/43, R48/20 10 - < 25 %

Xn R20, R36/37/38, R40, R42/43, R48/20 >= 25 %

Diphenylmethane-4,4'-diisocyanate

Concentration [% in weight]: approx. > 20 %

N. CAS: 101-68-8

N. EINECS: 202-966-0

N. INDEX: 615-005-00-9

Classification (1272/2008/EC): Acute Tox. 4 Inhalative H332 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Sens. Resp. 1 H334 Skin Sens. 1 H317 Carc. 2 H351 STOT SE 3 H335 STOT RE 2 Inhalative H373

Classification (67/548/EEC): Carc.Cat.3 R40 Xn R20 R42/43 R48/20 Xi R36/37/38

Specific limit concentrations:

Xn R42 0.1 - < 1 %

Note : CAS 101-68-8 is at Isomer MDI CAS 9016-87-9

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DYNAPUR MRI**4. FIRST-AID MEASURES****Description of the first aid measures**

General information: Immediately remove soaked and dirty shoes and clothing, decontaminate and dispose of them.

If inhaled: Take the injured person in the open air, keep him/her warm and at rest; in case of respiratory disturbances, medical assistance is required.

In case of contact with the skin: In case of contact with the skin, if possible clean using a polyethylene glycol-based detergent, or wash with plenty of warm water and soap. Seek medical advice in case of skin reactions.

In case of contact with the eyes: Rinse the eyes with warm water for a prolonged time (at least 10 min.) keeping the eyelids open, consult an optician.

If swallowed: DO NOT cause vomiting, medical intervention is required.

Main symptoms and effects, acute and delayed

Notes for the physician: The product irritates the respiratory system and is the potential cause of sensitisation of the skin and of the respiratory system. The therapy for acute irritation or bronchostenosis is firstly symptomatic. Based on the entity of the exposure and the disturbances, medical assistance may be required for a longer period of time.

5. FIRE PREVENTION MEASURES

Appropriate extinguishing means: Carbon dioxide (CO₂), Foam, fire-prevention powder, in case of significantly spread fires, jet of fog also.

Inadequate extinguishing agents: Abundant jet of water

Special dangers deriving from the substance or mix:

In case of fire, carbon oxide and monoxide form: nitrogen oxides, vapours of isocyanates and traces of hydrocyanic acid. In case of fire and/or explosion, do not inhale the fumes.

A pressure increase verifies in case of a near-by fire, with risk of explosion.

Cool the containers damaged by the fire using water and, if possible, move them away from the dangerous area.

Recommendations for personnel in charge of extinguishing the fires:

During fire extinguishing protect the respiratory system using an autonomous respirator and protective overalls impermeable to chemical products. Avoid the contaminated water

used to extinguish, from penetrating the ground, the water table and the superficial waters.

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DYNAPUR MRI**6. MEASURES IN CASE OF ACCIDENTAL LEAKAGE**

Personal precautions, protective devices and procedures in case of emergency: Wear protective equipment (see paragraph 8). Provide sufficient ventilation.

Keep third parties away.

Environmental measures: Avoid the product flowing into streams, waste waters or penetrating the ground.

Methods and materials for containment and drainage:

Mechanically remove; cover the residues using humid absorbing material (e.g. sawdust, binders for calcium hydrated silicate-based chemical reagents, sand). After about 1 hour, collect in a container for waste. Do not close it (carbon dioxide develops). Keep moist and leave in the open for a few days, in a monitored place.

References to other sections: For disposal, see paragraph 13.

7. MANIPULATION AND STORAGE

Precautions for safe manipulation:

Ensure sufficient aspiration and/or air exchange- adequate in the work environments.

In the work places or parts of systems where aerosol and/or isocyanates vapours in high concentrations may form (e.g. for pressure reduction, degassing of moulds, bubbling of compressed air in mixing heads) avoid, by means of localised aspiration of air, that the indicative limit values of professional exposure are exceeded.

