1 Identification

· Product identifier
  · Trade name: Palabond

· Application of the substance / the mixture Auxiliary for manufacture of dental prosthesis

· 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.
  Eye Dam. 1  H318 Causes serious eye damage.
  Skin Sens. 1  H317 May cause an allergic skin reaction.
  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 | GHS05 | GHS07 |
      |
  · Signal word Danger

· Hazard-determining components of labeling:
  methyl methacrylate
  methacrylic acid
  tetramethylene dimethacrylate

· Hazard statements
  Highly flammable liquid and vapor.
  Causes skin irritation.
  Causes serious eye damage.
  May cause an allergic skin reaction.
  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.

(Contd. on page 2)
Trade name: Palabond

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.

Classification system
- NFPA ratings for USA (scale 0-4)
  - Health = 2
  - Fire = 3
  - Reactivity = 2

- HMIS-Ratings (Scale 0-4)
  - HEALTH
    - Health = 1
  - FIRE
    - Fire = 3
  - REACTIVITY
    - Reactivity = 2

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

3 Composition/information on ingredients
- Chemical characterization: Mixtures
- Description: Composition based on methacrylates

- Dangerous components:
  - 80-62-6 methyl methacrylate
    - Flam. Liq. 2, H225; Skin Irrit. 2, H315; Skin Sens. 1, H317; STOT SE 3, H335
    - 75-90%
  - 79-41-4 methacrylic acid
    - Skin Corr. 1A, H314; Acute Tox. 4, H302; Acute Tox. 4, H312; STOT SE 3, H335
    - 0-5%
  - 2082-81-7 tetramethylene dimethacrylate
    - Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335
    - 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. If symptoms persist, consult a doctor.
  - After swallowing Rinse out mouth and then drink plenty of water.
  - If symptoms persist consult doctor.
  - Composition based on methacrylates
5 Fire-fighting measures

· Extinguishing media
  · Suitable extinguishing agents: CO2, sand, extinguishing powder. Do not use water.
  · For safety reasons unsuitable extinguishing agents
    Water.
    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).
  Do not flush with water or aqueous cleansing agents
  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.
    Keep away from heat and direct sunlight.
  · Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.
    Protect from heat.
    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.
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>Chemical</th>
<th>PEL</th>
<th>REL</th>
<th>TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-62-6 methyl methacrylate</td>
<td>410 mg/m³, 100 ppm</td>
<td>410 mg/m³, 100 ppm</td>
<td>Short-term value: 410 mg/m³, 100 ppm, Long-term value: 205 mg/m³, 50 ppm</td>
</tr>
<tr>
<td>79-41-4 methacrylic acid</td>
<td>70 mg/m³, 20 ppm</td>
<td>Skin</td>
<td>70 mg/m³, 20 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

· 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:**
  Protective goggles are recommended.
  Tightly sealed goggles.

- **Body protection:** Light weight protective clothing

### 9 Physical and chemical properties

#### Information on basic physical and chemical properties

- **General Information**
  - **Appearance:**
    - Form: Fluid
    - Color: Colorless
    - 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:** 370.0 °C (698 °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 mm Hg)

- **Density at 20 °C (68 °F):**
  - Relative density: Not determined.
  - Vapor density: Not determined.
### 43.0.7

- **Evaporation rate**: Not determined.
- **Solubility in / Miscibility with**
  - **Water**: Not miscible or difficult to mix
- **Partition coefficient (n-octanol/water)**: Not determined.
- **Viscosity**
  - **dynamic at 20 °C (68 °F)**: 1 mPas
  - **kinematic**: Not determined.
- **Solvent content**
  - **Water**: 0.2 %
- **Solids content**: 0.1 %
- **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
- **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**:

<table>
<thead>
<tr>
<th>Compound</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalative LC50/4 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-62-6 methyl methacrylate</td>
<td>&gt;5000 mg/kg (rat)</td>
<td>&gt;5000 mg/kg (rab)</td>
<td>29.8 mg/l (rat)</td>
</tr>
<tr>
<td>79-41-4 methacrylic acid</td>
<td>2260 mg/kg (rat)</td>
<td>500 mg/kg (rab)</td>
<td></td>
</tr>
<tr>
<td>2082-81-7 tetramethylene dimethacrylate</td>
<td>10120 mg/kg (rat)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
  
- **Primary irritant effect**
  - **on the skin**: Irritant to skin and mucous membranes.
  - **on the eye**: Irritating effect.
- **Sensitization**: Sensitization possible through skin contact.
- **Additional toxicological information**:
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version.

