SECTION 1: Identification of the substance/mixture and of the company/undertaking

- 1.1 Product identifier
  - Trade name: iBOND Total Etch

- 1.2 Relevant identified uses of the substance or mixture and uses advised against
  - No further relevant information available.
  - Application of the substance / the mixture: Dental bonding material

- 1.3 Details of the supplier of the safety data sheet
  - Manufacturer/Supplier:
    - Kulzer GmbH
    - Leipziger Straße 2, 63450 Hanau (Germany)
    - Tel.: +49 (0)800 4372522
  - Informing department: E-Mail: msds@kulzer-dental.com

- 1.4 Emergency telephone number:
  - Emergency CONTACT (24-Hour-Number): +49 (0)6132-84463

SECTION 2: Hazards identification

- 2.1 Classification of the substance or mixture
  - Classification according to Regulation (EC) No 1272/2008
    - Flam. Liq. 3 H226 Flammable liquid and vapour.
    - 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.
    - STOT SE 3 H335 May cause respiratory irritation.

- 2.2 Label elements
  - Labelling according to Regulation (EC) No 1272/2008
    - The product is classified and labelled according to the CLP regulation.
  - Hazard pictograms
    - GHS02
    - GHS05
    - GHS07
    - GHS08
  - Signal word: Danger
  - Hazard-determining components of labelling:
    - 2-hydroxyethyl methacrylate
    - glutaral
    - 4-methacryloxyethyltrimellitic acid anhydride
  - Hazard statements
    - H226 Flammable liquid and vapour.
    - H315 Causes skin irritation.
    - H318 Causes serious eye damage.
    - H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
    - H317 May cause an allergic skin reaction.
    - H335 May cause respiratory irritation.
  - Precautionary statements
    - P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
    - P241 Use explosion-proof electrical/ventilating/lighting equipment.
SECTION 3: Composition/information on ingredients

3.2 Chemical characterisation: Mixtures

• Description:

- Dangerous components:

<table>
<thead>
<tr>
<th>CAS:</th>
<th>EINECS:</th>
<th>Reg.nr.:</th>
<th>Ingredient</th>
<th>PBT:</th>
<th>vPvB:</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5</td>
<td>200-578-6</td>
<td></td>
<td>ethanol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>868-77-9</td>
<td>212-782-2</td>
<td></td>
<td>2-hydroxyethyl methacrylate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70293-55-9</td>
<td></td>
<td></td>
<td>Poly(methacrylic-oligo-acrylic acid)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>111-30-8</td>
<td>203-856-5</td>
<td></td>
<td>glutaral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>72869-86-4</td>
<td>276-957-5</td>
<td></td>
<td>diurethandimethacrylate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Additional information

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

SECTION 4: First aid measures

4.1 Description of first aid measures

- After inhalation Supply fresh air; consult doctor in case of symptoms.
- After skin contact Instantly wash with water and soap and rinse thoroughly.
- After eye contact Rinse opened eye for several minutes under running water. Then consult doctor.
- After swallowing Rinse out mouth and then drink plenty of water. Instantly call for doctor.

In case of persistent symptoms consult doctor.

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.
SECTION 5: Firefighting measures

- 5.1 Extinguishing media
  - Suitable extinguishing agents
    CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
  - For safety reasons unsuitable extinguishing agents
    Water with a full water jet.
- 5.2 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.
- 5.3 Advice for firefighters
  - Protective equipment: Put on breathing apparatus.
  - Additional information

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures
  Wear protective equipment. Keep unprotected persons away.
- 6.2 Environmental precautions:
  Do not allow to enter the ground/soil.
  No special measures required.
- 6.3 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 containers.
- 6.4 Reference to other sections
  See Section 13 for information on disposal.
  See Section 8 for information on personal protection equipment.

