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## Safety data sheet

### Lamination resin

Uniprox Safety data sheet according to 1907/2006 (EG)

Product: Lamination resin (MG112)

Date / Revised: 04.12.2010

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#### 1. Substance / preparation and company identification

Trade name: Lamination resin

Application of the substance / the preparation: Laminating resin for orthopaedic technology

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#### 2. Hazard identification

Hazards description:

F Highly flammable  
 Xi Irritant

Advice on critical hazards to man and the environment:

R 11 Highly flammable  
 R 37/38 Irritating to respiratory system and skin  
 R 43 May cause sensitisation by skin contact

#### 3. Composition / information on ingredients

Chemical nature: Preparation

Hazardous ingredients:

CAS No.:	80-62-6	methyl methacrylate
EINECS:	201-297-1	Index: 607-035-00-6
Content:	40,0 – 70,0 %	Hazard symbols: F, Xi
R-phrases:	11-37/38-43	
CAS No.:	123-81-9	ethylene di(S-thioacetate)
EINECS:	204-653-4	Content: 0,1 – 1,0 %
Hazard symbols:	Xn, N	R-phrases: 22-51/53
CAS No.:	38668-48-3	N,N-bis-(2-hydroxypropyl)-p-toluidine
EINECS:	254-075-1	Content 0,1 – 1,0%
Hazard symbols:	T	R-phrases: 25-41-52/53

The wording of hazard symbols and R-phrases is specified in chapter 16 if dangerous ingredients are mentioned.

#### 4. First-aid measures

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General information: Medical treatment is necessary if symptoms occur which are obviously caused by skin or eye contact with the product or by inhalation of its vapours. Remove soiled, soaked clothing immediately.

After inhalation: Move subject to fresh air and keep him calm. See a physician.

After skin contact: Immediately remove contaminated clothing. Immediately wash with water soap and rinse thoroughly.

After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.

After ingestion: Do not induce vomiting. Call a physician immediately.

## 5. Fire-fighting measures

Suitable extinguishing agents: Foam, dry chemical, carbon dioxide

Unsuitable extinguishing agents for safety reasons: Water

Special protective equipment for fire fighting: Wear self-contained breathing apparatus.

## 6. Accidental release measures

Personal precautions: Keep away from ignition sources. Take care for adequate ventilation. Use personal protective clothing. Use breathing apparatus if exposed to vapours / dust.

Environmental precautions: Prevent product from getting into drains / surface water / groundwater.

Methods for cleaning up: Larger quantities: Remove mechanically (by pumping). Use explosion-proof equipment! Smaller quantities and / or residues: Contain with absorbent material (e.g. sand, diatomaceous earth, acid absorbent, universal absorbent or sawdust). Dispose of in accordance with regulations.

## 7. Handling and storage

Handling:

Instruction on safe handling: Ensure the area is well ventilated. Keep container tightly closed.

Information on fire and explosion protection: Keep away from sources of ignition --- no smoking. Take precautionary measures against static discharges in the event of fire; cool the endangered containers with water. When heated above the flash point and /or during spraying (atomizing), ignitable mixtures may form in air. Use explosion-proof equipment only.

Storage:

Requirements for storage areas and containers: Keep only in the original container at a temperature not exceeding 35°C. Protect from light. Fill the container by approximately 90% only as oxygen (air) is required for stabilisation. With large storage containers make sure the oxygen (air) supply is sufficient to ensure stability.

## 8. Exposure controls and personal protection

Components with workplace control parameters:

CAS-No.: 80-62-6	methyl methacrylate
WEL-TWA:	55 ppm
WEL-TWA:	208 mg/m <sup>3</sup>
WEL-STEL:	100 ppm
WEL-STEL:	416 mg/m <sup>3</sup>
WEL (AGW):	50 ml/m <sup>3</sup> = ppm
WEL (AGW):	210 mg/m <sup>3</sup>

Occupational exposure controls: For monitoring procedures refer to for instance "Empfohlene Analyseverfahren für Arbeitsplatzmessung" Schriftenreihe der Bundesanstalt für Arbeitsschutz and "NIOSH Manual of Analytical Methods", National Institute for Occupational Safety and Health

Personal protective equipment

General protective and hygienic measures: Do not inhale vapours. Avoid contact with eyes and skin.

