1 Identification

- **Product identifier**
  - **Trade name:** Signum metal bond II

- **Application of the substance / the mixture** Metal-Resin Bonding System

- **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**
  - Flammable Liquids - Category 2 H225 Highly flammable liquid and vapour.
  - Skin Irritation - Category 2 H315 Causes skin irritation.
  - Skin Sensitizer - Category 1 H317 May cause an allergic skin reaction.
  - Reproductive Toxicity - Category 2 H361 Suspected of damaging fertility or the unborn child.
  - Specific Target Organ Toxicity - Single Exposure - Category 3 H335 May cause respiratory irritation.

- **Label elements**
  - **GHS label elements**
    The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**
    GHS02  GHS07  GHS08

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - methyl methacrylate
  - diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

- **Hazard statements**
  - Highly flammable liquid and vapour.
  - Causes skin irritation.
  - May cause an allergic skin reaction.
  - Suspected of damaging fertility or the unborn child.
  - May cause respiratory irritation.

- **Precautionary statements**
  - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
  - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

(Contd. on page 2)
Trade name: Signum metal bond II

- Hazard description:
  - Canadian Hazard Symbols
    - B2 - Flammable liquid
    - D2B - Toxic material causing other toxic effects

- Classification system
  - NFPA ratings for USA (scale 0-4)
    - Health = 1
    - Fire = 3
    - Reactivity = 0
  - HMIS-Ratings (Scale 0-4)
    - Health = 1
    - Fire = 3
    - Reactivity = 0

- Other hazards

3 Composition/information on ingredients

- Chemical characterization: Mixtures
  - Description:

<table>
<thead>
<tr>
<th>Dangerous components</th>
<th>80-62-6 methyl methacrylate</th>
<th>50-75% w/w</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flammable Liquids - Category 2, H225; Skin Irritation - Category 2, H315; Skin Sensitizer - Category 1, H317; Specific Target Organ Toxicity - Single Exposure - Category 3, H335</td>
<td>50-75% w/w</td>
</tr>
<tr>
<td></td>
<td>75980-60-8 diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide</td>
<td>0-5% w/w</td>
</tr>
<tr>
<td></td>
<td>Reproductive Toxicity - Category 2, H361; Skin Sensitizer - Category 1B, H317</td>
<td>0-5% w/w</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; consult doctor in case of complaints.
  - After skin contact
    - Immediately wash with water and soap and rinse thoroughly.
    - If skin irritation continues, consult a doctor.
  - 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.
    - If symptoms persist consult doctor.
Trade name: Signum metal bond II

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.
  - 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: Wear self-contained 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 enter sewers/surface or ground water.
  Do not allow to penetrate the ground/soil.
- 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.
    Ensure good interior ventilation, especially at floor level. (Fumes are heavier than air).
  - 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:
      Store in cool, dry conditions in well sealed receptacles.

(Contd. of page 2)
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:

<table>
<thead>
<tr>
<th>Component</th>
<th>Short-term value</th>
<th>Long-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-62-6 methyl methacrylate</td>
<td>100 ppm</td>
<td>50 ppm</td>
</tr>
<tr>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EV</td>
<td>100 ppm</td>
<td>50 ppm</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
    - 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:
    - Not necessary with efficient local exhaust. If exposition to vapours is possible, use breathing protective mask (filter A).
  
  - 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.
    - 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.

  - 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: Safety glasses

- Body protection: Protective work clothing.
9 Physical and chemical properties

- Information on basic physical and chemical properties
  - General Information
    - Appearance:
      - Form: Fluid
      - Color: White
      - Odor: Characteristic
      - Odor threshold: Not determined.
  - pH-value: Not determined.
  - Change in condition
    - Melting point/Melting range: undetermined
    - Boiling point/Boiling range: 100 °C (212 °F)
  - Flash point: 10 °C (50 °F)
  - Flammability (solid, gaseous) Not applicable.
  - Ignition temperature: 430 °C (806 °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: 2,1 Vol %
    - Upper: 12,5 Vol %
  - Vapor pressure at 20 °C (68 °F): 47 hPa (35.3 mm Hg)
  - Density:
    - 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

