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

1.1 Product identifier
   - Trade name: Palabond

1.2 Relevant identified uses of the substance or mixture and uses advised against
   - Application of the substance / the mixture: Auxiliary for manufacture of dental prothesis

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. 2 H225 Highly flammable liquid and vapour.
     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.

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
     - Signal word: Danger
     - Hazard-determining components of labelling:
       - methyl methacrylate
       - methacrylic acid
     - Hazard statements:
       - H225 Highly flammable liquid and vapour.
       - H315 Causes skin irritation.
       - H318 Causes serious eye damage.
       - H317 May cause an allergic skin reaction.
       - H335 May cause respiratory irritation.
     - Precautionary statements:
       - P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
       - P280 Wear protective gloves/protective clothing/eye protection/face protection.

(Contd. on page 2)
SECTION 3: Composition/information on ingredients

3.2 Chemical characterisation: Mixtures

Description: Product based on methacrylates

Dangerous components:

<table>
<thead>
<tr>
<th>CAS</th>
<th>EINECS</th>
<th>Reg.nr.</th>
<th>Substance</th>
<th>Hazard Classifications</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-62-6</td>
<td>201-297-1</td>
<td>01-2119452498-28-0000</td>
<td>methyl methacrylate</td>
<td>Flam., Liq. 2, H225; Skin Irrit. 2, H315; Skin Sens. 1, H317; STOT SE 3, H335</td>
<td>75-90%</td>
</tr>
<tr>
<td>79-41-4</td>
<td>201-204-4</td>
<td></td>
<td>methacrylic acid</td>
<td>Skin Corr. 1A, H314; Acute Tox. 4, H302; Acute Tox. 4, H312; STOT SE 3, H335</td>
<td>0-5%</td>
</tr>
<tr>
<td>2082-81-7</td>
<td>218-218-1</td>
<td>02-2119849716-25</td>
<td>tetramethylene dimethacrylate</td>
<td>Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335</td>
<td>0-5%</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. If symptoms persist, consult doctor.
After swallowing: Rinse out mouth and then drink plenty of water. In case of persistent symptoms consult doctor.

Product based on methacrylates:

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, sand, extinguishing powder. Do not use water.
Trade name: Palabond

- For safety reasons unsuitable extinguishing agents
  Water.
  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: No special measures required.
  - 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: Prevent material from reaching sewage system, holes and cellars.

- 6.3 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 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.
  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.

- 7.2 Conditions for safe storage, including any incompatibilities
  - Storage
    - Requirements to be met by storerooms and containers: Store in cool location.
    - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions:
    Store cool (not above 25 °C).
    Store in cool, dry conditions in well sealed containers.
    Protect from heat and direct sunlight.

- 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:

<table>
<thead>
<tr>
<th>Component</th>
<th>Short-term</th>
<th>Long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-62-6 methyl methacrylate</td>
<td>416 mg/m³, 100 ppm</td>
<td>208 mg/m³, 50 ppm</td>
</tr>
<tr>
<td>79-41-4 methacrylic acid</td>
<td>143 mg/m³, 40 ppm</td>
<td>72 mg/m³, 20 ppm</td>
</tr>
</tbody>
</table>

DNELs

- **80-62-6 methyl methacrylate**
  - Dermal worker industr., l.te., syst. 74.3 mg/Kg/d (human)
  - Inhalative worker industr., l.te., syst. 210 mg/m³ (human)

PNECs

- **80-62-6 methyl methacrylate**
  - Freshwater 0.94 mg/l (aqua)

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.
- 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 trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
Trade name: Palabond

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 safety glasses.

Body protection:
- Light weight protective clothing

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

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

- pH-value: Not determined.

Change in condition
- Melting point/Melting range: Not determined
- Boiling point/Boiling range: 100 °C

Flash point: 10 °C

Inflammability (solid, gaseous): Not applicable.

Ignition temperature: 370.0 °C

Decomposition temperature: Not determined.

Self-inflammability: Product is not selfigniting.

Danger of explosion: Product is not explosive. However, formation of explosive air/vapour mixtures is possible.

Critical values for explosion:
- Lower: 2.1 Vol %
- Upper: 12.5 Vol %

Steam pressure at 20 °C: 47 hPa

Density at 20 °C: 0.940 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.
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.
· 10.6 Hazardous decomposition products: None
  · Additional information: If stored longer than recommended and/or above recommended temperature, product may polymerize generating heat.

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></th>
<th>80-62-6 methyl methacrylate</th>
<th>79-41-4 methacrylic acid</th>
<th>2082-81-7 tetramethylene dimethacrylate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50 &gt;5000 mg/kg (rat)</td>
<td>LD50 2260 mg/kg (rat)</td>
<td>LD50 10120 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>LD50 &gt;5000 mg/kg (rab)</td>
<td>LD50 500 mg/kg (rab)</td>
<td></td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC50/4 h 29.8 mg/l (rat)</td>
<td></td>
<td></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 an allergic skin reaction.
SECTION 12: Ecological information

12.1 Toxicity
- Aquatic toxicity: No further relevant information available.
- Persistent and degradability: No further relevant information available.
- 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 bodies or sewage system.

12.2 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: 2924

14.2 UN proper shipping name
(Contd. on page 8)
43.0.7 ADR

· FLAMMABLE LIQUID, CORROSIVE, N.O.S. (METHYL METHACRYLATE MONOMER, STABILIZED, METHACRYLIC ACID, STABILIZED)

· IMDG, IATA

· FLAMMABLE LIQUID, CORROSIVE, N.O.S. (METHYL METHACRYLATE MONOMER, STABILIZED, METHACRYLIC ACID, STABILIZED)

14.3 Transport hazard class(es)

· ADR

· Class

· Label

3 (FC) Flammable liquids.

· IMDG, IATA

· Class

· Label

3 Flammable liquids.

14.4 Packing group

· ADR, IMDG, IATA

II

14.5 Environmental hazards:

· Marine pollutant:

No

14.6 Special precautions for user

· Kemler Number:

338

· EMS Number:

F-E,S-C

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable.

14.8 Transport/Additional information:

- UN "Model Regulation":

UN2924, FLAMMABLE LIQUID, CORROSIVE, N.O.S. (METHYL METHACRYLATE MONOMER, STABILIZED, METHACRYLIC ACID, STABILIZED), 3 (8), II
SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

- Directive 2012/18/EU
- Qualifying quantity (tonnes) for the application of lower-tier requirements: 5.000 t
- Qualifying quantity (tonnes) for the application of upper-tier requirements: 50.000 t
- REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3

15.2 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.
  - 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 skin irritation.
  - H335 May cause respiratory irritation.

- 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)
  - VOCV: Lenkungsabgabe auf flüchtigen organischen Verbindungen, Schweiz (Swiss Ordinance on volatile organic compounds)
  - DNEL: Derived No-Effect Level (REACH)
  - PNEC: Predicted No-Effect Concentration (REACH)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative
  - 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. 2: Serious eye damage/eye irritation – Category 2
  - 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.