

**Material Safety Data Sheet**  
acc. to ISO/DIS 11014

Printing date 01/22/2007

Reviewed on 01/22/2007

**1 Identification of substance**

- **Product details**
- **Trade name:** CLEARFIL TRI-S BOND (CLEARFIL S<sup>3</sup> BOND)  
CLEARFIL TRI-S BOND Single Dose (CLEARFIL S<sup>3</sup> BOND Single Dose)
- **Article number:** US104-106
- **Application of the substance / the preparation** Dental bonding material
- **Manufacturer:**  
Kuraray Medical Inc.  
1621 Sakazu, Kurashiki, Okayama 710-0801,  
Japan
- **Supplier:**  
Kuraray America, Inc.  
600 Lexington Avenue, 26th Floor, New York,  
NY10022 U.S.A.  
Tel: 800-879-1676  
Fax: 888-700-5200  
Website: www.kuraraydental.com
- **Information department:** Supplier

**2 Composition/Data on components**

- **Chemical characterization**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

868-77-9	2-hydroxyethyl methacrylate	20-30%
64-17-5	ethanol	< 20%

- **Other ingredients:**  
Bisphenol A diglycidylmethacrylate  
10-Methacryloyloxydecyl dihydrogen phosphate  
Colloidal silica  
dl-Camphorquinone  
Water  
Initiators  
Accelerators  
Others

**3 Hazards identification**

- **Hazard description:**  
Irritant  
Highly flammable
- **Information pertaining to particular dangers for man and environment:**  
The product has to be labelled due to the calculation procedure of international guidelines.  
Highly flammable.  
Irritating to eyes and skin.  
May cause sensitisation by skin contact.
- **Classification system:**  
The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.
- **NFPA ratings (scale 0 - 4)**  
Health = 1  
Fire = 3  
Reactivity = 0

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· **HMIS-ratings (scale 0 - 4)**

Health = 1  
Fire = 3  
Reactivity = 0

**4 First aid measures**

· **After inhalation:**

Supply fresh air and to be sure call for a doctor.  
In case of unconsciousness place patient stably in side position for transportation.

· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

· **After eye contact:**

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

· **After swallowing:**

Do not induce vomiting; immediately call for medical help.  
If symptoms persist consult doctor.

**5 Fire fighting measures**

· **Suitable extinguishing agents:**

CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

· **Protective equipment:**

Wear self-contained respiratory protective device.  
Wear fully protective suit.

**6 Accidental release measures**

· **Person-related safety precautions:** Wear protective equipment. Keep unprotected persons away.

· **Measures for environmental protection:**

Dilute with plenty of water.  
Do not allow to enter sewers/ surface or ground water.

· **Measures for cleaning/collecting:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Ensure adequate ventilation.

**7 Handling and storage**

· **Handling:**

· **Information for safe handling:**

Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of aerosols.

· **Information about protection against explosions and fires:**

Keep ignition sources away - Do not smoke.  
Protect against electrostatic charges.

· **Storage:**

· **Requirements to be met by storerooms and receptacles:** Store in a refrigerator (2-8°C).

· **Information about storage in one common storage facility:**

Store away from oxidizing agents.  
Store away from reducing agents.

· **Further information about storage conditions:**

Keep receptacle tightly sealed.  
Store in cool, dry conditions in well sealed receptacles.

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Protect from heat and direct sunlight.

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**8 Exposure controls and personal protection**

· **Additional information about design of technical systems:** No further data; see item 7.

· **Components with limit values that require monitoring at the workplace:**

**64-17-5 ethanol**

PEL	1900 mg/m <sup>3</sup> , 1000 ppm
REL	1900 mg/m <sup>3</sup> , 1000 ppm
TLV	1880 mg/m <sup>3</sup> , 1000 ppm

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:** Tightly sealed goggles

**9 Physical and chemical properties**

· **General Information**

<b>Form:</b>	Liquid
<b>Color:</b>	Yellow
<b>Odor:</b>	Alcohol-like

· **Change in condition**

<b>Melting point/Melting range:</b>	-114.5 °C (ethanol)
<b>Boiling point/Boiling range:</b>	78 °C (ethanol)

· **Flash point:** 13 °C (ethanol)

