1.1 Product Identifier
Product Name: OptiBond eXTRa Universal Adhesive

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against
Product Use: Dental Adhesive

1.3 Details of the Supplier of the Safety Data Sheet
Manufacturer: Kerr Corporation
1717 W. Collins Ave.
Orange, CA 92867-5422
U.S.A.
1-800-KERR-123
E-mail: safety@kerrhawe.com

Supplier: KERRHAWE S.A.
Via Strecce n°4
6934 Bioggio
Switzerland
00-800-41-050-505
E-mail: safety@kerrhawe.com

1.4 Emergency Telephone Number
Transportation Emergencies: CHEMTREC 1-800-424-9300 (in the US) 1-703-527-3887 (Outside the US)
Medical Emergencies:
Gibraltar +350 200 79700
+350 200 72266

Ireland +353 1 809 2566
(Healthcare professionals-24/7)
+353 1 809 2166 (public,8am - 10pm, 7/7)

Malta +356 2545 6504

United Kingdom +44 191 2606182/+44 1912606180 24H

Information Phone Number: 1-800-KERR-123
SDS Date of Preparation/Revision: February 28, 2018

2.1 Classification of the Substance or Mixture
Flammable Liquid Category 2 H225
Skin Sensitization Category 1 H317
Eye Irritation Category 2 H319
Hazardous to the Aquatic Environment Chronic Hazard Category 3

2.2 Label Elements:
Danger!
Hazard Phrases
H225 Highly flammable liquid and vapor.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H412 Harmful to aquatic life with long lasting effects.

Precautionary Phrases:
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P240 Ground and bond container and receiving equipment.
P241 Use explosion-proof electrical, ventilating and lighting equipment.
P242 Use non-sparking tools.
P243 Take action to prevent static discharge.
P261 Avoid breathing vapors or mists.
P264 Wash thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves and eye protection.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P333 + P313 If skin irritation or rash occurs: Get medical attention.
P363 Wash contaminated clothing before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical attention.
P370 + P378 In case of fire: Use water fog, alcohol foam carbon dioxide or dry chemical to extinguish.
P403 + P235 Store in a well-ventilated place. Keep cool. Store locked up.
P501 Dispose of contents and container in accordance with local and national regulations.

2.3 Other Hazards: None identified

3.2 Mixtures

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No./ EC No.</th>
<th>Amount</th>
<th>GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>64-17-5 / 200-578-6</td>
<td>20-40%</td>
<td>Flam Liq 2 H225</td>
</tr>
<tr>
<td>2-Hydroxyethyl methacrylate</td>
<td>868-77-9 / 212-782-2</td>
<td>10-20%</td>
<td>Skin Irrit 2 H315, Eye Irrit 2 H319, Skin Sens 1 H317</td>
</tr>
<tr>
<td>Glycerol Dimethacrylate</td>
<td>1830-78-0 / 217-388-4</td>
<td>1-10%</td>
<td>Skin Irrit 2 H315, Eye Irrit 2 H319, STOT SE 3 H335</td>
</tr>
<tr>
<td>Glycerol Phosphate Dimethacrylate</td>
<td>Proprietary</td>
<td>1-10%</td>
<td>Skin Irrit 2 H315, Eye Irrit 2 H319, STOT SE 3 H335</td>
</tr>
</tbody>
</table>
Section 4. First Aid Measures

4.1 Description of First Aid Measures

**Inhalation**: Move to fresh air. If irritation develops or breathing is difficult get medical attention.

**Skin Contact**: Immediately flush skin with water for several minutes while removing contaminated clothing. Wash with soap and water. Get medical attention if irritation or rash develops. Launder contaminated clothing before reuse.

**Eye Contact**: Flush eyes with water for 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Get medical attention if irritation persists.

**Ingestion**: If conscious, rinse mouth with water. Do not induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

4.2 Most Important symptoms and effects, both acute and delayed: Causes eye irritation. Prolonged skin contact may cause irritation. May cause allergic skin reaction. Inhalation of mists may cause upper respiratory tract irritation and central nervous system effects such as dizziness and drowsiness. Ingestion may cause gastrointestinal irritation, nausea and vomiting.

4.3 Indication of any immediate medical attention and special treatment needed: Immediate medical attention is not required.

Section 5. Firefighting Measures

5.1 Extinguishing Media: Use water fog, alcohol foam, carbon dioxide or dry chemical to extinguish. Cool fire exposed containers with water.

