Material Safety Data Sheet according to 91/155/EEC

Tradename:

PERLIBOND

1. Identification of the substance / preparation and the company

Information on the product

Trade name: Perlibond

Use / Purpose: Auxiliary means, used as a form of bonding agent, to assure adhesion between synthetic teeth and denture base resin.

Information on the manufacturer

Scheu Dental GmbH
Am Burgberg 20
58642 Iserlohn
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2. Composition / Information on ingredients

Chemical characterization

Methyl methacrylate and dichloromethane

Hazardous ingredients

Methyl methacrylate		
concentration	60 to 100%	5 bis 60 %
chemical formula	$C_5 H_8 O_2$	
CAS-Nr.	80-62-6	75-09-2
EG-Nr.	201-297-1	
INDEX-Nr.	607-035-00-6	200-838-9
hazard symbols	F, Xi	Xn
R-phrases	11-37/38-43	40

3. Hazards identification

Hazard symbols

Highly flammable

Harmful

Special guidelines concerning dangers to humans and the environment

Highly flammable. Irritating to respiratory system and skin. May cause sensitization by skin contact. Limited evidence of a carcinogenic effect.

4. First aid measures

General Information: Remove soaked clothing immediately. Medical treatment is necessary if symptoms occur that are obviously caused by skin or eye contact with the product or by inhalation of its vapours. Symptoms of poisoning may not appear for several hours. Keep under medical supervision for at least 48 hours.

After inhalation: In case of inhalation remove casualty to fresh air and allow to rest. If necessary, apply mouth-to-mouth resuscitation or mechanical ventilation. Seek medical advice. .

After contact with skin: In case of contact with skin wash off immediately with soap and water. If skin irritation occurs, seek medical advice.

After contact with eyes: In case of contact with eyes rinse thoroughly with plenty of water while keeping the eyelids apart. If irritation persists seek medical advice.

After ingestion: If swallowed, do not induce vomiting - seek medical advice.

Notes to physician

Symptoms: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Hazards: Do not induce vomiting without medical advice. In case of ingestion, the stomach should be emptied by gastric lavage under quailed medical supervision. Aspiration may cause pulmonary oedeman and pneumonitis.

5. Fire-fighting measures

Suitable extinguishing media

Foam, dry powder, carbon dioxide

Unsuitable extinguishing media for safety reasons

Water

Sapecial risks

Practically non-combustible. Vapours heavier than air. Development of hazardous combustion gases or vapours possible in the event of fire. The following may develop in event of fire: hodrochloric acid, phosgene.

Special protective equipment for fire fighting

Do not stay in the dangerous zone without self-contained breathing apparatus. In order to avoid contact with skin , keep a safety distance and wear protective clothing. In case of fire hazardous decomposition products may be produced such as: Carbon monoxide; Hydrogen chloride gas; phosgene; Chlorine.

6. Accidental release measures

Personal precautionary measures

Assure appropriate air-flow. Wear protective clothing. Keep away sources of ignition. Use breathing apparatus if exposed to vapours/dust/mist/aerosol.

Environmental protection measures

Do not allow to get into drains/surface water/groundwater

Measures for cleaning

Large quantities: Remove mechanically (hydraulic pump). Assure explosion-safe measures!

smaller quantities: Pick up with liquid absorbing material (sand, diatomaceous earth, acid absorbent, sawdust or tissues)

7. Handling and storage

Instructions on safe handling

Keep container well closed. Assure appropriate air-flow.

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.

Requirements for storage areas and containers

Storage temperature: +10 °C to +25 °C
Short term max.: - 20 °C to +30 °C
Store in original container only. Temperatures should never exceed 25 °C. Fill container up to 90% max, because enclosed oxygen (air) is needed for stabilization purposes. Keep out of direct sunlight. Special explosion safe environment needed to store quantities larger than 5l per container.

Additional Information

If the liquid should cool down to a temperature of lower than 10°C some of the ingredients may crystallize and sink to the bottom. If the materials temperature rises up to room temperature again these crystals dissolve again. The properties of the material will not be affected by this phenomena.

8. Exposure controls and personal protection

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

LT-Value for

Methyl methacrylate	210 mg/m³
CAS-Number	80-62-6
maximum limitation category	I

Remarks

Y: Danger of damage to unborn children is not to be expected as long as the LT-value does not exceed above mentioned amount.

