1 Identification

- **Product identifier**
  - **Trade name:** iBOND Total Etch

- **Application of the substance / the mixture** Dental bonding material

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:** Kulzer GmbH
    Leipziger Straße 2, 63450 Hanau (Germany)  
    Tel.: +49 (0)800 4372522
  - **Information department:**
    Tel. +1 (800) 431-1785  Fax: +1 (800) 522-1545  
    e-mail: customer.servicehkna@kulzer-dental.com
  - **Emergency telephone number:**
    Emergency CONTACT (24-Hour-Number)  
    GBK/Infotrac ID 105860: (domestic) 1 800 535 5053 or international (001) 352 323 3500

2 Hazard(s) identification

- **Classification of the substance or mixture**
  - Flam. Liq. 3     H226 Flammable liquid and vapor.
  - Skin Irrit. 2    H315 Causes skin irritation.
  - Eye Dam. 1       H318 Causes serious eye damage.
  - Resp. Sens. 1    H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  - Skin Sens. 1     H317 May cause an allergic skin reaction.

- **Label elements**
  - **GHS label elements**
    The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**
    ![Hazard pictograms]
    - GHS02
    - GHS05
    - GHS08

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - 2-hydroxyethyl methacrylate
  - glutaral
  - 4-methacryloxyethyltrimellitic acid anhydride

- **Hazard statements**
  - Flammable liquid and vapor.
  - Causes skin irritation.
  - Causes serious eye damage.
  - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  - May cause an allergic skin reaction.

- **Precautionary statements**
  - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - Use explosion-proof electrical/ventilating/lighting/equipment.
  - [In case of inadequate ventilation] wear respiratory protection.
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - Immediately call a poison center/doctor.

(Contd. on page 2)
Trade name: iBOND Total Etch

- Classification system
  - NFPA ratings for USA (scale 0-4)
    
    | Health | Fire | Reactivity |
    |--------|------|------------|
    | 3      | 3    | 0          |

- HMIS-Ratings (Scale 0-4)
  - Health = 3
  - Fire = 3
  - Reactivity = 0

- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

3 Composition/information on ingredients

- Chemical characterization: Mixtures
- Description:

  - Dangerous components:
    
    | Code | Chemical Name                          | Concentration |
    |------|---------------------------------------|---------------|
    | 64-17-5 | Ethanol                             | 25-50%        |
    | 868-77-9 | 2-hydroxyethyl methacrylate      | 10-25%        |
    |      | Skin Irrit. 2; H315; Eye Irrit. 2A; Skin Sens. 1; H317 |
    |      | Poly(methacrylic-oligo-acrylic acid) | 0-5%          |
    |      | Eye Irrit. 2A; H319                |
    | 70293-55-9 | 4-methacryloxyethyltrimellitic acid anhydride | 0-5%          |
    | 112926-00-8 | Amorphous silica                   | 0-5%          |
    | 111-30-8 | Glutaral                            | 0-5%          |

  - Additional information For the wording of the listed hazard phrases refer to section 16.

4 First-aid measures

- Description of first aid measures
  
  - After inhalation Supply fresh air; consult doctor in case of complaints.
  
  - After skin contact Immediately wash with water and soap and rinse thoroughly.
  
  - After eye contact
    
    Rinse opened eye for several minutes under running water. Then consult a doctor.
  
  - After swallowing
    
    Rinse out mouth and then drink plenty of water.
    
    Immediately call a doctor.
    
    If symptoms persist consult doctor.
  
  - Information for doctor
    
    - Most important symptoms and effects, both acute and delayed
    
      No further relevant information available.

(Contd. on page 3)
5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents
    CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  - For safety reasons unsuitable extinguishing agents
    Water with full jet.

- Special hazards arising from the substance or mixture
  Can form explosive gas-air mixtures.
  Formation of toxic gases is possible during heating or in case of fire.

- Advice for firefighters
  - Protective equipment: Mount respiratory protective device.

- Additional information

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  Wear protective equipment. Keep unprotected persons away.

- Environmental precautions:
  Do not allow to penetrate the ground/soil.
  No special measures required.

- Methods and material for containment and cleaning up:
  Absorb with liquid binding material (diatomite, universal binders, for small amounts tissues).
  Send for recovery or disposal in suitable receptacles.

- Reference to other sections
  See Section 13 for disposal information.
  See Section 8 for information on personal protection equipment.

7 Handling and storage

- Handling
  - Precautions for safe handling
    Keep receptacles tightly sealed.
    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.