5.2 Special Hazards arising from the Substance or Mixture: This product is highly flammable and forms explosive mixtures with air. Vapors are heavier than air and will travel along surfaces to remote ignition sources and flash back. Closed containers may explode if exposed to extreme heat. Combustion may produce carbon and phosphorous oxides.

5.3 Advice for Firefighters: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing for fires in areas where chemicals are used or stored.
Section 6: Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures: Wear appropriate protective clothing and equipment. Remove all sources of ignition. Avoid breathing vapors or mists. Ventilate area with explosion proof equipment. Avoid contact with the eyes, skin and clothing.

6.2 Environmental Precautions: Avoid release to the environment. Report spill as required by local and federal regulations.

6.3 Methods and Material for Containment and Cleaning Up: Contain and collect using inert absorbent materials and place in appropriate containers for disposal. Use non-sparking tools and equipment. If spill has not ignited, use water spray to disperse the vapors and protect personnel attempting to stop leak. Do not flush to sewer!

6.4 Reference to Other Sections: Refer to Section 8 for personal protective equipment and Section 13 for disposal information.

Section 7. Handling and Storage

7.1 Precautions for Safe Handling: Avoid contact with eyes, skin and clothing. Wear appropriate eye protection and gloves when handling (see Section 8). Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse. Keep product away from heat, sparks, flames and all other sources of ignition. Do not permit smoking in use or storage areas. Use with non-sparking tools and explosion proof equipment. Electrically bond and ground containers for transfer.

Empty containers retain product residues which can be hazardous. Follow all SDS precautions when handling empty containers.

7.2 Conditions for Safe Storage, Including any Incompatibilities: Store in accordance with regulations for the storage of flammable liquids. Store in a cool, dry, well-ventilated area away from heat, direct sunlight and all sources of ignition. Store away from oxidizers and other incompatible materials.

7.3 Specific end use(s): Dental Adhesive

Section 8. Exposure Controls/Personal Protection

8.1 Control Parameters:

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Exposure Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>1000 ppm STEL ACGIH TLV</td>
</tr>
<tr>
<td></td>
<td>1000 ppm TWA, 5000 ppm STEL France OEL</td>
</tr>
<tr>
<td></td>
<td>500 ppm TWA, 1000 ppm STEL Germany OEL</td>
</tr>
<tr>
<td></td>
<td>1900 mg/m3 TWA Poland OEL</td>
</tr>
<tr>
<td></td>
<td>1000 ppm STEL Spain OEL</td>
</tr>
<tr>
<td></td>
<td>1000 ppm TWA UK OEL</td>
</tr>
<tr>
<td>2-Hydroxyethyl methacrylate</td>
<td>None Established</td>
</tr>
</tbody>
</table>
8.2 Exposure Controls:

Recommended Monitoring Procedures: None identified.

Appropriate Engineering Controls: Use with adequate general or local exhaust ventilation to maintain exposures below the occupational exposure limits. Use explosion proof equipment where required.

Personal Protective Measurers

Respiratory Protection: None needed under normal use conditions. In operations where exposure levels are exceeded, an approved respirator with organic vapor cartridges or supplied air respirator should be used. Equipment selection depends on contaminant type and concentration. Select in accordance with applicable regulations and good industrial hygiene practice. For firefighting, use self-contained breathing apparatus. Follow EN 374.

Eye Protection: Chemical safety goggles are recommended if contact is possible. Follow EN 166.

Skin Protection: Impervious gloves such as butyl rubber are recommended if contact is possible. Follow EN 374.

Other protection: Wear protective clothing as needed to avoid skin contact and contamination of personal clothing. Suitable eye and skin washing facilities should be available in the work area.

### Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>Light Yellow liquid</td>
</tr>
<tr>
<td>Odor:</td>
<td>Fruity ester</td>
</tr>
<tr>
<td>Odor Threshold:</td>
<td>15,000 ppm (ethanol)</td>
</tr>
<tr>
<td>pH:</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting/Freezing Point:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Initial Boiling Point/Range:</td>
<td>173°F (78°C) (ethanol)</td>
</tr>
<tr>
<td>Flash Point:</td>
<td>64.4°F (18°C)</td>
</tr>
<tr>
<td>Vapor Pressure:</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Density:</td>
<td>Not available</td>
</tr>
<tr>
<td>Relative Density /Specific Gravity:</td>
<td>1.2</td>
</tr>
<tr>
<td>Solubility in Water:</td>
<td>Partially soluble in water</td>
</tr>
<tr>
<td>Partition Coefficient:</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto-Ignition Temperature:</td>
<td>363°C (685°F) (ethanol)</td>
</tr>
</tbody>
</table>
OptiBond eXTRa Universal Adhesive
Date Prepared: 3/28/18
Version: 0

