

**SAFETY DATA SHEET** (91/155/EWG)**DeguDent**

A Dentsply International Company

**Cristobal+ Opaque liquid**

Material no.		Version	<b>1.0 / GB</b>
Specification	<b>144555</b>	Revision date	<b>14.09.2005</b>
VA-Nr		Print Date	<b>14.09.2005</b>
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**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING****Product information**

Trade name	:	Cristobal+ Opaque liquid
Company	:	DeguDent GmbH Postfach 1364 D-63403 Hanau
Telephone	:	+49 (0)6181/59-5767
Telefax	:	+49 (0)6181/59-5879
Emergency telephone number	:	+49 (0)180 / 23 24-555
Use of the Substance / Preparation	:	For dental use only.

**2. COMPOSITION/INFORMATION ON INGREDIENTS****Chemical nature**

The preparation contains:  
acrylic resin based on: methyl methacrylate

**Information on ingredients / Hazardous components**

• <b>methyl methacrylate</b>		30% - 50%	
CAS-No.	80-62-6	EC-No.	201-297-1
	F; R11		
	Xi; R37/38		
	R43		

See chapter 16 for text of risk phrases

**3. HAZARDS IDENTIFICATION**

Highly flammable.  
Irritating to respiratory system and skin.  
May cause sensitization by skin contact.  
When heated, formation of explosive vapour/air mixtures.  
Danger of bursting of closed systems to vigorous exothermic polymerization. Avoid uncontrolled polymerization.

**4. FIRST AID MEASURES****General advice**

Take off all contaminated clothing immediately.

**Inhalation**

Take affected persons out into the fresh air.  
Obtain medical attention.

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**Skin contact**

Wash off immediately with soap and plenty of water.  
Obtain medical attention.

**Eye contact**

With eye held open, thoroughly rinse immediately with plenty of water for at least 5 minutes.  
Consult an ophthalmologist.

**Ingestion**

Do not induce vomiting.  
Have the mouth rinsed with water.  
Have patient drink plenty of water in small sips.  
Obtain medical attention.

**Notes to physician**

Specific therapy/antidote treatment: none known  
If required, therapy of irritative effect.  
If substance has been swallowed:  
Allergic reactions of the skin are possible.  
Treatment of allergic reaction if necessary.  
Early endoscopy in order to assess mucosa lesions in the oesophagus and stomach which may appear. If necessary, suck away leftover substance.

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**5. FIRE-FIGHTING MEASURES****Suitable extinguishing media**

mist, carbon dioxide (CO<sub>2</sub>), quenching foam - polar

**Extinguishing media which must not be used for safety reasons**

high volume water jet

**Specific hazards during fire fighting**

In case of combustion or decomposition of the product, the fumes produced lead to irritations or inflammations of the respiratory tract.  
When heated, formation of explosive vapour/air mixtures.

**Special protective equipment for fire-fighters**

In the case of fire, wear respiratory protective equipment independent of surrounding air and chemical protective suit.

**Further information**

In case of fire cool containers or take them to a safe place.  
Use water spray to cool unopened containers.

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**6. ACCIDENTAL RELEASE MEASURES****Personal precautions**

Keep unauthorised persons away.  
Wear personal protective equipment.  
Avoid coming into contact with the following substance/substance classes: Product.

**Environmental precautions**

Prevent substance from entering soil, natural bodies of water and sewer systems.  
Avoid penetration into drainage system or in rooms situated at a lower level because of danger of explosion.

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**Methods for cleaning up**

Remove all sources of ignition.

Absorb with liquid-binding material (e.g. inert absorbent sand universal binder).

Pick up mechanically with a suitable device and collect in a suitable container.

**Additional advice**

Ensure explosion proofness.

Dispose of contaminated material as a waste in a correct manner.

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**7. HANDLING AND STORAGE****Handling****Safe handling advice**

Always close container tightly after removal of product.

Avoid light effect heat sun rays.

Vapours are heavier than air.

Only fill up to 90 % of the container as air is required to stabilize.

**Advice on protection against fire and explosion**

Product is flammable.

product is highly flammable.

Keep away from sources of ignition - No smoking.

Explosion-proof installations required.

Take precautionary measures against static discharges.

**Storage****Requirements for storage areas and containers**

Keep containers tightly closed in a dry, cool and well-ventilated place.

Ensure there is good room ventilation.

