

MATERIAL SAFETY DATA SHEET

SECTION 1 Identification of the Substance/Preparation and of the Company

1.1 Product Trade Name	META FAST BONDING LINER	
1.2 Exporter: Name	Sun Medical Co., Ltd.	
Address	571-2 Furutaka-cho, Moriyama, Shiga, 524-0044, Japan	
Telephone	81-77-582-9981	
Facsimile	81-77-582-9984	
e-mail	export@sunmedical.co.jp	

SECTION 2 Composition / Information on Ingredients

	CAS No.	UN No.	Percent	Symbol	R-Phrase
Preparation	----	1247	----	F / Xi	R11-36/37/38-43
Ingredients	CAS No.	UN No.	Percent	Symbol	R-Phrase
methyl methacrylate (MMA)	80-62-6	1247	balance	F / Xi	R11-36/37/38-43
4-methacryloxyethyltrimellitic acid anhydride (4-META)	70293-55-9	----	< 10 %	---	----

SECTION 3 Hazards Identification

3.1 Emergency overview	Highly flammable (F), irritant (Xi) liquid. Irritating to eyes, respiratory system and skin. May cause sensitization by skin contact. Heating, sunlight may cause explosive polymerization.
3.2 Potential health effects	
Eye	May cause irritation and possible corneal injury.
Skin	May cause irritation, redness. Persons with known sensitivity to methacrylate may show allergic contact dermatitis.
Ingestion	May cause nausea, vomiting.
Inhalation	May cause cough, drowsiness, headache, sore throat.
Effects of long-term or repeated exposure	Repeated or prolonged contact may cause skin sensitization. Prolonged or repeated inhalation may cause kidney and lung damage. The substance may have effects on the nervous system.

SECTION 4 First-Aid Measures

4.1 Eye	Immediately flush with flowing water for at least 15 minutes. Get medical attention.
4.2 Skin	Flush with soap and plenty of water. Get medical attention if irritation develops or persists.
4.3 Ingestion	Induce vomiting immediately as directed by medical personnel. Get medical attention.
4.4 Inhalation	Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

SECTION 5 Fire-Fighting Measures

5.0 Flammable properties	Highly flammable.		
5.1 Flash point	10°C (MMA)	5.2 Autoignition temp.	420°C (MMA)
5.3 Flammable limit	LEL=2 vol% UEL=12 vol% (MMA)	5.4 Suitable extinguishing media	Foam, dry chemical, carbon dioxide or dry sand.
5.5 Hazardous decomposition products	Toxic gasses such as carbon monoxide, may be released in a fire.	5.6 Special protective equipment	During emergency conditions, over-exposure to thermal decomposition products may cause health hazard. Self-contained breathing apparatus should be worn.

SECTION 6 Accidental Release Measures			
6.1 Personal precaution	For skin protection wear impervious protective gloves and clothing. For eye protection use safety goggle or a full-face shield.		
6.2 Environmental precautions	May be hazardous to the environment. Special attention should be given to water. This material is not expected to significantly bioaccumulate.		
6.3 Methods for cleaning-up	In case material is released or spilled, remove all ignition sources, and ventilate the area of leak or spill. Collect spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer.		
SECTION 7 Handling and Storage			
7.1 Handling	Observe normal warehouse handling procedures. Protect against physical damages.		
7.2 Storage	Store in a cool, dry and dark well-ventilated place. Store away from sources of ignition, strong oxidants, strong bases, strong acids. Do NOT store under pure nitrogen or oxygen-free gas. Take precautionary measures against static discharge.		
SECTION 8 Exposure Controls / Personal Protection			
8.1 Engineering measures			
Ventilation	Use general and/or local exhaust to keep exposures to a minimum.		
Other protective equipment	Eye wash station near work area.		
8.2 Personal protection			
Respiratory protection	None required during ordinary use of this product.		
Hand protection	Use impervious protective gloves to prevent skin contact.		
Eye protection	Use safety glasses.		
Skin protection	Use impervious protective gloves to prevent skin contact.		
Exposure guideline	(MMA) OSHA PEL 100 ppm (TWA), ACGIH TLV 100 ppm (TWA)		
SECTION 9 Physical and Chemical Properties			
9.1 Appearance:	Clear colorless liquid	9.2 Odor	Sweet, sharp
9.3 pH	Not applicable	9.4 Vapor density	3.5 (MMA)
9.5 Boiling point	101°C (MMA)	9.6 Solubility in water	<1.7 wt%
9.7 Specific gravity	0.94/20°C (MMA)		
SECTION 10 Stability and Reactivity			
10.1 Stability	Stable under ordinary conditions of use and storage. Polymerization may be caused by elevated temperature, oxidizers or sunlight.		
10.2 Conditions to avoid	Heat beyond 30°C. Direct sunlight. Ignition sources.		
10.3 Incompatibility (materials to avoid)	Polymerization initiator such as peroxide, persulfate, amine, light, strong acids, strong bases.		
10.4 Hazardous decomposition products	Carbon dioxide and carbon monoxide may form when heated to decomposition.		
10.5 Hazardous polymerization	May occur. (see 10.1 above)		
SECTION 11 Toxicological Information			
11.1 Health hazards (immediate, delayed, acute, chronic)	Contact with eyes and skin may cause irritation. Persons with sensitivity to methacrylates may show allergic contact dermatitis. Prolonged or repeated exposure can cause liver and kidney damage, and allergic skin reaction.		
11.2 Toxicity	(MMA) LD ₅₀ (Oral/rat): 7,870 mg/kg LD ₅₀ (Inhalation/rat): 78,000 mg/m ³ /2H (4-META) LD ₅₀ (Oral/rat): >2,000 mg/kg		
11.3 Mutagenicity	(MMA): Has caused mutagenic effects on laboratory animals. (4-META): Ames test negative.		
11.4 Carcinogenicity	(ACGIH) No, (IARC) No (Group 3: MMA)		

SECTION 12 Ecological Information	
12.1 General	This substance may be hazardous to the environment.
12.2 Mobility	When released, this substance is expected quickly evaporate or may leach into groundwater.
12.3 Degradability	Degradable to a moderate extent.
12.4 Accumulation:	An estimated bioconcentration factor (BCF) is below 100.
12.5 Ecotoxicity	(Toxicity on fish) LCL ₀ 320 mg/L-water (MMA)
12.6 Other adverse effects	Not known.
SECTION 13 Disposable Considerations	
13.1 Danger in disposal	Should be handled as hazardous waste.
13.2 Disposal method	(Consult federal, state, and local regulations) Do not empty into sewer. This substance should be sent to an approved incinerator.
SECTION 14 Transport Information	
14.1 Precautions for transport	Flammable liquid
14.2 UN	UN1247 – methyl methacrylate monomer, inhibited
14.3 IMDG	Class 3.2, PG II
14.4 ICAO/IATA	Class 3, PG II
SECTION 15 Regulatory Information	
15.1 RTECS	methyl methacrylate OZ5075000 4-methacryloxyethyltrimellitic acid anhydride NP6600000
15.2 EU Classification	F; R11(Highly flammable) Xi; R36/37/38 (Irritating to eyes, respiratory system and skin), R43 (May cause sensitization by skin contact)
SECTION 16 Other Information	
16.1	Prepared / Revised in March 2002 by Sun Medical Co., Ltd.
16.2	This Product is for dental professional use only.
16.3	The information above is believed to be accurate. However, Sun Medical Co., Ltd. makes NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Users must take their own investigations to determine the suitability of the information and the Product for their particular purposes.