This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006 (REACH) and with its amendment Regulation (EU) 2015/830

<table>
<thead>
<tr>
<th>evaporation Rate:</th>
<th>temperature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not available</td>
<td>Viscosity:</td>
</tr>
<tr>
<td>Flammability:</td>
<td>Not available</td>
</tr>
<tr>
<td>(solid/gas)</td>
<td>Explosive Properties:</td>
</tr>
<tr>
<td>Flammable/</td>
<td>None</td>
</tr>
<tr>
<td>Explosive Limits:</td>
<td>LEL: 3.3 (ethanol)</td>
</tr>
<tr>
<td></td>
<td>UEL: 19 (ethanol)</td>
</tr>
<tr>
<td></td>
<td>Oxidizing Properties:</td>
</tr>
<tr>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>

9.2 Other Information: None

Section 10. Stability and Reactivity

10.1 Reactivity: Loss of inhibitor may allow the product to polymerize.
10.2 Chemical Stability: Stable
10.3 Possibility of Hazardous Reactions: Excessive heat and ultraviolet light may allow the product to polymerize.
10.4 Conditions To Avoid: Highly flammable liquid. Keep product away from heat, sparks, flames and all other sources of ignition.
10.5 Incompatible Materials: Strong oxidizing agents, reducing agents, alkalis, amines, sulfur compounds, peroxides.
10.6 Hazardous Decomposition Products: Thermal decomposition will produce carbon and phosphorus oxides.

Section 11. Toxicological Information

11.1 Information on Toxicological Effects:

Potential Health Effects:

Inhalation: Inhalation of vapors or mists may cause respiratory tract irritation and central nervous system effect such headache, dizziness and drowsiness.
Skin Contact: Prolonged skin contact may cause irritation. May cause an allergic skin reaction,
Eye Contact: Causes eye irritation with tearing and redness.
Ingestion: Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Acute Toxicity Values:
Acute Toxicity Estimate (ATE): Oral: <2325 mg/kg, Dermal: >2000 mg/kg, Inhalation >5 mg/L
Ethanol: Oral rat LD50 10470 mg/kg, Inhalation rat LC50 116.9 mg/L/4 hr,
2-Hydroxyethyl methacrylate: Oral rat LD50 5564 mg/kg, Dermal rabbit LD50 >5000 mg/kg
Glycerol Dimethacrylate: No toxicity data available
Glycerol Phosphate Dimethacrylate: No toxicity data available
Trimethylolpropane Trimethacrylate: Oral rat LD50 >2000 mg/kg, Dermal rat LD50 >2000 mg/kg
Sodium Hexafluorosilicate: Oral rat LD50 114 mg/kg (structurally similar chemical), Inhalation rat LC50 1.814 mg/L/4 hr

Skin corrosion/irritation: 2-Hydroxyethyl methacrylate, glycerol phosphate dimethacrylate and glycerol dimethacrylate are irritating to rabbit skin. The concentration of these chemicals are below those for classification.
Eye damage/ irritation: 2-Hydroxyethyl methacrylate, glycerol phosphate dimethacrylate and glycerol dimethacrylate are irritating to rabbit eyes.

Skin Sensitization: 2-Hydroxyethyl methacrylate was positive in a guinea pig maximization test.

Respiratory Sensitization: No data available. This product is not expected to cause respiratory sensitization.

Germ Cell Mutagenicity: None of the components are germ cell mutagens.

Carcinogenicity: None of the components is listed as a carcinogen or potential carcinogen by EU CLP.

Developmental / Reproductive Toxicity: None of the components have been shown to cause reproductive or developmental effects.

Specific Target Organ Toxicity (Single Exposure): Glycerol phosphate dimethacrylate and glycerol dimethacrylate have been shown to cause respiratory irritation. The concentration of these chemicals are below those for classification.

Specific Target Organ Toxicity (Repeated Exposure): In a dietary study with rats, the NOAEL for ethanol was 2400 mg/kg. At higher doses, male rats showed minor changes to organ weights and blood and biochemistry changes. Female rats showed minor biochemistry changes and increased length of oestrus cycle along with liver nodules. Adverse liver effects were observed at concentrations of 3600 mg/kg and above.

Aspiration Toxicity: Not an aspiration hazard.