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**8. EXPOSURE CONTROLS / PERSONAL PROTECTION****Components with workplace control parameters****• methyl methacrylate**

CAS-No.	80-62-6	EC-No.	201-297-1
Control parameters	50 ppm 208 mg/m <sup>3</sup>		Time Weighted Average (TWA):(EH40 WEL)
Control parameters	100 ppm 416 mg/m <sup>3</sup>		Short Term Exposure Limit (STEL):(EH40 WEL)

**Engineering measures**

Ensure suitable suction/aeration at the work place and with operational machinery.

**Personal protective equipment****Respiratory protection**

If workplace exposure limit is exceeded apply Respirator with brown A-type filter.

**Hand protection**

Wear protective gloves made of the following materials: solvent-resistant material.

Glove material	butyl-rubber
Material thickness	0.5 mm
Break through time	60 min

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Method Source: GESTIS substance database (hazardous substance information system of commercial professional associations)

The suitability for a specific workplace should be discussed with the producers of the protective gloves.

The exact break through time can be obtained from the protective glove producer and this has to be observed.

preventive skin protection  
Use barrier cream regularly.

**Eye protection**

goggles

**Skin and body protection**

Immediately change moistened and saturated work clothes.  
Use suitable skin protective agents before handling product. Cleanse and apply cream to skin after work. Preventive skin protection recommended.

**Hygiene measures**

No eating, drinking, smoking, or snuffing tobacco at work. Wash face and/or hands before break and end of work.

If the limits at the workplace are exceeded and/or larger amounts are released (leakage, spilling, dust) the indicated respiratory protection should be used.

Avoid contact with skin and eyes.

After contact with skin, wash immediately with plenty of water.

If there is the possibility of skin/eye contact, the indicated hand/eye/body protection should be used.

**9. PHYSICAL AND CHEMICAL PROPERTIES****Appearance**

Form	liquid
Colour	colourless
Odour	ester-like

**Safety data**

Melting point/range	-48.2 °C	
	related to substance:	methyl methacrylate
Boiling point/range	100.3 °C (1013 hPa)	
	Method: DIN 51 751	
	related to substance:	methyl methacrylate
Flash point	10 °C	
	Method: DIN 51 755	
	related to substance:	methyl methacrylate
Ignition temperature	430 °C	
	Method: DIN 51 794	
	related to substance:	methyl methacrylate
Lower explosion limit	2.1 %(V)	
	related to substance:	methyl methacrylate
Upper explosion limit	12.5 %(V)	
	related to substance:	methyl methacrylate
Vapour pressure	38.7 hPa (20 °C)	

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	related to substance:	methyl methacrylate
Density	0.94 g/cm <sup>3</sup> (20 °C) Method: DIN 51757	
	related to substance:	methyl methacrylate
Water solubility	15.9 g/l (20 °C)	
	related to substance:	methyl methacrylate
Partition coefficient (n-octanol/water)	POW: 1.38 (measured) (literature value)	
	related to substance:	methyl methacrylate
Viscosity, dynamic	0.63 mPa.s (20 °C) Method: Brookfield method	
	related to substance:	methyl methacrylate

**10. STABILITY AND REACTIVITY**

Conditions to avoid	Avoid light effect / sun rays. Protect from heat sources of ignition.
Materials to avoid	Product polymerizes on contact with radical generating substances such as peroxides, azo compounds, heavy metal compounds, solutions.
Hazardous reactions	Danger of bursting of closed systems to vigorous exothermic polymerization. Avoid uncontrolled polymerization.

**11. TOXICOLOGICAL INFORMATION**

Acute oral toxicity	LD50 Rat: > 5000 mg/kg Method: OECD Test Guideline 401 literature related to substance: methyl methacrylate
Acute inhalation toxicity	LC50 Rat: 29.8 mg/l / 4 h (literature value) related to substance: methyl methacrylate
Acute dermal toxicity	LD50 Rabbit: > 5000 mg/kg literature related to substance: methyl methacrylate
Skin irritation	Rabbit / 24 h not irritating Method: Draize Test related to substance: methyl methacrylate
Eye irritation	Rabbit not irritating Method: Draize Test related to substance: methyl methacrylate