General protective measures:	Do not inhale vapours. Avoid contact with eyes and skin.
Hygiene measures:	Keep working clothes away from regular clothing. Take off contaminated clothes immediately. Follow the regular standards of occupational hygiene. Clean skin thoroughly after work; apply skin cream.
Respiratory protection:	Breathing apparatus in case of high concentrations
Eye protection:	Wear protective goggles.
Body protection:	When handling larger quantities wear face shield, apron and chemical resistant boots.
Hand protection:	Wear protective gloves made of butyl rubber (0,7mm), break through time 300 min (EN 374). In practice, due to variable exposure conditions, this information can only ba an aid to orientation for the selection of a suitable chemical protection glove. In particular, this information does not substitute suitability tests by the user.
general information:	Gloves should be changed regularly, especially after over excessive contact with the product. A different type of glove should be considered for each workplace.

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

LT-Value for

Dichloromethane	350 mg/m³
CAS-Number	75-09-2
maximum limitation category	3A - carcinogenic

General protective measures:	Do not inhale vapours. Avoid contact with eyes and skin.
Hygiene measures:	Keep working clothes away from regular clothing. Take off contaminated clothes immediately. Follow the regular standards of occupational hygiene. Clean skin thoroughly after work; apply skin cream.
Respiratory protection:	Breathing apparatus in case of high concentrations
Eye protection:	Wear protective goggles.
Body protection:	When handling larger quantities wear face shield, apron and chemical resistant boots.
Hand protection:	Wear protective gloves made of butyl rubber (0,7mm), break through time 300 min (EN 374). In practice, due to variable exposure conditions, this information can only ba an aid to orientation for the selection of a suitable chemical protection glove. In particular, this information does not substitute suitability tests by the user.
general information:	Gloves should be changed regularly, especially after over excessive contact with the product. A different type of glove should be considered for each workplace.

9. Physical and chemical properties

Appearance

Form:	Liquid
Colour:	Colourless
Odour:	Ester-like, slightly sweet, stinging

Changes in physical state (related to the component methyl methacrylate)

Melting temperature:	-48,2 °C
Boiling temperature:	100,3 °C (at 1.013 hPa)
Flashpoint:	10 °C (DIN 51755)
Ignition temperature:	430 °C (DIN 51794)
Self ignition ability:	not determined
lower explosion limit:	1,7 %(V)
upper explosion limit:	12,5 % (V)
vapour pressure:	38,7 hPa (at 20 °C)
Density:	0,94 g/cm³ (at 20 °C)
Relative vapor density related to air:	> 1 (at 20 °C)
solubility in water:	15,9 g/l (at 20 °C)
qualitative solubility:	miscible with most organic solvents
pH-value:	not applicable
n-octanol/water partition coefficient	log Pow 1,38 (measured)
dynamic viscosity:	0,63 mPa.s (at 20 °C, Brookfield)
further information	none

Changes in physical state (related to the component dichloromethane

Melting temperature:	-95,1 °C
Boiling temperature:	40 °C (at 1.013 hPa)
Flashpoint:	n.a.
Ignition temperature:	605 °C (DIN 51794)
Self ignition ability:	not determined
lower explosion limit:	13 %(V)
upper explosion limit:	22 % (V)
vapour pressure:	475 mbar (at 20 °C)
Density:	1,33 g/cm^3 (at 20 °C)
solubility in water:	13,7 g/l (at 20 °C)
n-octanol/water partition coefficient	log Pow 1,1,25 (measured)
dynamic viscosity:	0,43 mPa.s (bei 20 °C, Brookfield)
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

The following information is related to the component methyl methacrylate.

Acute oral toxicity:	>5.000 mg/kg; practically non-toxic if swallowed; LD50 rat, OECD 401
Acute inhalational toxicity:	29,8 mg/l; low toxicity by inhalation; LC50 rat, exposure 4h
Acute dermal toxicity:	>5.000 mg/kg; practically non-toxic in contact with skin; LD50 rabbit
Irritant effect on skin:	not irritating; rabbit; exposure 24h; FDA 1959 Draize, occlusive
Irritant effect on eyes:	not irritating; rabbit; Draize
Sensitization:	In sensitization 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).
Toxicity on repeated administration:	NOAEL 25ppm; at said dosis no adverse effects were observed. At higher doses adverse effects were observed; rat; inhalative 2 a, 25-400ppm (Findings: damage to mucous membranes in the nose at 400ppm) NOAEL 2000ppm; rat; drinking water 2 a, 6-2000ppm (Findings: no toxic effects)
Mutagenicity:	Positive as well as negative results within in vitro mutagenicity / genotoxicity tests. No experimental indication of genotoxicity in vivo available. In summary **not mutagenic** according to internationally accepted criteria.
Carcinogenicity:	Non-carcinogetig in inhalation and feeding studies carried out on rats, mice and dogs.
Reprotoxicity / teratogenicity:	No indications of toxic effects were observed in reproduction

studies in animals.