The air flow must be away from persons. The efficiency of the aspiration system must be checked at regular intervals. Check the threshold values in the air indicated in section 8. Observe the personal protective measures described in section 8. Absolutely avoid contact with the skin and eyes, as well as inhaling of vapours. Keep away from food. Wash your hands before breaks and at the end of the working day. Keep the work clothes separate. Remove all contaminated clothing immediately. Decontaminate, destroy and dispose of the dirty clothing (cf. chap. 13).

Conditions for safe storage, including any incompatibilities:

Keep the container securely closed and away from humidity. Further information on storage conditions to be respected for quality assurance reasons are contained in our technical sheet.

For personal protection reasons, storage temperature: max. 50 °C.

Storage class according to VCI (VCI = German association of the chemical industry): 10

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DYNAPUR MRI**8. CONTROLLING INDIVIDUAL EXPOSURE/PROTECTION**

Control parameters

Components with limits of exposure

Substance N.	CAS	Base	Value	Type	Ass	lim value	Notes
Dipheylmethane-4,4'diisocyanate	101/68/8	OEL (IT)	TWA	0.005	ppm		

Evaluation value of the exposure according to TRGS 430: The polyisocyanate content (oligomer and/or prepolymer of MDI) is equal to 57 %. Therefore, take evaluation value of exposure 0.05 mg/m³.

The product may contain traces of phenylisocyanate.

Controlling the exposure**Respiratory protection:**

In the work environments with sufficient ventilation and during spray processing it is necessary to protect the respiratory system. Use of a mask is recommended with air supply or for short-term work, a mask with A2-P2 combined filter.

Hand protection:

Materials suitable for protective gloves; EN 374-3:

polychloroprene - CR: thickness ≥ 0.5 mm; Onset time ≥ 480 min.

Nitrile rubber - NBR: thickness ≥ 0.35 mm; Onset time ≥ 480 min.

Butyl rubber - IIR: thickness ≥ 0.5 mm; Onset time ≥ 480 min.

Fluorine rubber - FKM: thickness ≥ 0.4 mm; Onset time ≥ 480 min.

Recommendation: dispose of the contaminated gloves adequately.

Eye protection:

Protect the eyes/face.

Skin and body protection:

Wear suitable protective clothing.

Protective measures to be taken when handling just moulded items: cf. chapter 16

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DYNAPUR MRI**9. CHEMICAL AND PHYSICAL CHARACTERISTICS****Fundamental information on chemical and physical characteristics**

Appearance: liquid

Colour: transparent clear rosed

Odour: almost odourless

Odour threshold: not determined

pH: not applicable

Pour point: approx. -34 °C DIN 51556

Flash point: not determined

Rate of evaporation: not determined

Flammability (solids, gas): not applicable

Combustion class: not applicable

Vapour density: not determined

Density: approx. 1.08 +/- 0.5 g/cm³ at 20 °C DIN 53217

Mixable with water: not mixable at 15 °C

Superficial tension: not determined

Partition coefficient:

n-octanol/water: not determined

Self-ignition temperature: not applicable

Ignition temperature: > 500 °C DIN 51794

Decomposition temperature: not determined

Viscosity, dynamics: approx. 2.000 +/- 500 mPa.s at 25 °C DIN 53211

Explosive characteristics: not determined

Explosion class of the powder: not applicable

Oxidant characteristics: not determined

Additional information: The reported values are not always conform with the product specifications. The specification data must be taken from the technical sheet.

COV : 26 +/- 3%

VOC : 56 gr/lit +/- 3%

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DYNAPUR MRI**10. STABILITY AND REACTIVITY**

Chemical stability: Starting from 200 °C polymerisation, development of CO₂.

Possibility of dangerous reactions: Exothermal reaction with amines and alcohols, with water development of CO₂, if in closed containers pressure increase; risk of explosion.

Dangerous decomposition products: In case of adequate storage and manipulating there is no development of dangerous decomposition products.