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Sensitization	guinea pig: positive and negative literature related to substance: methyl methacrylate
Repeated dose toxicity	inhalative Rat Testing period: 2 years NOAEL: 25 mg/kg target organ/effect: irritative effects, skin linings literature related to substance: methyl methacrylate  Oral Rat Testing period: 2 years NOAEL: 2000 mg/kg drinking water analysis no therapy-related results literature related to substance: methyl methacrylate
Gentoxicity in vitro	positive and negative literature related to substance: methyl methacrylate
Gentoxicity in vivo	no evidence of mutagenic effects literature related to substance: methyl methacrylate
Mutagenicity assessment	in vivo: no evidence of mutagenic effects
Carcinogenicity	inhalative Rat related to substance: methyl methacrylate  Oral Rat related to substance: methyl methacrylate  inhalative mouse related to substance: methyl methacrylate  Oral mouse related to substance: methyl methacrylate  inhalative dog related to substance: methyl methacrylate  Oral dog related to substance: methyl methacrylate
carcinogenicity assessment	no evidence that cancer may be caused, literature. related to substance: methyl methacrylate
teratogenicity assessment	no evidence of teratogenic properties related to substance: methyl methacrylate

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**12. ECOLOGICAL INFORMATION****Elimination information (persistence and degradability)**

Biodegradability	Exposure time: 14 day Result: 94 % Readily biodegradable. Method: OECD 301 C related to substance: methyl methacrylate
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**Behaviour in environmental compartments****Ecotoxicity effects**

Toxicity to fish	LC50 Lepomis macrochirus: 191 mg/l / 96 h literature related to substance: methyl methacrylate  Oncorhynchus mykiss: > 79 mg/l / 96 h Method: OECD 203 literature related to substance: methyl methacrylate
Toxicity to daphnia	EC50 Daphnia magna: 68 mg/l / 48 h Method: OECD 202 (literature value) related to substance: methyl methacrylate  EC50 Daphnia magna: 49 mg/l / 21 d Method: OECD 202 part 2 (literature value) related to substance: methyl methacrylate
Toxicity to algae	EC50 selenastrum capricornutum: 170 mg/l / 96 h Method: OECD 201 literature related to substance: methyl methacrylate
Toxicity to bacteria	EC0 Pseudomonas putida: 100 mg/l literature related to substance: methyl methacrylate

**Further information on ecology**

Further Information	Prevent penetration into soil, stretches of water and drainage systems.
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**13. DISPOSAL CONSIDERATIONS****Product**

Disposal according to local authority regulations.

**Uncleaned packaging**

Disposal according to local authority regulations.

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**14. TRANSPORT INFORMATION****Land transport ADR/RID/GGVSE (Germany)**

Class	3
ADR/RID-Labels	3
UN-No	1247
Packaging group	II
orange warning plate	339 / 1247
Description of the goods (Technical name)	METHYL METHACRYLATE MONOMER, STABILIZED

**Sea transport IMDG-Code/GGVSee**

Class	3
UN-No	1247
Packaging group	II
EmS	F-E, S-D
Proper technical name (Proper shipping name)	METHYL METHACRYLATE MONOMER, STABILIZED

**Air transport ICAO-TI/IATA-DGR**

Class	3
UN-No	1247
Packaging group	II
Proper technical name (Proper shipping name)	Methyl methacrylate monomer, stabilized

**Inland waterway transport ADN/ADNR/GGVBinSch (Germany)**

Class	3
ADR/RID-Labels	3
UN-No / Substance number	1247
Packaging group	II
Description of the goods (Technical name)	METHYL METHACRYLATE MONOMER, STABILIZED

**Loading instructions/Remarks**

IATA_C	ERG-Code 3L
IATA_P	ERG-Code 3L
IMDG	Clear of living quarters.
ADR	Measures as 2.2.3.2.2 ADR/RID/ADNR have been applied.
ADR	Observe listed materials regulation §7, paragraph 1 GGVSE
ADNR	Measures as 2.2.3.2.2 ADR/RID/ADNR have been applied.

**15. REGULATORY INFORMATION****Labelling according to EC Directives****hazard-defining component(s)**

- methyl methacrylate

Symbol(s)	F Xi	Highly flammable Irritant
R-phrase(s)	R11	Highly flammable.

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	R37/38	Irritating to respiratory system and skin.
	R43	May cause sensitization by skin contact.
<b>S-phrase(s)</b>	S 2	Keep out of the reach of children.
	S24	Avoid contact with skin.
	S37	Wear suitable gloves.
	S46	If swallowed, seek medical advice immediately and show this container or label.

**National legislation**

employment restriction      The employment limitations under the protection of young persons act, the laws on pregnant women and young mothers and work at home is/are to be observed.

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**16. OTHER INFORMATION****Risk phrase (R phrase) texts**• **methyl methacrylate**

R11	Highly flammable.
R37/38	Irritating to respiratory system and skin.
R43	May cause sensitization by skin contact.

**Further information**

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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