

MATERIAL SAFETY DATA SHEET					
SECTION 1 Identification of the Substance/Preparation and of the Company					
1.1	Product Trade Name	Hybrid Bond Hybrid Base			
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
	Methacrylate monomers			approx. 50%	
	methyl methacrylate (MMA)	80-62-6	1247	----	F / Xi R11-36/37/38-43
	4-methacryloxyethyltrimellitic acid anhydride (4META)	70293-55-9	----	----	----
	2-hydroxyethyl methacrylate (HEMA)	868-77-9	----	----	Xi R36/38
	Acetone	67-64-1	1090	< 45%	F R11
	Water	7732-18-5	----	< 25%	----
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 irritation of the digestive tract. May cause central nervous system depression. Symptoms may include: headache, excitement, fatigue, nausea, vomiting, stupor, and coma. May cause nausea, vomiting.			
	Inhalation	Inhalation of high concentration may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. Cause respiratory tract irritation.			
	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	Promptly drink several glasses of water or milk to dilute. 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	-18 (acetone)	5.2 Autoignition temp.	420°C (MMA)
5.3 Flammable limit	LEL=2 vol% UEL=13 vol% (acetone)	5.4 Suitable extinguishing media	For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For Large fires, use water spray, fog, or alcohol-resistant foam.
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 goggles or a full-face shield.		
6.2 Environmental precautions	May be hazardous to the environment. Special attention should be given to water.		
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. Use in a well-ventilated place away from all ignition sources.		
7.2 Storage	Store in a cool (between 4 and 30), dry and dark place, preferably in a refrigerator, but do NOT freeze. Store away from direct sunlight. Keep away from sources of ignition. 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. If the exposure limit is exceeded a vapor respirator should be worn.		
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	(acetone) OSHA PEL 1,000 ppm (TWA), ACGIH TLV 500 ppm (TWA) (MMA) OSHA PEL 100 ppm (TWA), ACGIH TLV 100 ppm (TWA)		
SECTION 9 Physical and Chemical Properties			
9.1 Appearance:	Translucent liquid	9.2 Odor	Fragrant, mint-like
9.3 pH	1.9	9.4 Vapor density	Not known
9.5 Boiling point	56 (acetone)	9.6 Solubility in water	Not known
9.7 Specific gravity	approx. 1		

SECTION 10 Stability and Reactivity	
10.1 Stability	Polymerization may be caused by elevated temperature, oxidizers or light.
10.2 Conditions to avoid	Heat beyond 30°C, low temperature below 4°C, high humidity, direct sunlight and ignition sources.
10.3 Incompatibility (materials to avoid)	Polymerization initiator such as peroxide, persulfate, amine, light, strong acids, oxidizing agents, chloroform, alkalis.
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. May cause central nervous system depression. Prolonged or repeated exposure can cause liver and kidney damage, and allergic skin reaction.
11.2 Toxicity	(acetone) LD ₅₀ (Oral/rat) 5,800 mg/kg (MMA) LD ₅₀ (Oral/rat) 7,870 mg/kg (Inhalation/rat) 78,000 mg/m ³ /2H (4META) LD ₅₀ (Oral/rat) >2,000 mg/kg (HEMA) LD ₅₀ (Oral/rat) 5,050 mg/kg
11.3 Mutagenicity	(MMA): Has caused mutagenic effects on laboratory animals. (4META): 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; special attention should be given to water.
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:	Not expected to significantly bioaccumulate.
12.5 Ecotoxicity	Toxicity on fish (acetone) LC ₅₀ /96 hr >100 mg/L. (Not significantly toxic.) (MMA) LCL ₀ 320 mg/L-water
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 handled as hazardous waste and sent to an approved incinerator.
SECTION 14 Transport Information	
14.1 Precautions for transport	Flammable liquid
14.2 UN	UN1247 – methyl methacrylate
14.3 IMDG	Class 3, PG II
14.4 ICAO/IATA	Class 3, PG II

SECTION 15 Regulatory Information	
15.1 RTECS	acetone AL3150000 methyl methacrylate OZ5075000 4-methacryloxyethyltrimellitic acid anhydride NP6600000 2-hydroxyethyl methacrylate OZ4725000
15.2 EU Classification	F; R11 (Highly flammable) Xi; R36/37/38 (irritating to eyes, respiratory system and skin.) R 43 (May cause sensitization by skin contact.) S9 (Keep container in a well-ventilated place.) S16 (Keep away from sources of ignition – no smoking.) S23 (Do not breath vapour.) S33 (Take precautionary measures against static discharges.)
SECTION 16 Other Information	
16.1	Prepared / Revised in February 2009 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.