Hygiene measures: Store work clothing separately. Remove soiled or soaked clothing immediately. Follow the usual good standards of occupational hygiene. Clean skin thoroughly after work; apply skin cream.

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**Respiratory protection:** Breathing apparatus in case of high concentrations, short term: filter appliance, filter A

**Hand protection:** Butyl rubber gloves (0,7 mm), Breakthrough time approx. 60 min (EN 374)  
In practice, due to variable exposure conditions, this information can only be an aid to orientation for the selection of a suitable chemical protection glove. In particular, this information does not substitute suitability tests by the end of the user.

General information: Gloves should be replaced regularly, especially after extended contact with the product. For each work-place a suitable glove type has to be selected.

**Eye protection:** Tightly fitting goggles

**Body protection:** On handling of larger quantities: Face mask, chemical-resistant boots and apron

## 9. Physical and chemical properties

<b>Form:</b>	liquid	
<b>Colour:</b>	colourless	
<b>Odour:</b>	ester-like	
<b>Boiling point:</b>	100,5°C	(methyl methacrylate)
<b>Flash point:</b>	10°C	(methyl methacrylate)
<b>Ignition temperature:</b>	430°C	(methyl methacrylate)
<b>Spontaneous ignition:</b>	not determined	
<b>Lower explosion limit:</b>	2,1 % (V)	(methyl methacrylate)
<b>Upper explosion limit:</b>	12,5 % (V)	(methyl methacrylate)
<b>Vapour pressure:</b>	38,7 hPa at 20°C	(methyl methacrylate)
<b>Density:</b>	approx. 1,0 g/cm <sup>3</sup> at 20°C	
<b>Relative vapour density:</b>	<1 at 20°C	
<b>Solubility in water:</b>	approx. 16g/l	(methyl methacrylate)
<b>Viscosity dynamic at 20°C:</b>	approx. 500 mPas	

## 10. Stability and reactivity

**Thermal decomposition:** No decomposition when used as directed.

**Hazardous reactions:** Polymerization with heat evolution may occur in the presence of radical forming substances (e.g. peroxides), reducing substances, and /or heavy metal ions.

**Hazardous decomposition products:** None when used as directed.

## 11. Toxicological information

**Acute oral toxicity:**

LD50 rat, OECD 401 > 5000 mg/kg

Related to substance: methyl methacrylate

LD50 rat, OECD 172 mg/kg

Related to substance: N,N-bis-(2-hydroxypropyl)-p-toluidine

**Acute inhalational toxicity:**

Low toxicity by inhalation

LC50/4h rat 29,8 mg/l

Related to substance: methyl methacrylate

**Acute dermal toxicity:**

Practically non toxic in contact with skin.

LD50 rabbit >5000 mg/kg

Related to substance: methyl methacrylate

**Irritant Effect on the skin:** Contact with skin may cause irritations.

**Irritant Effects on the eyes:** Contact with eyes may cause irritation.

**Sensitisation:**

In sensitisation tests on guinea pigs with and without adjuvant, both positive and negative results were found. In humans various types of allergic reactions have been observed (symptoms: headache, eye irritations and skin affections).

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Related to substance: methyl methacrylate

Toxicity on repeated administration.

Dose ad which no adverse effects were observed (NOAEL). At higher doses adverse effects were observed.

rat, inhalation, 2a ,0, 25, 100, 400ppm NOAEL 25 ppm

Findings: Damage to mucous membranes in the nose at 400 ppm

Related to substance: methyl methacrylate

rat, in drinking water, 2a, 0, 6/7, 60/70, 2000ppm NOAEL 2000 ppm

Findings: no toxic effects

Related to substance: methyl methacrylate

Mutagenicity:

Positive as well as negatives results in in vitro mutagenicity/genotoxicity tests.

No experimental indication of genotoxicity in vivo available.

In summary it is not mutagenic according to internationally accepted criteria.

Related to substance: methyl methacrylate

Carcinogenicity:

Non-carcinogenic in inhalation and feeding studies carried out on rats, mice and dogs.

Related to substance: methyl methacrylate

Reprotoxicity / teratogenicity:

No indications of toxic effects were observed in reproduction studies in animals.

