1 Identification

- Product identifier
  - Trade name: GLUMA Bond universal
  - 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)
    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. 2 H225 Highly flammable liquid and vapor.
  Skin Irrit. 2 H315 Causes skin irritation.
  Eye Irrit. 2A H319 Causes serious eye irritation.
  Skin Sens. 1 H317 May cause an allergic skin reaction.
  STOT SE 3 H336 May cause drowsiness or dizziness.

- Label elements
  - GHS label elements
    The product is classified and labeled according to the Globally Harmonized System (GHS).
  - Hazard pictograms
    GHS02  GHS07

- Signal word: Danger

- Hazard-determining components of labeling:
  7,7,9(or 7,9,9)-trimethyl-4,13-dioxo-3,14-dioxa-5,12-diazahexadecane-1,16-diyl bismethacrylate
  acetone
  4-methacryloxyethyltrimellitic acid anhydride

- Hazard statements
  Highly flammable liquid and vapor.
  Causes skin irritation.
  Causes serious eye irritation.
  May cause an allergic skin reaction.
  May cause drowsiness or dizziness.

- Precautionary statements
  Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  Avoid breathing mist/vapours/spray.
  Avoid release to the environment.
  Wear protective gloves/protective clothing/eye protection/face protection.

(Contd. on page 2)
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.

- **Classification system**
  - **NFPA ratings for USA (scale 0-4)**
    - Health = 2
    - Fire = 3
    - Reactivity = 0
  - **HMIS-Ratings (Scale 0-4)**
    - HEALTH
      - Health = 2
    - FIRE
      - Fire = 3
    - REACTIVITY
      - Reactivity = 0

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

### 3 Composition/information on ingredients
- **Chemical characterization:** Mixtures
- **Description:**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetone</td>
<td>25-50%</td>
</tr>
<tr>
<td>72869-86-4</td>
<td>10-25%</td>
</tr>
<tr>
<td>70293-55-9</td>
<td>10-25%</td>
</tr>
</tbody>
</table>

- **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 and to be sure call for a doctor.
    - In case of unconsciousness place patient stably in side position for transportation.
  - **After skin contact**
    - If skin irritation continues, consult a doctor.
  - **After eye contact**
    - Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  - **After swallowing**
    - If symptoms persist consult doctor.
    - Rinse out mouth and then drink plenty of water.
  - **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:** No special measures required.
  - **Additional information**

**6 Accidental release measures**

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

- **Environmental precautions:** Prevent seepage into sewage system, workpits and cellars.

- **Methods and material for containment and cleaning up:**
  - Absorb with liquid binding material (diatomite, universal binders, for small amounts tissues).
  - Ensure adequate ventilation.
  - Send for recovery or disposal in suitable receptacles.
  - See Section 7 for information on safe handling
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.

**7 Handling and storage**

- **Handling**
  - **Precautions for safe handling** Keep receptacles tightly sealed.
  - **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:** Store in a cool location.
    - **Information about storage in one common storage facility:** Not required.
    - **Further information about storage conditions:**
      - Keep receptacle tightly sealed.
      - Protect from exposure to the light.
      - Store in cool, dry conditions in well sealed receptacles.
    - **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

<table>
<thead>
<tr>
<th>Component</th>
<th>PEL</th>
<th>REL</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetone</td>
<td>2400 mg/m³, 1000 ppm</td>
<td>590 mg/m³, 250 ppm</td>
</tr>
</tbody>
</table>

- joined in short-term value: (1782) NIC-1187 mg/m³, (750) NIC-500 ppm
  - Long-term value: (1188) NIC-475 mg/m³, (500) NIC-200 ppm

- Ingredients with biological limit values:

<table>
<thead>
<tr>
<th>Component</th>
<th>BEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetone</td>
<td>50 mg/L urine end of shift</td>
</tr>
<tr>
<td>Acetone (nonspecific)</td>
<td></td>
</tr>
</tbody>
</table>

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

- Exposure controls

  - Personal protective equipment
    - General protective and hygienic measures
      - Avoid contact with the eyes.
      - Keep away from foodstuffs, beverages and feed.
      - 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:
      - Use respiratory protective device against the effects of fumes/dust/aerosol.
    - Protection of hands:
      - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
      - Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
      - If skin contact cannot be avoided, protective gloves are recommended to avoid possible sensitization.
      - Check protective gloves prior to each use for their proper condition.
      - recommended
    - 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 breakthrough 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 goggles.
9 Physical and chemical properties

- **Appearance:** Liquid
- **Form:** Liquid
- **Color:** Clear
- **Odor:** Characteristic
- **Odor threshold:** Not determined.
- **pH-value:** Not determined.
- **Change in condition**
  - **Melting point/Melting range:** Undetermined
  - **Boiling point/Boiling range:** Undetermined
- **Flash point:** -19 °C (-2.2 °F)
- **Flammability (solid, gaseous):** Not applicable.
- **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:** Not determined.
  - **Upper:** Not determined.
- **Vapor pressure:** Not determined.
- **Density at 20 °C (68 °F):** 0.99 g/cm³ (8.26155 lbs/gal)
  - **Relative density:** Not determined.
  - **Vapor density:** Not determined.
  - **Evaporation rate:** Not determined.
- **Solubility in / Miscibility with**
  - **Water:** Partly miscible
  - **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