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling
  Keep containers 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.
- 7.2 Conditions for safe storage, including any incompatibilities
  - Storage
    - Requirements to be met by storerooms and containers: No special requirements.
    - Information about storage in one common storage facility: Not required.
    - Further information about storage conditions: Store cool (not above 25 °C).
- 7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- 8.1 Control parameters
  - Components with critical values that require monitoring at the workplace:
    64-17-5 ethanol
    WEL | Long-term value: 1920 mg/m³, 1000 ppm
Trade name: iBOND Total Etch

111-30-8 glutaral

| WEL | Short-term value: 0.2 mg/m³, 0.05 ppm | Long-term value: 0.2 mg/m³, 0.05 ppm |

DNELs

<table>
<thead>
<tr>
<th>64-17-5 ethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral worker profess., l.te, syst. ge.pop., l.te, syst. 87 mg/Kg (nd)</td>
</tr>
<tr>
<td>Dermal worker profess., l.te., syst. ge.pop., acu., local 343 mg/Kg/d (nd)</td>
</tr>
<tr>
<td>ge.pop., l.te, syst. 950 mg/Kg/d (nd)</td>
</tr>
<tr>
<td>Inhalative worker profess., acute, local ge.pop., acu., local 1900 mg/m³ (nd)</td>
</tr>
<tr>
<td>worker profess., l.te., syst. 1900 mg/m³ (nd)</td>
</tr>
<tr>
<td>ge.pop., l.te, syst. 950 mg/m³ (nd)</td>
</tr>
<tr>
<td>114 mg/m³ (nd)</td>
</tr>
</tbody>
</table>

PNECs

<table>
<thead>
<tr>
<th>64-17-5 ethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>freshwater 0.96 mg/l (nd)</td>
</tr>
<tr>
<td>marine water 0.79 mg/l (nd)</td>
</tr>
<tr>
<td>STP 580 mg/l (nd)</td>
</tr>
<tr>
<td>sedim., dw, fre.wat. 3.6 mg/Kg (nd)</td>
</tr>
<tr>
<td>soil,dw 0.63 mg/Kg (nd)</td>
</tr>
</tbody>
</table>

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

8.2 Exposure controls

- Personal protective equipment
  - General protective and hygienic measures
    - Keep away from foodstuffs, beverages and food.
    - Instantly remove any soiled and impregnated garments.
    - Wash hands during breaks and at the end of the work.
    - Do not inhale gases / fumes / aerosols.
    - Avoid contact with the eyes and skin.
  - Breathing equipment: Breathing protection 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 trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
  - For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:
    - Butyl rubber, BR
    - Nitrile rubber, NBR
  - Eye protection: Tightly sealed safety glasses.
Trade name: iBOND Total Etch

Body protection: Light weight protective clothing

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information
- Appearance: Fluid
- Colour: Yellowish
- Smell: Characteristic
- Odour threshold: Not determined.

pH-value: Not determined.

Change in condition
- Melting point/freezing point: Not determined
- Initial boiling point and boiling range: Not determined

Flash point: 24 °C

Inflammability (solid, gaseous) Not applicable.

Ignition temperature: 425 °C

Decomposition temperature: Not determined.

Self-inflammability: Product is not selfigniting.

Explosive properties: Product is not explosive. However, formation of explosive air/vapour mixtures is possible.

Critical values for explosion:
- Lower: 3,5 Vol %
- Upper: 15,0 Vol %

Steam pressure at 20 °C: 57 hPa

Density at 20 °C: 1 g/cm³
- Relative density: Not determined.
- Vapour 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.

9.2 Other information No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity No further relevant information available.

10.2 Chemical stability
- Conditions to be avoided: No decomposition if used and stored according to specifications.

10.3 Possibility of hazardous reactions No dangerous reactions known

10.4 Conditions to avoid No further relevant information available.

10.5 Incompatible materials: No further relevant information available.
Trade name: iBOND Total Etch

10.6 Hazardous decomposition products: None

Additional information:

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Based on available data, the classification criteria are not met.