· **Ignition temperature:** 425.0 °C (ethanol)

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

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· <b>Explosion limits:</b>	
<b>Lower:</b>	3.5 Vol % (ethanol)
<b>Upper:</b>	15.0 Vol % (ethanol)
· <b>Vapor pressure:</b>	59.0 hPa (20°C, ethanol)
· <b>Density:</b>	0.8 g/cm <sup>3</sup> (ethanol)
· <b>Vapour density</b>	1.6 g/cm <sup>3</sup> (ethanol, air=1)
· <b>Solubility in / Miscibility with</b>	
<b>Water:</b>	Fully miscible.
· <b>pH-value:</b>	2.7
· <b>Segregation coefficient (n-octanol/water):</b>	-0.32 (ethanol)

**10 Stability and reactivity**

- **Thermal decomposition / conditions to be avoided:**  
No decomposition if used and stored according to specifications.
- **Dangerous reactions** No dangerous reactions known.
- **Dangerous products of decomposition:** Carbon monoxide and carbon dioxide

**11 Toxicological information**

- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

**868-77-9 2-hydroxyethyl methacrylate**

Oral	LD50	4680 mg/kg (guinea pig)
		3275 mg/kg (mouse)
		5050 mg/kg (rat)

**64-17-5 ethanol**

Oral	LD50	3450 mg/kg (mouse)
		7060 mg/kg (rat)
Inhalative	LC50/4 h	20000 mg/l (rat)
	LD50	3600 mg/kg (rat - intraperitoneal)

- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Irritating effect.
- **Sensitization:** Sensitization possible through skin contact.
- **Additional toxicological information:**  
The product shows the following dangers according to internally approved calculation methods for preparations:  
Irritant

**12 Ecological information**

- **General notes:**  
Water hazard class 1 (Self-assessment): slightly hazardous for water  
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

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**13 Disposal considerations**

- **Product:**
- **Recommendation:**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

**14 Transport information**

- **DOT regulations:**
- **Hazard class:** 3
- **Identification number:** UN1170
- **Packing group:** II
- **Proper shipping name (technical name):** ETHANOL, mixture
- **Label:** 3
- **Land transport ADR/RID (cross-border):**
- **ADR/RID class:** 3 Flammable liquids
- **Danger code (Kemler):** 33
- **UN-Number:** 1170
- **Packaging group:** II
- **Label:** 3
- **Description of goods:** 1170 ETHANOL (ETHYL ALCOHOL), mixture
- **Maritime transport IMDG:**
- **IMDG Class:** 3
- **UN Number:** 1170
- **Label:** 3
- **Packaging group:** II
- **EMS Number:** F-E,S-D
- **Marine pollutant:** No
- **Propper shipping name:** ETHANOL (ETHYL ALCOHOL), mixture
- **Air transport ICAO-TI and IATA-DGR:**
- **ICAO/IATA Class:** 3
- **UN/ID Number:** 1170
- **Label:** 3
- **Packaging group:** II
- **Propper shipping name:** ETHANOL, mixture

**15 Regulations**

- **Sara**
- **Section 355 (extremely hazardous substances):**  
None of the ingredient is listed.
- **Section 313 (Specific toxic chemical listings):**  
None of the ingredients is listed.
- **TSCA (Toxic Substances Control Act):**  
All ingredients are listed.
- **Proposition 65**
- **Chemicals known to cause cancer:**  
None of the ingredients is listed.

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· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

64-17-5 ethanol

· **Carcinogenicity categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**

64-17-5 ethanol

A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

· **Product related hazard informations:**

The product has been classified and marked in accordance with directives on hazardous materials.

· **Hazard symbols:**



Irritant  
Highly flammable

· **Hazard-determining components of labelling:**

2-hydroxyethyl methacrylate

· **Risk phrases:**

Highly flammable.  
Irritating to eyes and skin.  
May cause sensitisation by skin contact.

· **Safety phrases:**

Keep container tightly closed and in a well-ventilated place.  
Keep away from sources of ignition - No smoking.  
Avoid contact with skin.  
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Wear suitable gloves.  
This material and its container must be disposed of as hazardous waste.

**16 Other information**

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.

· **Version:** 1