1 IDENTIFICATION OF THE PRODUCT AND COMPANY

1.1 product name: VERTEX Self Curing liquid
chemical characterisation: Monomer based on Methyl methacrylate. \( \text{CH}_2=\text{C(CH}_3\text{)}\text{COOCH}_3 \)

1.2 Manufacturer: Vertex-Dental B.V.
PO Box 10
3700 AA ZEIST
The Netherlands

1.3 emergency telephone number: + 31 30 6976749

2 COMPOSITION AND INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>components</th>
<th>label</th>
<th>CAS reg.nr.</th>
<th>[%]</th>
<th>MAC [ppm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>( X_i, F )</td>
<td>80-62-6</td>
<td>&gt; 95</td>
<td>10</td>
</tr>
<tr>
<td>Crosslinker</td>
<td>( X_i )</td>
<td>97-90-5</td>
<td>&lt; 5</td>
<td>-</td>
</tr>
<tr>
<td>Accelerator</td>
<td>( X_n )</td>
<td>99-97-8</td>
<td>&lt; 1</td>
<td>-</td>
</tr>
<tr>
<td>UV absorber</td>
<td>( X_i )</td>
<td>2440-22-4</td>
<td>&lt;&lt; 1</td>
<td>-</td>
</tr>
</tbody>
</table>

3 HAZARDS IDENTIFICATION

3.1 routes of entry:
Methyl methacrylate is absorbed into the body by inhalation, swallowing and through the skin. A for the health harmful concentration in the air, is quickly reached at a temperature of 20°C.

3.2 carcinogenic aspects:
None of the components of this product are listed by IARC, NTP, OSHA or ACIGH as carcinogens.

3.3 maximum concentration at workplace (MAC):
For Methyl methacrylate: 10 ppm = 40 mg/m$^3$

3.4 effects short-term:
Liquid or high vapour concentration can irritate eyes and respiratory system and cause skin rashes.

3.5 effects long-term, repeated exposure:
Prolonged exposure can lead to headaches, nausea, drowsiness and unconsciousness. Repeated and prolonged overexposure may cause permanent allergic skin rashes.
4 FIRST AID MEASURES

4.1 inhalation:
Remove to fresh air, rest, sit half way up. Get medical help if discomfort persist.

skin:
Remove contaminated clothing. Wash thoroughly with soap and water.

eyes:
Flush thoroughly with water for 15 minutes and contact a doctor.

ingestion:
Wash out the mouth and transport immediately to a hospital.

5 MEASURES IN CASE OF FIRE

5.1 flash point: 10°C

5.2 explosion limits: air vol.%
- lower: 2.1 %
- upper: 12.5 %

5.3 auto ignition temperature: 430°C

5.4 extinguisher method:
- not useful: Direct jet of water.

5.5 hazardous decomposition products: none

5.6 hazardous reactions:
When heated above the flash point, flammable vapours are emitted which can mix with air and can burn or be explosive. Vapours are heavier than air and may travel to the source of ignition and flash back. Heat can cause polymerisation with rapid release of energy which may rupture container explosively.

6 ACCIDENTAL RELEASE MEASURES

6.1 leakage / spillage:
Warn bystanders. Eliminate sources of ignition. Prevent monomer from entering drains or water sources. Collect liquid in a open barrel. Absorb spilled liquid with inert material as dry earth or other absorbent material and transfer to a save place for disposal. See point 13 for disposal of the liquid.

6.2 personal precautions:
See point 8 for personal protection.

6.3 environmental precautions:
See point 12 for information concerning the environment.
7 HANDLING AND STORAGE

7.1 handling:  
Work in a well ventilated place. Material is inflammable, it must be kept away from naked flames or other sources of ignition. Keep away from food, drinks, and animal feed.

7.2 storage:  
Store in a cool dark place, separated from oxidising agents. Container may be filled only for 80 %. Keep container tightly closed to avoid evaporation of the product.

7.3 protection against fire and explosion:  
Keep out of direct sunlight or any source of heat, sparks or flame. Take measures against the build-up of electrostatic charges. In case of fire, keep any closed container of monomer cool by using a fine water spray if they cannot be moved away.

8 PERSONAL PROTECTION

8.1 respiratory protection:  
Local exhaust ventilation or an adequate mask with a filter useful for organic vapour (type A2B2). Possible a half-mask with active carbon may be used (FHMPE).  
hand protection: Polyvinylalcohol gloves. Warning: PVA is soluble in water!  
eye protection: Protecting glasses.  
other protection: None.