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

The following information is related to the component dichloromethane.

Acute oral toxicity: 2300 mg/kg rat LD50
Skin irritation: Prolonged skin contact may defat the skin an produce dermatitis. May cause irritation of the mucous membranes.
Eye irritation: May have irritant effects.
Sensitization: Did not cause sensitization on laboratory animals.

12. Ecological information

Information on elimination (persistence and degradability) to the component methyl methacrylate

Biodegradability: readily degradable, ca. 94 %
Method: OECD 301 C, 14d

Ecotoxicological effect

Fish toxicity (LC50): > 79 mg/l
Oncorhynchus mykiss, rainbow trout, OECD 203 GLP, 96h
Daphnia toxicity (EC50): 69 mg/l
Daphnia magma, OECD 202, 48h
Algae toxicity (EC3): 37 mg/l
Scenedesmus quadricauda, DIN 38412 section 9, 8d
Algae toxicity (EC50) 170 mg/l
Selenastrum capricornutum, OECD 201, 96h
Bakteria toxicity (EC0) 100 mg/l
Pseudomonas putida

Additional ecological information

Do not allow to enter soil, waterways or waste water.

Information on elimination (persistence and degradability) to the component dichloromethane

Biodegradability: Biodegradable log Pow 1,25
Bioaccumulation: Very volatile. Does not bioaccumulate.
Ecotoxicity effects

Toxicity to fish	237-626 mg/l	48 h	LC 50 (Golden orfe)
Toxicity to daphnia:	220 mg/l	48 h	EC 50 (Daphnia magna)
Toxicity to bacteria	500 mg/l		EC 0 (Pseudomonas putida)

Further information on ecology

Do not flush into surface water or sanitary sewer system.

13. Disposal considerations

Product (Components, powder and liquid)

European waste code: **07 02 99**
Waste name: Not yet cured acrylic leftovers, compounds or components.
Recommendations: Must be disposed of in accordance with the regulations of the local authorities and the disposal company in a suitable and licensed facility.

Already cured acrylic leftovers (both components mixed and cured)

European waste code: **17 02 03**

Waste name:	other cured acrylic waste
Recommendations:	Can be disposed of in accordance with the regulations of the local authorities and the disposal company in a suitable and licensed facility.

Contaminated packaging

Recommendations:	Can be burned in accordance to local regulations. Dispose decontaminated packaging at local recycling facilities.

14. Transport information

Overland transport

ADR/RID/GGVSE

Class:	3 flammable liquid, Toxic, N.O.S
Subsidiary risk:	6.1
UN Number:	1992
Packaging group:	II
Label:	3
Limited Quantity:	LQ0
Special regulation	274

Inland waterway transport

ADNR

Class:	3 flammable liquid, Toxic, N.O.S.
Subsidiary risk:	6.1
UN Number:	1992
Packaging group:	II
Label:	3 + 6.1

Shipment by sea

IMDG/GGVSee

Class:	3
Subsidiary risk:	6.1
UN Number	1992
EmS:	F-E, S-D
Marine pollutant:	-
Packing group:	II
Proper Shipping Name:	Flammable Liquid, Toxic, N.O.S.

Air transport

ICAO/IATA

Class:	3
Subsidiary risk:	6.1
UN Number	1992
Packing group:	II
Proper Shipping Name:	Flammable Liquid, Toxic, N.O.S.

15. Regulations

Labelling in accordance to EC directive GefStoffV
requires labelling
Hazardous component for labelling
contains methyl methacrylate
Hazard symbols

F	Highly flammable
Xi	Irritant

Risk phrases (R-phrases)

11	Highly flammable
37/38	Irritating to respiratory system and skin
40	Limited evidence of a carcinogenic effect
43	May cause sensitization by skin contact

Safety phrases (S-phrases)

24	Avoid contact with skin
37	Wear suitable gloves
46	If swallowed, seek medical advice immediately and show container or label

15. Regulations - continued -

National regulations (for Germany only)

Technical regulation for air	5.2.5
Water hazards class	1 (VwVwS, Annex 2)

Occupational restrictions
- Note for juveniles
- Note for pregnant women and nursing mothers

16. Other information

This 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.

References
Relevant manuals and publications, toxicological and ecological studies of different manufacturers. (SIAR, OECD-SIDS, RTK public files)

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.