11. TOXICOLOGY INFORMATION**Information on toxicology effects****Acute toxicology, oral:**

Methylene diphenyl diisocyanate, isomers and homologous
DL50 rat, female: > 2,000 mg/kg
Toxicology examinations on a comparable product.

Acute toxicology, skin:

Methylene diphenyl diisocyanate, isomers and homologous
On rabbit
Result: irritating
Method: OECD TG 404
Toxicology examinations on a comparable product.

Acute toxicology, for inhalation:

Methylene diphenyl diisocyanate, isomers and homologous
CL50 rat: 490 mg/m³, 4 h
Substance to be subjected to tests like aerosol.
Concentration of saturated vapour of 4.4' – MDI at 25°C 0.09 g/cm³

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DYNAPUR MRI**Primary skin irritation:**

Methylene diphenyl diisocyanate, isomers and homologous
on rabbit

Result: irritating

Method: OECD TG 404

Toxicology examinations on a comparable product.

Primary mucous irritation:

Methylene diphenyl diisocyanate, isomers and homologous
on rabbit

Result: not irritant

Method: OECD TG 405

Toxicology examinations on a comparable product.

Sensitisation:

Methylene diphenyl diisocyanate, isomers and homologous

Result: May cause sensitisation due to inhalation and skin contact.

Long-term and chronic , sub-acute toxicity:

Methylene diphenyl diisocyanate, isomers and homologous

Study on effects of long-term inhaling of Dipheylmethane-diisocyanate tec. (PMDI),
with respirable aerosol of PMDI mechanically produced. Aerodynamic diameter:

95 % lower than 5 µm

Concentration: 0.2; 1.0 and 6.0 mg/m³ - groups of animals: for test 120 rats (60 females, 60
males)

Result after clinical examination and histopathology of animals: 0.2 mg aerosols/m³: None
irritation of the respiratory system and lungs "No effect level" (NOEL).

1.0 mg aerosols/m³: Read inflammatory alterations and irritations in the nose, in the respiratory
system and in lungs, no lung cancer.

6.0 mg aerosols/m³: Strong chronic inflammatory alterations and irritations in the nose, in the
respiratory

system and in the lungs. Agglomeration of a yellow substance in the lungs.

8 benign tumours have been detected (statistically high value) and 1 malignant tumour
(statistically without meaning).

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The overall high appearance of lung cancers exclusively in the group exposed to maximum concentration of aerosols is seen in direct correlation with the chronic irritations and alterations of the respiratory systems, as well as with the agglomeration of yellow substance observed in the lungs of animals.

Other warnings:

Particular characteristics/effects: In case of overexposure, there is a danger, in view of the concentration, of irritation of the eyes, nose, throat, and respiratory system. Possible delayed appearance of disturbances and development of a form of hypersensitivity (respiratory disturbances, cough, asthma). In case of hypersensitive persons, reactions may arise already with very low concentrations of isocyanates, even below the TLV value. In case of prolonged contact with the skin, irritating and dehydrating effects may be possible.

12. ENVIRONMENTAL INFORMATION

Avoid the product flowing into streams, waste waters or penetrating the ground.

Toxicology**Acute toxicology for fish:**

Methylene diphenyl diisocyanate, isomers and homologous
CL0 > 1,000 mg/l
Species: Danio rerio (zebra fish)
Duration of exposure: 96 h
Method: OECD TG 203

Acute toxicology on daphnia:

Methylene diphenyl diisocyanate, isomers and homologous
CE50 > 1,000 mg/l
Species: Daphnia magna (Large water flea)
Duration of exposure: 24 h
Method: OECD TG 202

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DYNAPUR MRI**Acute bacterial toxicology:**

Methylene diphenyl diisocyanate, isomers and homologous

CE50 > 100 mg/l

Tested on: activated sludges Duration of test: 3 h

Method: OECD TG 209

Persistence and degradability**Biodegradability:**

Methylene diphenyl diisocyanate, isomers and homologous

Biodegradation: 0 %, 28 d, meaning not degradable

Method: OECD TG 302C

Other information on ecotoxicology:

The product reacts with water in correspondence of the surface with development of CO₂ forming

a solid reaction product, insoluble and high melting (polyurea). This reaction is strongly favoured by surfactant substances (e.g. liquid soaps) and by water-soluble solvents. According to experiences acquired to-date, polyurea is inert and not degradable.