(Contd. on page 6)
11 Toxicological information

11.1 Toxicity:

11.1.1 Acute toxicity:

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

<table>
<thead>
<tr>
<th>Substance</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalative LC50/4 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-64-1 acetone</td>
<td>5800 mg/kg (rat)</td>
<td>&gt;15800 mg/kg (rabbit)</td>
<td>76 mg/l (rat)</td>
</tr>
<tr>
<td>72869-86-47,7,9(or 7,9,9)-trimethyl-4,13-dioxo-3,14-dioxa-5,12-diazahexadecane-1,16-diyl bismethacrylate</td>
<td>&gt;5000 mg/kg (rat) (OECD 401)</td>
<td>&gt;2000 mg/kg (rat) (OECD 402)</td>
<td></td>
</tr>
<tr>
<td>70293-55-94-methacryloxyethyltrimellitic acid anhydride</td>
<td>&gt;2000 mg/kg (mouse)</td>
<td>&gt;2000 mg/kg (mouse)</td>
<td></td>
</tr>
</tbody>
</table>

- **Primary irritant effect:**
  - **on the skin:** No irritant effect.
  - **on the eye:** Irritating effect.
  - **Sensitization:** Sensitization possible through skin contact.

- **Additional toxicological information:** Irritant

- **Carcinogenic categories**
  - **IARC (International Agency for Research on Cancer)**
    None of the ingredients is listed.
  - **NTP (National Toxicology Program)**
    None of the ingredients is listed.
  - **OSHA-Ca (Occupational Safety & Health Administration)**
    None of the ingredients is listed.

- **Reproductive toxicity** Based on available data, the classification criteria are not met.

12 Ecological information

12.1 Toxicity:

- **Aquatic toxicity:**

<table>
<thead>
<tr>
<th>Substance</th>
<th>EC50/48h</th>
<th>LC50/96h</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-64-1 acetone</td>
<td>8800 mg/l (daphnia)</td>
<td>6210 mg/l (fish) (OECD 203)</td>
</tr>
<tr>
<td>72869-86-47,7,9(or 7,9,9)-trimethyl-4,13-dioxo-3,14-dioxa-5,12-diazahexadecane-1,16-diyl bismethacrylate</td>
<td>&gt;1.2 mg/l (daphnia) (OECD 202)</td>
<td>10.1 mg/l (fish) (OECD 203)</td>
</tr>
<tr>
<td>ErC50 / 72 h</td>
<td>&gt;0.68 mg/l (algae) (OECD 201)</td>
<td>0.21 mg/l (algae) (OECD 201)</td>
</tr>
</tbody>
</table>

(Contd. on page 7)
Trade name: GLUMA Bond universal

Persistence and degradability

<table>
<thead>
<tr>
<th>Substance</th>
<th>Biodegradability</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-64-1 acetone</td>
<td>90.9 % /28d (nd) (OECD 301D)</td>
</tr>
<tr>
<td>72869-86-4 7,7,9(or 7,9,9)-trimethyl-4,13-dioxo-3,14-dioxo-5,12-diazahexadecane-1,16-diyl bismethacrylate</td>
<td>22 % /28d (nd) (OECD 301B; ISO/9439/EEC 92/69/V, C.4-C)</td>
</tr>
</tbody>
</table>

Behavior in environmental systems:
- Bioaccumulative potential: No further relevant information available.
- Mobility in soil: No further relevant information available.

Additional ecological information:
- General notes: Do not allow product to reach ground water, water course or sewage system. Danger to drinking water if even small quantities leak into the ground.

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: Disposal must be made according to official regulations. 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: UN1090
  - UN proper shipping name
    - DOT, IMDG, IATA: ACETONE, mixture
    - ADR: 1090 ACETONE, mixture

Transport hazard class(es)
- DOT
  - Class: 3
  - Label: Flammable liquids 3
Trade name: GLUMA Bond universal

- ADR
  - Class 3 (F1) Flammable liquids
  - Label 3

- IMDG, IATA
  - Class 3 Flammable liquids
  - Label 3

- Packing group II
- DOT, ADR, IMDG, IATA
- Environmental hazards: No
- Special precautions for user Warning: Flammable liquids
  - Hazard identification number (Kemler code): 33
  - EMS Number: F-E,S-D

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.
- Transport/Additional information: -
- UN "Model Regulation": UN1090, Acetone mixture, 3, II

15 Regulatory information
- Safety, health and environmental regulations/legislation specific for the substance or mixture No further relevant information available.
  - 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.
    - 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.

(Contd. on page 9)
Trade name: GLUMA Bond universal

- Chemicals known to cause developmental toxicity:
  None of the ingredients is listed.

- Cancerogenity categories
  - EPA (Environmental Protection Agency)
    67-64-1 acetone I
  - TLV (Threshold Limit Value)
    67-64-1 acetone 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.
  H315 Causes skin irritation.
  H317 May cause an allergic skin reaction.
  H319 Causes serious eye irritation.
  H336 May cause drowsiness or dizziness.

- Date of preparation / last revision 06/29/2021 / 3

- Abbreviations and acronyms:
  ADR: Accord relatif au transport international 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
  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
  OSHA: National Institute for Occupational Safety
  TLV: Threshold Limit Value
  PEL: Permissible Exposure Limit
  REL: Recommended Exposure Limit
  BEI: Biological Exposure Limit
  Flam. Liq. 2: Flammable liquids – Category 2
  Skin Irrit. 2: Skin corrosion/irritation – Category 2
  Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
  Skin Sens. 1: Skin sensitisation – Category 1
  Skin Sens. 1B: Skin sensitisation – Category 1B
  STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

- * Data compared to the previous version altered.