(Contd. on page 7)
## 43.0.7 Irritant

### Carcinogenic categories

- **IARC (International Agency for Research on Cancer)**
  - 80-62-6 methyl methacrylate
    - Category 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

### Toxicity
- **Aquatic toxicity**: No further relevant information available.
- **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.
- **Additional ecological information**:
  - **General notes**: Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- **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**: UN2924
- **DOT**: 2924
- **ADR, IMDG, IATA**: 2924
Trade name: **Palabond**

<table>
<thead>
<tr>
<th><strong>UN proper shipping name</strong></th>
<th>2924 FLAMMABLE LIQUID, CORROSIVE, N.O.S. (METHYL METHACRYLATE MONOMER, STABILIZED, METHACRYLIC ACID, STABILIZED) FLAMMABLE LIQUID, CORROSIVE, N.O.S. (METHYL METHACRYLATE MONOMER, STABILIZED, METHACRYLIC ACID, STABILIZED)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADR</strong></td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>IMDG, IATA</strong></td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Transport hazard class(es)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOT</strong></td>
<td>![Flammable Liquid]</td>
</tr>
<tr>
<td><strong>Class</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Label</strong></td>
<td>3</td>
</tr>
</tbody>
</table>

| **ADR**                      | ![Flammable Liquid]  |
| **Class**                    | 3 (FC) Flammable liquids |
| **Label**                    | 3+8 |

| **IMDG, IATA**               | ![Flammable Liquid]  |
| **Class**                    | 3 |
| **Label**                    | 3+8 |

<table>
<thead>
<tr>
<th><strong>Packing group</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOT, ADR, IMDG, IATA</strong></td>
<td>II</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Environmental hazards:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marine pollutant:</strong></td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Special precautions for user</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Danger code (Kemler):</strong></td>
<td>Warning: Flammable liquids</td>
</tr>
<tr>
<td><strong>EMS Number:</strong></td>
<td>338</td>
</tr>
</tbody>
</table>

| **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** | Not applicable. |

| **Transport/Additional information:** | - |
Trade name: Palabond

UN "Model Regulation": UN2924, Flammable liquids, corrosive, n.o.s. (Methyl methacrylate monomer, stabilized, Methacrylic acid, stabilized), 3 (8), 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.

Cancerogenity categories

TLV (Threshold Limit Value established by ACGIH)
80-62-6 methyl methacrylate A4

GHS label elements
The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms

GHS02  GHS05  GHS07

Signal word Danger

Hazard-determining components of labeling:
methyl methacrylate
methacrylic acid
tetramethylene dimethacrylate

Hazard statements
Highly flammable liquid and vapor.
Causes skin irritation.
Causes serious eye damage.
May cause an allergic skin reaction.
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.

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.
  - H302 Harmful if swallowed.
  - H312 Harmful in contact with skin.
  - H314 Causes severe skin burns and eye damage.
  - H315 Causes skin irritation.
  - H317 May cause an allergic skin reaction.
  - H319 Causes serious eye irritation.
  - H335 May cause respiratory irritation.

- **Date of preparation / last revision** 06/03/2017 / 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
  - vPvB: very Persistent and very Bioaccumulative
  - OSHA: Occupational Safety & Health
  - TLV: Threshold Limit Value
  - PEL: Permissible Exposure Limit
  - REL: Recommended Exposure Limit
  - Flam. Liq. 2: Flammable liquids – Category 2
  - Acute Tox. 4: Acute toxicity – Category 4
  - Skin Corr. 1A: Skin corrosion/irritation – Category 1A
  - 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
  - Skin Sens. 1: Skin sensitisation – Category 1
  - STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

- **Data compared to the previous version altered.**