13 CONSIDERATIONS ON DISPOSAL

Dispose in compliance with all local, national and international standards.

For disposal within the EU, use the relative waste code taken from the European waste catalogue (EWC code).

Waste treatment methods

Immediately after last product pick-up, completely empty the containers (drained, without granules and paste residues). After having neutralised the product residues adhering to the container walls, cancel the product label and danger symbols. These packages may be delivered, by type of package, to the collection system centres of the chemical industry for re-use purposes. Recovery must be carried out in conformity with the national environmental protection standard

Do not dispose in waste waters.

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DYNAPUR MRI**14. INFORMATION ABOUT TRANSPORTATION****ADR/RID** Not dangerous goods**ADNR** Not dangerous goods

This classification data do not refer to transport with tank vessel. If necessary, it is possible to contact the manufacturer for further information.

IATA Not dangerous goods**IMDG** Not dangerous goods

Special precautions for the users:

Not dangerous for transport purposes.

Irritant for skin and mucous.

Keep away from food.

15. INFORMATION ON REGULATION**Health and safety and environmental laws and standards specific for the substance or mix****Contamination class of the water (Germany):** 1 mild water contaminant

(in compliance with Appendix 4 VwVwS)

It is necessary to observe all current national regulations on manipulating isocyanates.

16. OTHER INFORMATION**Complete text of dangerous warnings (H phrases) contained in sections 2 and 3 of the CLP classification (1272/2008/EC).**

H315 Causes skin irritation.

H317 Can cause a skin allergic reaction.

H319 Causes serious eye irritation.

H332 Toxic if inhaled.

H334 If inhaled can cause allergic or asthmatic symptoms or difficulty in breathing.

H335 Can irritate the respiratory system.

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H351 Suspected to cause cancer.

H373 In case of prolonged or repeated exposure can cause damages to organs due to inhalation.

Complete text of R phrases contained in sections 2 and 3 of EU classification (67/548/EEC, 1999/45/EC).

R20 Harmful if inhaled.

R36/37/38 Irritant for eyes, respiratory system and the skin.

R40 Possibility of cancerous effects - insufficient tests.

R42/43 May cause sensitisation due to inhalation and skin contact.

R48/20 Harmful: serious health hazard in case of prolonged exposure due to inhalation.

For shipments within the USA territory: pursuant to § 172.101, Appendix A, DOT (Department of Transportation): MDI Reportable Quantity (RQ):5000lbs (2270kg).

ISOPA Directives for safe loading/unloading, transport and storage conditions of the TDI and MDI. Order number ISOPA:PSC-0020-GUIDL-I

Protective measures to be taken when handling just moulded polyurethane items:

Depending on the working parameters, the polyurethane items produced with this raw material, which surfaces are not covered, may contain traces of substance on the surface (e.g. base products and derivatives, catalysts, releasing agent) with dangerous characteristics.

Avoid

skin contact with said traces. In this regard, both during mould release and during handling of just moulded items, at least wear protective gloves in fabric where the palm and fingers are externally covered with nitrile rubber, PVC or polyurethane. The protective gloves must be changed daily. We recommend wearing protective clothing conform with the usual handling conditions of parts in just moulded polyurethane.

The modifications made on the previous version have been highlighted in the margin. This version replaces all previous ones.

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DYNAPUR MRI**Further information**

The information contained in this Safety Data Sheet is correct according to our best product knowledge at the time of publication. This information is supplied with the only purpose of allowing use, storage, transport and disposal of the products in the most correct and safest way. This information must not be considered a guarantee or a specification of product quality. It only refers to material specifically indicated and is not valid for it when used in combination with other materials or in other processes not specifically indicated in the Safety Data Sheet of the Material.

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