- Conditions for safe storage, including any incompatibilities
  - Storage
    - Requirements to be met by storerooms and receptacles: No special requirements.
    - Information about storage in one common storage facility: Not required.
    - Further information about storage conditions: Keep cool, if possible (not above 25 °C).
  - Specific end use(s) No further relevant information available.
## 8 Exposure controls/personal protection

### Additional information about design of technical systems
- No further data; see item 7.

### Control parameters

| Components with limit values that require monitoring at the workplace: |
|--------------------------|--------------------------|
| 64-17-5 ethanol |
| PEL 1900 mg/m³, 1000 ppm |
| REL 1900 mg/m³, 1000 ppm |
| TLV 1880 mg/m³, 1000 ppm |
| 111-30-8 glutaral |
| REL Short-term value: C 0.8 mg/m³, C 0.2 ppm |
| TLV Short-term value: C 0.2 mg/m³, C 0.05 ppm |
| SEN |
| 112926-00-8 amorphous silica |
| PEL Short-term value: 80 mg/m³ as % SiO2 |
| REL 6 mg/m³ |
| TLV 10 mg/m³ |

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

### Exposure controls

#### Personal protective equipment

- **General protective and hygienic measures**
  - Keep away from foodstuffs, beverages and feed.
  - Immediately remove all soiled and contaminated clothing.
  - Wash hands before breaks and at the end of work.
  - Do not inhale gases / fumes / aerosols.
  - Avoid contact with the eyes and skin.

- **Breathing equipment**: Suitable respiratory protective device recommended.

- **Protection of hands**:
  - If skin contact cannot be avoided, protective gloves are recommended to avoid possible sensitization.
  - Solvent resistant gloves
  - Check protective gloves prior to each use for their proper condition.

- **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 through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection**: Tightly sealed goggles.
Trade name: iBOND Total Etch

9 Physical and chemical properties

- Appearance:
  - Form: Fluid
  - Color: Yellowish
- Odor:
  - Odor threshold: Characteristic
- pH-value: Not determined.
- Change in condition
  - Melting point/Melting range: Undetermined
  - Boiling point/Boiling range: Undetermined
- Flash point: 24 °C (75.2 °F)
- Flammability (solid, gaseous): Not applicable.
- Ignition temperature: 425 °C (797 °F)
- Decomposition temperature: Not determined.
- Auto igniting: Product is not selfigniting.
- Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
- Explosion limits:
  - Lower: 3.5 Vol %
  - Upper: 15.0 Vol %
- Vapor pressure at 20 °C (68 °F): 57 hPa (42.8 mm Hg)
- Density at 20 °C (68 °F):
  - Relative density: Not determined.
  - Vapor density: Not determined.
  - Evaporation rate: Not determined.
- Solubility in / Miscibility with
  - Water: Not miscible or difficult to mix
- Partition coefficient (n-octanol/water): Not determined.
- Viscosity:
  - Dynamic: Not determined.
  - Kinematic: Not determined.
- Other information: No further relevant information available.

10 Stability and reactivity

- Reactivity: No further relevant information available.
- Possibility of hazardous reactions: No dangerous reactions known
- Conditions to avoid: No further relevant information available.
- Incompatible materials: No further relevant information available.
- Hazardous decomposition products: none
11 Toxicological information

- Information on toxicological effects

- Acute toxicity:
  - LD/LC50 values that are relevant for classification:

<table>
<thead>
<tr>
<th>Compound</th>
<th>Type</th>
<th>LD50/C50</th>
<th>Route of Exposure</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
<td>Oral</td>
<td>LD50</td>
<td>6200 mg/kg (rat)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalative</td>
<td>LC50/4 h</td>
<td>95.6 mg/l (rat)</td>
<td></td>
</tr>
<tr>
<td>41137-60-4 diurethandimethacrylate</td>
<td>Oral</td>
<td>LD50</td>
<td>5564 mg/kg (rat)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dermal</td>
<td>LD50</td>
<td>&gt;3000 mg/kg (can)</td>
<td></td>
</tr>
<tr>
<td>868-77-9 2-hydroxyethyl methacrylate</td>
<td>Oral</td>
<td>LD50</td>
<td>5564 mg/kg (rat)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dermal</td>
<td>LD50</td>
<td>&gt;3000 mg/kg (can)</td>
<td></td>
</tr>
<tr>
<td>Poly(methacrylic-oligo-acrylic acid)</td>
<td>Oral</td>
<td>LD50</td>
<td>5564 mg/kg (rat)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dermal</td>
<td>LD50</td>
<td>&gt;3000 mg/kg (can)</td>
<td></td>
</tr>
<tr>
<td>70293-55-9 4-methacryloxyethyltrimellitic acid anhydride</td>
<td>Oral</td>
<td>LD50</td>
<td>&gt;2000 mg/kg (mouse)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dermal</td>
<td>LD50</td>
<td>&gt;2000 mg/kg (mouse)</td>
<td></td>
</tr>
<tr>
<td>72869-86-4 diurethandimethacrylate</td>
<td>Oral</td>
<td>LD50</td>
<td>4800 mg/kg (rat)</td>
<td></td>
</tr>
</tbody>
</table>

- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Strong irritant with the danger of severe eye injury.