Related to substance: methyl methacrylate

General information's:

There are no toxicological data available for the product as such. Avoid contact with the skin, eyes and inhalation of the product vapours.

12. **Ecological information**

Persistence and degradability

Biodegradability:

readily degradable, OECD301C, 14d 94%

Related to substance: methyl methacrylate

Ecotoxicological effect

Fish toxicity:

LC50 Oncorhynchus mykiss, rainbow trout, OECD 203  
flow through GLP, 96h 79 mg/l

Related to substance: methyl methacrylate

Daphnia toxicity:

EC50 Daphnia magna, OECD 202, flow trough, 48 h 69 mg/l

Related to substance: methyl methacrylate

NOEC Daphnia magna, OECD 202 part 2, flow trough, 21d 37 mg/l

Related to substance: methyl methacrylate

Algae toxicity:

EC3 Scenedesmus quadricauda, DIN 38412 section 9, 8d 37 mg/l

Related to substance: methyl methacrylate

Bacteria toxicity:

ECO Pseudomonas putida 100 mg/l

Related to substance: methyl methacrylate

General information's:

Do not allow to enter soil, waterways or waste water

13. **Disposal considerations**

Product:

Waste is hazardous and therefore particularly to be kept under surveillance. It must be disposed of in accordance with the regulations after consultation of the competent local authorities and disposal

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company in a suitable and licensed facility.

European waste catalogue: 07 02 08

Waste from the manufacture, formulation, supply and use (MFSU) of plastics, synthetic rubber and man-made fibres – other still bottoms and reaction residues. Always check the given waste codes according to the actual conditions of manufacturing, formulation or use in your facilities.

Uncleaness packaging:

Contaminated packaging should be emptied optimally and after appropriate professional cleansing may be taken for reuse. Packaging that cannot be cleaned should be disposed of professionally.

Uncontaminated packaging may be taken for recycling.

#### 14. **Transport information**

Land transport ADR (cross-border):

ADR/GGVS: 3  
 UN-Number: 1866  
 Packaging group: III  
 Label: 3  
 Transport category: 3  
 Tunnel restriction code: D/E  
 Description of goods: 1866 RESIN SOLUTION (containing: methyl methacrylate)  
 ADR: Special provision 640H

RID/GGVE: See ADR

Maritime transport IMDG:

IMDG Class: 3  
 UN-Number: 1866  
 Packaging group: II  
 EMS Number: F-E, S-E  
 Marine pollutant:  
 Packed (+/0): 0  
 Proper shipping name: 1866 RESIN SOLUTION (containing: methyl methacrylate)

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: 3  
 UN/ID Number: 1866  
 Label: 3  
 Packaging group: II  
 Proper shipping name: 1866 RESIN SOLUTION (containing: methyl methacrylate).

#### 15. **Regulatory information**

Regulations of the European union (Labelling) / National legislation/Regulations:

Directive 1999/45/EEC ('Preparation Directive'): requires labelling

Hazardous component(s) for labelling:

Contains: methyl methacrylate

Hazard symbol(s):

F Highly flammable

Xi Irritant

R-phrases(s)

R 11 Highly flammable

R 37/38 Irritating to respiratory system and skin.

R 43 May cause sensitization by skin contact

S-phrases(s)

S 16 Keep away from sources of ignition --- No smoking.

S 24 Avoid contact with skin

S 37 Wear suitable gloves

Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.

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## 16. Other information

The product is normally supplied in a stabilized form. If the permissible storage period and / or storage temperature is exceeded, the product may polymerize with heat evolution.

Full text of hazard symbols and R-phrases if mentioned as hazardous components in chapter 3:

### Hazards description:

F	Highly flammable
T	Toxic
Xi	Irritant
N	Dangerous for the environment
Xn	Harmful

### Relevant R-phrases

R	11	Highly flammable
R	22	Harmful if swallowed
R	25	Toxic if swallowed
R	37/38	Irritating to respiratory system and skin.
R	41	Risk of serious damage to eyes.
R	43	May cause sensitization by skin contact.
R	51/53	Toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.
R	52/53	Harmful to aquatic organisms may cause long-term adverse effects in the aquatic environment

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