



Safety data sheet

1. Substance/preparation and company identification

Trade name:

BKF Siegel

Application of the substance/ the preparation:

Laminating resin for orthopaedic technology

BEIL

Kunststoff-Produktions- und Handelsgesellschaft mbH

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2. Hazards identification

Highly flammable.

Irritating to respiratory system and skin.

May cause sensitisation by skin contact.

3. Composition/information on ingredients

preparation

Hazardous Ingredients

Component	CAS Number	Hazard symbol(s) / R-phrase(s)	Content
methyl methacrylate	80-62-6	F, Xi 11-37/38-43	60.0 - 100.0 %
N,N-bis-(2-hydroxypropyl)-p-toluidine	38668-48-3	T 25-41-52/53	0.1 - 1.0 %
ethylene di(S-thioacetate)	123-81-9	Xn, N 22-51/53	0.1 - 1.0 %
tris(nonylphenyl) phosphite	26523-78-4	Xi, N 38-43-50/53	0.1 - 1.0 %

4. First Aid Measures

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 contact with eyes:

Keeping the eyelids apart flush thoroughly with water immediately. If irritation persists, contact a physician.

After contact with skin:

Wash off immediately with soap and water. If skin irritation occurs consult a physician.

After Ingestion:

Do not induce vomiting. Contact a doctor immediately.

5. Fire-fighting Measures

Suitable extinguishing media:



foam, dry chemical, carbon dioxide

Unsuitable extinguishing media for safety reasons:

water

Special protective equipment for fire fighting:

Wear self-contained breathing apparatus.

6. Accidental Release Measures

Precautionary measures related to people:

Take care for adequate ventilation. Keep away sources of ignition. Use personal protective clothing. Use breathing apparatus if exposed to vapours/dust/mist/aerosol.

Environmental protective measures:

Prevent product from getting into drains/surface water/groundwater.

Methods of cleaning / adsorption:

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:

Provide good room ventilation even at ground level (vapours are heavier than air). 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. Vapours are heavier than air and can form an explosive mixture with air. Use explosion-proof equipment only.

Storage

Requirements for storage areas and containers:

Keep only in the original container at a temperature not exceeding 25°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/ Personal Protection

Components or products of decomposition according to point 10, with limit values related to the place of work which require monitoring

methyl methacrylate: 80-62-6

WEL (long-term) 2007

208 mg/m³

50 ppm

WEL (short-term) 2007

416 mg/m³

100 ppm

Personal protective equipment

General protective 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. After work-time and during work intervals the affected skin areas must be thoroughly cleaned.

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 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

Appearance

Form:	liquid
Colour:	colourless
Odour:	ester-like
Data relevant to safety:	
Changes in physical state:	
Freezing Temperature :	not determined
Boiling Temperature:	approx. 100 °C at 1,013 hPa
Flash point:	10 °C (methyl methacrylate)
Ignition temperature:	430 °C (methyl methacrylate)
Lower explosion limit :	2.1 %(V) at 10,5°C (methyl methacrylate)
Upper explosion limit:	12.5 %(V) (methyl methacrylate)
Vapour pressure:	approx. 40 hPa at 20 °C
Density:	approx. 1 g/cm ³ at 20 °C
Relative vapour density (related to air):	> 1 at 20 °C
Solubility in water:	approx. 16 g/l at 20 °C
Fat solubility:	not determined
pH-value:	not applicable
n-Octanol/water partition coefficient:	not determined
Viscosity (dynamic):	approx. 500 mPa.s
Further information:	none

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, 172 mg/kg

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

Acute Inhalational Toxicity:

Low toxicity by inhalation

LC50 rat, 4 h 29,8 mg/l

Related to substance: methyl methacrylate

Acute Dermal Toxicity:

Practically non-toxic in contact with skin

LD50 rabbit > 5,000 mg/kg

Related to substance: methyl methacrylate

**Irritant Effect on the skin:**

Contact with skin may cause irritations.

Related to substance: product

Irritant Effects on the eyes:

Contact with eyes may cause irritation.

Related to substance: product

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, skin affections).

Related to substance: methyl methacrylate

Toxicity on repeated administration:

Dose at 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 N OAEL 2000 ppm

Findings: no toxic effects

Related to substance: methyl methacrylate

Mutagenicity:

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

No experimental indication of genotoxicity in vivo available.

In summary 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:

Avoid contact with the skin and eyes and inhalation of the product vapours.

12. Ecological Information**Information on elimination (persistence and degradability)****Biodegradability:**

readily degradable, OECD 301 C, 14 d 94 %

Related to substance: methyl methacrylate

Ecotoxicological effect**Fish toxicity:**

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

Related to substance: methyl methacrylate

Daphnia toxicity:

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

Related to substance: methyl methacrylate

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

Related to substance: methyl methacrylate

Algae toxicity:

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

Related to substance: methyl methacrylate

Bacteria toxicity:



100 mg/l

EC0 Pseudomonas putida

Related to substance: methyl methacrylate

General information Do not allow to enter soil, waterways or waste water**13. Disposal considerations****Product:**

Waste is hazardous. It must be disposed of in accordance with the regulations after consultation of the competent local authorities and disposal company in a suitable and licensed facility.

Uncleanness 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.

Untamminated packaging may be taken for recycling.

Code of waste EWC:

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.

14. Transport Information**Overland transport ADR/RID/GGVSE**

UN 1866 RESIN SOLUTION, 3, III

Hazard no. 30

Inland waterway transport ADNR

UN 1866 RESIN SOLUTION, 3, III

Shipment by sea IMDG/GGVSee

UN number 1866

Class 3

EmS F-E, S-E

Marine pollutant -

Packaging group II

Proper Shipping Name RESIN SOLUTION

Air transport ICAO/IATA

UN number 1866

Class 3

Packaging group II

Proper Shipping Name RESIN SOLUTION

Remarks

ADR Special provision 640H

RID Special provision 640H

ADNR Special provision 640H

15. Regulatory Information**Labelling in accordance with directive 1999/45/EC**

requires labelling

Hazardous component(s) for labelling

contains methyl methacrylate

Hazard symbol(s):

F Highly flammable

Xi Irritant

R-phrases(s):

11 Highly flammable

37/38 Irritating to respiratory system and skin.

43 May cause sensitization by skin contact

**S-phrases(s):**

16	Keep away from sources of ignition --- No smoking.
24	Avoid contact with skin.
37	Wear suitable gloves

Status of Registration:

REACH (EU)	preregistered, registered or exempted
TSCA (USA)	listed or exempted
DSL (CDN)	listed or exempted
PICCS (RP)	listed or exempted
IECS (VR)	listed or exempted

Occupational restrictions:

Note for juveniles.
Note for pregnant woman and nursing mothers (EC Directive 92/85/EEC).

16. Other information**Miscellaneous 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.

R-phrases of relevance from Section 3

11	Highly flammable.
22	Harmful if swallowed.
25	Toxic if swallowed.
37/38	Irritating to respiratory system and skin.
38	Irritating to skin.
41	Risk of serious damage to eyes.
43	May cause sensitisation by skin contact.
50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

References:

relevant manuals and publications
own examinations
own toxicological and ecotoxicological studies
toxicological and ecotoxicological studies of other manufacturers
SIAR
OECD-SIDS
RTK public files

The information contained here in is based on the present state of our knowledge and does not therefore guarantee certain properties. Recipients of our product must take responsibility for observing existing laws and regulations.