1 Identification

· 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:
  - Flam. Liq. 2 H225 Highly flammable liquid and vapor.
  - Skin Irrit. 2 H315 Causes skin irritation.
  - Skin Sens. 1 H317 May cause an allergic skin reaction.
  - Repr. 2 H361 Suspected of damaging fertility or the unborn child.
  - STOT SE 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 vapor.
  - 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/sparks/open flames/hot surfaces. - 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/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.

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

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

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

3 Composition/information on ingredients

Chemical characterization: Mixtures

- Dangerous components:
  - methyl methacrylate 80-62-6 Flam. Liq. 2, H225; Skin Irrit. 2, H315; Skin Sens. 1, H317; STOT SE 3, H335 50-75%
  - diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide 75980-60-8 Repr. 2, H361; Skin Sens. 1B, H317 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. 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.

Information for doctor
- Most important symptoms and effects, both acute and delayed
  - No further relevant information available.
- Indication of any immediate medical attention and special treatment needed
  - No further relevant information available.

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.
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.
  - 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:
    80-62-6 methyl methacrylate
    PEL 410 mg/m³, 100 ppm

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

<table>
<thead>
<tr>
<th>REL</th>
<th>410 mg/m³, 100 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLV</td>
<td>Short-term value: 410 mg/m³, 100 ppm</td>
</tr>
<tr>
<td></td>
<td>Long-term value: 205 mg/m³, 50 ppm</td>
</tr>
</tbody>
</table>

- **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.

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**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.
Trade name: Signum metal bond II

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: None
- Hazardous decomposition products: None
- Additional information: Product might polymerize after considerable exceeding of recommended storage time or temperature.

11 Toxicological information

- Information on toxicological effects
- Acute toxicity:
  - LD/LC50 values that are relevant for classification:
    | 80-62-6 methyl methacrylate |
    | Oral | LD50  | >5000 mg/kg (rat) |
    | Dermal | LD50  | >5000 mg/kg (rab) |
Trade name: Signum metal bond II

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Inhalative LC50/4 h</td>
<td>29.8 mg/l (rat)</td>
</tr>
<tr>
<td>Oral LD50</td>
<td>&gt;5000 mg/kg (rat)</td>
</tr>
</tbody>
</table>

**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**
- **IARC (International Agency for Research on Cancer)**
  - 80-62-6 methyl methacrylate: 3
  - 128-37-0 2,6-di-tert-butyl-p-cresol: 3
- **NTP (National Toxicology Program)**
  - None of the ingredients is listed.
- **OSHA-Ca (Occupational Safety & Health Administration)**
  - None of the ingredients is listed.

**Ecological information**

**Toxicity**
- **Aquatic toxicity:**
  - 75980-60-8 diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
    - EC50/48h: 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.

**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

<table>
<thead>
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<th>ENGLISH</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>· Label</td>
</tr>
<tr>
<td>DOT</td>
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<tr>
<td>ADR, IMDG, IATA</td>
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<td>Special precautions for user</td>
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<tr>
<td>· Danger code (Keimler):</td>
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<tr>
<td>· EMS Number:</td>
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<td>Transport/Additional information:</td>
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<td>UN &quot;Model Regulation&quot;:</td>
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<td>UN1247, Methyl methacrylate monomer, stabilized, solution, 3, II</td>
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</tbody>
</table>
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.

- Cancerogenity categories
  - TLV (Threshold Limit Value established by ACGIH)
    80-62-6 methyl methacrylate A4
    128-37-0 2,6-di-tert-butyl-p-cresol A4

- 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 vapor.
  Causes skin irritation.
  May cause an allergic skin reaction.
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- Precautionary statements
  Keep away from heat/sparks/open flames/hot surfaces. - 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/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 vapor.
  H315 Causes skin irritation.
  H317 May cause an allergic skin reaction.
  H335 May cause respiratory irritation.
  H361 Suspected of damaging fertility or the unborn child.
- Date of preparation / last revision 01/28/2018 / 3
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
OSHAP: Occupational Safety & Health
REL: Permissible Exposure Limit
PEL: Permissible Exposure Limit
TLV: Threshold Limit Value
BCR: 貯蔵による毒性
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

* Data compared to the previous version altered.