(Contd. on page 6)
**Trade name:** Signum metal bond II

(Contd. of page 5)

**11 Toxicological information**

- **Information on toxicological effects**
  - **Acute toxicity:**
    - **LD/LC50 values that are relevant for classification:**
      
      | Compound                          | Oral LD50 | Dermal LD50 | Inhalative LC50/4h |
      |----------------------------------|-----------|-------------|---------------------|
      | 80-62-6 methyl methacrylate       | >5000 mg/kg (rat) | >5000 mg/kg (rab) | 29.8 mg/l (rat)    |
      | 41137-60-4 diurethandimethacrylate | >5000 mg/kg (rat) |                      |                     |
      | 75980-60-8 diphenyl(2,4,6- trimethylbenzoyl)phosphine oxide | >5000 mg/kg (rat) |                      |                     |

- **Primary irritant effect:**
  - **on the skin:** Irritant to skin and mucous membranes.
  - **on the eye:** No irritating effect.
  - **Sensitization:** Sensitization possible through skin contact.

- **Additional toxicological information:** Irritant

- **Carcinogenic categories**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-62-6 methyl methacrylate</td>
<td>3</td>
</tr>
<tr>
<td>128-37-0 2,6-di-tert-butyl-p-cresol</td>
<td>3</td>
</tr>
</tbody>
</table>

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

- **NTP (National Toxicology Program)**

None of the ingredients is listed.

**12 Ecological information**

- **Toxicity**
  - **Aquatic toxicity:**
    
    | Compound                          | EC50/48h  |
    |----------------------------------|-----------|
    | 75980-60-8 diphenyl(2,4,6- trimethylbenzoyl)phosphine oxide | 10 100 mg/l (algae) | 10 - 100 mg/l (daphnia) |

- **Persistence and degradability** No further relevant information available.

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

- **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  
  - TDG, IMDG, IATA UN1247
  - DOT  
  - TDG, IMDG, IATA 1247

- UN proper shipping name
  - TDG 1247 METHYL METHACRYLATE MONOMER, STABILIZED, solution
  - IMDG, IATA METHYL METHACRYLATE MONOMER, STABILIZED, solution

- Transport hazard class(es)
  - DOT
    - Class 3 Flammable liquids
    - Label 3
  - TDG (Transport dangerous goods):
    - Class 3 (F1) Flammable liquids
    - Label 3

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

- Packing group
  - DOT, TDG, IMDG, IATA II

- Environmental hazards:
  - Marine pollutant: No

- Special precautions for user
  - Warning: Flammable liquids
Trade name: Signum metal bond II

- Danger code (Kemler): 339
- EMS Number: F-E,S-E
- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.
- Transport/Additional information:
- UN "Model Regulation": UN1247, Methyl methacrylate monomer, stabilized, solution, 3, II

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - SARA Section 355 (extremely hazardous substances)
  None of the ingredients is listed.
- GHS label elements
  The product is classified and labeled according to the Globally Harmonized System (GHS).
  - Hazard pictograms
    
    GHS02  GHS07  GHS08

- Signal word Danger
- Hazard-determining components of labeling:
  - methyl methacrylate
  - diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
- Hazard statements
  - Highly flammable liquid and vapour.
  - Causes skin irritation.
  - May cause an allergic skin reaction.
  - Suspected of damaging fertility or the unborn child.
  - May cause respiratory irritation.
- Precautionary statements
  - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or 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.
  - Store locked up.
- 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 vapour.
**Trade name:** Signum metal bond II

<table>
<thead>
<tr>
<th>H315 Causes skin irritation.</th>
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<td>H317 May cause an allergic skin reaction.</td>
</tr>
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<td>H335 May cause respiratory irritation.</td>
</tr>
<tr>
<td>H361 Suspected of damaging fertility or the unborn child.</td>
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</table>

**Date of preparation / last revision** 01/28/2018 / 3

**Abbreviations and acronyms:**
- 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)
- WHMIS: Workplace Hazardous Materials Information System (Canada)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- PBT: Persistent, Bioaccumulative and Toxic
- vPvB: very Persistent and very Bioaccumulative
- * Data compared to the previous version altered."