Section 12. Ecological Information

12.1 Toxicity: No toxicity data available for product
Ethanol: 96 hr LC50 Pimephales promelas 13.8 mg/L, 48 hr EC50 daphnia magna 12340 mg/L, 72 hr EC50 Selenastrum capricornutum 12900 mg/L
2-Hydroxyethyl Methacrylate: 96 hr LC50 Oryzias latipes >100 mg/kg, 48 hr EC50 daphnia magna 380 mg/L, 72 hr EC50 Pseudokirchneriella subcapitata 345 mg/L
Glycerol Dimethacrylate: No data available
Glycerol Phosphate Dimethacrylate: No data available
Trimethylolpropane Trimethacrylate: 96 hr LC50 Oncorhynchus mykiss 2 mg/L, 48 hr EC50 daphnia magna >9.22 mg/L, 72 hr EbC50 Pseudokirchneriella subcapitata 1.11 mg/L
Sodium Hexafluorosilicate: 96 hr LC0 Danio rerio 25 mg/L, 48 hr EC50 daphnia magna 35.4 mg/L, 72 hr EC50 Pseudokirchneriella subcapitata 16.6-19.6 mg/L

12.2 Persistence and Degradability: 2-Hydroxyethyl methacrylate and ethanol are readily biodegradable.

12.3 Bioaccumulative Potential: 2-Hydroxyethyl methacrylate has a logKow of 0.42 and ethanol has a log Kow of 3. This suggest the potential for bioaccumulation is low.
12.4 Mobility in Soil:  Ethanol is highly mobile in soil.

12.5 Results of PBT and vPvB assessment:  Components are not PBT or vPvB.

12.6 Other Adverse Effects:  None known.

Section 13. Disposal Considerations

13.1 Waste Treatment Methods:
Disposal: For unused product, dispose of in accordance with Federal, State, and local regulations. For used Product, the waste solution must be characterized by the generator and disposed of in accordance with Federal, State, and local regulations.
Container Disposal: Rinse empty container thoroughly with water and offer for recycling, if available.

Section 14. Transport Information

<table>
<thead>
<tr>
<th>14.1 UN Number</th>
<th>14.2 UN Proper Shipping Name</th>
<th>14.3 Transport Hazard Class(es)</th>
<th>14.4 Packing Group</th>
<th>14.5 Environmental Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>US DOT</td>
<td>UN1170  Ethanol Solution</td>
<td>3</td>
<td>II</td>
<td>None</td>
</tr>
<tr>
<td>EU ADR/RID</td>
<td>UN1170  Ethanol Solution</td>
<td>3</td>
<td>II</td>
<td>None</td>
</tr>
<tr>
<td>IMDG</td>
<td>UN1170  Ethanol Solution</td>
<td>3</td>
<td>II</td>
<td>None</td>
</tr>
<tr>
<td>IATA/ICAO</td>
<td>UN1170  Ethanol Solution</td>
<td>3</td>
<td>II</td>
<td>None</td>
</tr>
</tbody>
</table>

14.6 Special Precautions for User:  None identified

14.7 Transport in Bulk According to Annex III MARPOL 73/78 and the IBC Code:  Not applicable – product is transported only in packaged form.

Section 15. Regulatory Information

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

European Regulations:

Water Hazard Class: 2

Other EU Regulations:  This product is classified and labeled in accordance with CLP Regulation. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006 (REACH) and its amendment regulation (EU) 2015/830.

International Inventories

US EPA TSCA Inventory:  This product is regulated under the Federal Drug Administration (FDA) so it is
exempt from the TSCA regulation.

15.2 Chemical Safety Assessment: None required

16. Other Information

GHS Classification for Reference (See Sections 2 and 3):
- Flam Liq 2 Flammable Liquid Category 2
- Acute Tox 3 Acute Toxicity Category 3
- Skin Irrit 2 Skin Irritation Category 2
- Skin Sens 1 Skin Sensitization Category 1
- Eye Irrit 2 Eye Irritation Category 2
- STOT SE 3 Specific Target Organ Toxicity Single Exposure Category 3
- Aquatic Chronic 2 Hazardous to the Aquatic Environment Chronic Hazard Category 2

H225 Highly flammable liquid and vapor.
H301 Toxic if swallowed
H311 Toxic in contact with skin
H331 Toxic if inhaled.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H411 Toxic to aquatic life with long lasting effects.

Effective Date: March 29, 2018
Supersedes Date: New SDS
Revision Summary: New SDS
Version: 0

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