- Sensitization:
  - Sensitization possible through inhalation.
  - Sensitization possible through skin contact.

- Additional toxicological information: Harmful

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    - 112926-00-8 amorphous silica: 3
  - NTP (National Toxicology Program)
    - None of the ingredients is listed.
  - OSHA-Ca (Occupational Safety & Health Administration)
    - None of the ingredients is listed.

12 Ecological information

- Aquatic toxicity:
  - 868-77-9 2-hydroxyethyl methacrylate
    - LC50/96 h: 58 mg/l (fish)
  - 72869-86-4 diurethandimethacrylate
    - LC50/96 h: 10.1 mg/l (fish)

- Persistence and degradability
  - No further relevant information available.
Trade name: iBOND Total Etch

- Behavior in environmental systems:
  - Bioaccumulative potential No further relevant information available.
  - Mobility in soil No further relevant information available.
- Additional ecological information:
  - General notes: Avoid transfer into the environment.
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
- Other adverse effects No further relevant information available.

13 Disposal considerations

- Waste treatment methods
  - 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.

14 Transport information

- UN-Number
  - DOT, ADR, IMDG, IATA UN1170
- UN proper shipping name
  - DOT, IATA Ethanol
  - ADR 1170 Ethanol
  - IMDG ETHANOL (ETHYL ALCOHOL)
- Transport hazard class(es)
  - DOT
    - Class 3 Flammable liquids
    - Label 3
  - ADR
    - Class 3 (F1) Flammable liquids
    - Label 3
### IMDG, IATA

- **Class**: 3
- **Label**: Flammable liquids
- **Packing group**: III
- **DOT, ADR, IMDG, IATA**: Not applicable.
- **Environmental hazards**: None
- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**: Not applicable.

### Transport/Additional information:

- **ADR**
  - **Excepted quantities (EQ)**
    - Code: E1
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 1000 ml

- **IMDG**
  - **Limited quantities (LQ)**
    - 5L
  - **Excepted quantities (EQ)**
    - Code: E1
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 1000 ml

- **UN “Model Regulation”:** UN 1170 ETHANOL, 3, III

### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - **Sara**
    - **SARA Section 355 (extremely hazardous substances)**: None of the ingredients is listed.
    - **SARA Section 313 (specific toxic chemical listings)**: None of the ingredients is listed.
    - **Proposition 65**
      - **Prop 65 - Chemicals known to cause cancer**: None of the ingredients is listed.
Trade name: **iBOND Total Etch**

- **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

- **Cancerogenity categories**
  - **EPA (Environmental Protection Agency)**
    None of the ingredients is listed.

- **TLV (Threshold Limit Value established by ACGIH)**
  64-17-5 ethanol A4
  111-30-8 glutaral A4

- **NIOSH-Ca (National Institute for Occupational Safety and Health)**
  None of the ingredients is listed.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 16 Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant phrases**
  - H225 Highly flammable liquid and vapor.
  - H227 Combustible liquid.
  - H301 Toxic if swallowed.
  - H314 Causes severe skin burns and eye damage.
  - H315 Causes skin irritation.
  - H317 May cause an allergic skin reaction.
  - H319 Causes serious eye irritation.
  - H331 Toxic if inhaled.
  - H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

- **Date of preparation / last revision** 08/01/2018 / 2

- **Abbreviations and acronyms:**
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - DOT: US Department of Transportation
  - IATA: International Air Transport Association
  - ACGIH: American Conference of Governmental Industrial Hygienists
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - ELINCS: European List of Notified Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - NFPA: National Fire Protection Association (USA)
  - HMIS: Hazardous Materials Identification System (USA)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative
  - NIOSH: National Institute for Occupational Safety
  - OSHA: Occupational Safety & Health
  - TLV: Threshold Limit Value
  - PEL: Permissible Exposure Limit
  - REL: Recommended Exposure Limit
  - Flam. Liq. 2: Flammable liquids – Category 2
  - Flam. Liq. 3: Flammable liquids – Category 3
  - Flam. Liq. 4: Flammable liquids – Category 4

(Contd. on page 10)
Trade name: iBOND Total Etch

Acute Tox. 3: Acute toxicity – Category 3
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
Resp. Sens. 1: Respiratory sensitisation – Category 1
Skin Sens. 1: Skin sensitisation – Category 1

* Data compared to the previous version altered.