LD/LC50 values that are relevant for classification:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Oral LD50</th>
<th>Inhalative LC50/4 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
<td>6200 mg/kg (rat)</td>
<td>95.6 mg/l (rat)</td>
</tr>
<tr>
<td>41137-60-4 diurethandimethacrylate</td>
<td>LD50</td>
<td>&gt;5000 mg/kg (rat)</td>
</tr>
<tr>
<td>868-77-9 2-hydroxyethyl methacrylate</td>
<td>LD50</td>
<td>&gt;5000 mg/kg (rat)</td>
</tr>
<tr>
<td>Poly(methacrylic-oligo-acrylic acid)</td>
<td>LD50</td>
<td>&gt;3000 mg/kg (can)</td>
</tr>
<tr>
<td>70293-55-9 4-methacryloxyethyltrimellitic acid anhydride</td>
<td>LD50</td>
<td>&gt;5000 mg/kg (rat)</td>
</tr>
<tr>
<td>72869-86-4 diurethandimethacrylate</td>
<td>LD50</td>
<td>&gt;2000 mg/kg (mouse)</td>
</tr>
<tr>
<td></td>
<td>Dermal LD50</td>
<td>&gt;2000 mg/kg (mouse)</td>
</tr>
</tbody>
</table>

Primary irritant effect:
- Skin corrosion/irritation
  Causes skin irritation.
- Serious eye damage/irritation
  Causes serious eye damage.
- Respiratory or skin sensitisation
  May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  May cause an allergic skin reaction.

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)
- Germ cell mutagenicity
  Based on available data, the classification criteria are not met.
- Carcinogenicity
  Based on available data, the classification criteria are not met.
- Reproductive toxicity
  Based on available data, the classification criteria are not met.

STOT-single exposure
- May cause respiratory irritation.

STOT-repeated exposure
- Based on available data, the classification criteria are not met.
- Aspiration hazard
  Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity:

<table>
<thead>
<tr>
<th>Substance</th>
<th>LC50/96h</th>
</tr>
</thead>
<tbody>
<tr>
<td>868-77-9 2-hydroxyethyl methacrylate</td>
<td>227 mg/l (fish)</td>
</tr>
<tr>
<td>72869-86-4 diurethandimethacrylate</td>
<td>10.1 mg/l (fish)</td>
</tr>
</tbody>
</table>
45.3

12.2 Persistence and degradability No further relevant information available.
12.3 Bioaccumulative potential No further relevant information available.
12.4 Mobility in soil No further relevant information available.
   Additional ecological information:
   General notes: Avoid transfer into the environment.
12.5 Results of PBT and vPvB assessment
   PBT: Not applicable.
   vPvB: Not applicable.
12.6 Other adverse effects No further relevant information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
   Recommendation
   Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
   European waste catalogue
   18 01 06 chemicals consisting of or containing dangerous substances
   Uncleaned packagings:
   Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

14.1 UN-Number
   ADR, IMDG, IATA
   UN1170
14.2 UN proper shipping name
   ADR
   IMDG
   IATA
   1170 ETHANOL SOLUTION
   ETHANOL (ETHYL ALCOHOL)
   Ethanol
14.3 Transport hazard class(es)
   ADR
   
   Class
   Label
   3 (F1) Flammable liquids.
14.4 Packing group
   ADR, IMDG, IATA
   III

(Contd. of page 6)
(Contd. on page 8)
Trade name: iBOND Total Etch

14.5 Environmental hazards:
- Marine pollutant: No

14.6 Special precautions for user
- Kemler Number: 30
- EMS Number: F-E,S-D
- Stowage Category A

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable.

Transport/Additional information:
- ADR
  - Limited quantities (LQ) 5L Code: E1
  - Excepted quantities (EQ)
    Maximum net quantity per inner packaging: 30 ml
    Maximum net quantity per outer packaging: 1000 ml
- Tunnel restriction code 3
- IMDG
  - Limited quantities (LQ) 5L Code: E1
  - Excepted quantities (EQ)
    Maximum net quantity per inner packaging: 30 ml
    Maximum net quantity per outer packaging: 1000 ml
- UN "Model Regulation": UN1170, ETHANOL (ETHYL ALCOHOL), 3, III

SECTION 15: Regulatory information
- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3
- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 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 vapour.
  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.
  H400 Very toxic to aquatic life.
  H412 Harmful to aquatic life with long lasting effects.
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
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
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)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistant, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Flam. Liq. 2: Flammable liquids – Category 2
Flam. Liq. 3: Flammable liquids – Category 3
Acute Tox. 3: Acute toxicity – Category 3
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Skin Irrit. 1: Skin corrosion/irritation – Category 1
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Resp. Sens. 1: Respiratory sensitisation – Category 1
Skin Sens. 1: Skin sensitisation – Category 1
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3
* Data compared to the previous version altered.