8.2 industrial hygiene:  
Keep working clothes separately. Take off contaminated clothing immediately. Keep away from food, drinks and animal feed.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 appearance: colourless, clear liquid  
9.2 odour: ester like  
9.3 pH: not applicable  
9.4 boiling point: 101°C  
9.5 melting point: -48°C  
9.6 flash point: 10°C  
9.7 auto ignition temperature: 430°C  
9.8 explosive properties: yes, see point 5.2  
9.9 oxidising properties: not applicable
9.10 vapour pressure: 47 mbar  (at 20°C)
9.11 relative density: 0.94  (water = 1)
9.12 water solubility: 1.5 g / 100 ml  (at 20°C)
9.13 viscosity: 0.6 mPa×s

10 STABILITY AND REACTIVITY

10.1 stability:  
The liquid is stabilised with Hydroquinone (CAS-regnr. 123-31-9). However polymerisation may occur when the expiry date and/or storage temperature is considerable exceeded.

10.2 hazardous reactions:  
When heated above the flash point, flammable vapours are emitted which can mix with air and can burn or be explosive. Vapours are heavier than air and may travel to the source of ignition and flash back. Heat can cause polymerisation with rapid release of energy which may rupture container explosively.

10.3 hazardous decomposition products:  
By use according the instructions; none.

11 INFORMATION ON TOXICITY

According to literature.
Methyl methacrylate is essentially non toxic when absorbed into the body by any route, but for some few individuals is a powerful skin sensitiser. Apart from this skin allergy, human cases of ill health caused by material are of a low probability.

Long-term inhalation test on rats and hamsters with exposure concentrations ranging from 100 to 400 ppm did not show any chronic toxic effects. However concentrations on excess of 100 ppm volume may be irritating for some people. Handling of the product requires adequate ventilation to prevent accumulation of vapours in work areas.

11.1 Methyl methacrylate:  
Acute oral rat:  \( \text{LD}_{50} = 7872 \text{ mg/kg} \)
Acute skin rabbit:  \( \text{LD}_{50} = 9400 \text{ mg/kg} \)
Acute inhalation rat:  \( \text{LC}_{50} = 7093 \text{ ppm/4 hours} \)

Human patch test:  
Approximate one-third of subjects developed mild redness at site of application. Twenty percent showed sensitivity when tested 10 days later.

11.2 Crosslinker:
Acute oral rat:  \( \text{LD}_{50} = 3300 \text{ mg/kg} \)
Skin irritation rabbit:  Not irritating
Eye irritation rabbit:  Not irritating
11.3  **Accelerator:**  
Acute oral rat: $LD_{50} = 1.88 \text{ ml/kg}$  
Acute inhalation mouse: $LD_{50} = 212 \text{ mg/kg}$  
Skin irritation rabbit: Severe irritant  
Eye irritation rabbit: Irritating  

11.4  **UV absorber:**  
Acute oral rat: $LD_{50} = > 5000 \text{ mg/kg}$  
Skin irritation rabbit: Not irritating  
Eye irritation rabbit: Not irritating  

12  **ECOLOGICAL INFORMATION**  
The product should not be allowed to drain into sewers. There is a severe danger of explosion.  

13  **DISPOSAL CONSIDERATIONS**  
The product can be disposed as Methyl methacrylate. The preferred method for disposal of waste quantity's of Methyl methacrylate is by incineration in accordance with local regulations.  

14  **TRANSPORT**  

14.1  **UN no.:** 1247  

14.2  **Land –Road /Rail and inland waterways:**  
Un. : 1247  
Proper shipping name : Methyl methacrylate monomer stabilized  
ADR/ADNR Rid class : 3  
Packing group : II  
Hazard Identification : 339  
Tremcard : 30G30.  
Tank lorry RN 10500: 339/1247  

14.3  **transport through the air:**  
UN no./ID no : 1247  
ICAO/IATA class : 3  
Packing group air : II  
Proper shipping name : Methyl methacrylate, monomer stabilized  

14.4  **transport by sea:**  
UN IMDG : 1247  
IMDG classs : 3  
Packing group sea : II  
EmS : 3-07  
MFAG : 330  
Technical name: Methyl methacrylate, monomer stabilized
14.6 further information:
The product contains more than 95 % Methyl methacrylate, monomer, stabilised by Hydroquinone.
Registration EC list hazardous material:
Methyl methacrylate 607-035-00-6
Crosslinker 607-114-00-5
Accelerator 612-056-00-9
Hydroquinone 604-005-00-4

15 REGULATORY INFORMATION / LABELS

Methyl methacrylate, the crosslinker, accelerator and UV absorber are subjected to the law environmental dangerous substances concerning information according packing and labelling.

15.1 hazard category:
The product is subjected to mandatory marking in accordance with the law environmental dangerous substances.
F highly flammable
X_ irritant

15.2 risk phrases:
R 11 Highly flammable
R 36/37/38 Irritating to eyes, respiratory system and skin
R 43 May cause sensitisation by skin contact

15.3 safety phrases:
S 9 Keep container in well ventilated place
S 16 Keep away from ignition sources - no smoking -
S 29 Do not empty into drains
S 33 Take precautionary measures against static discharges

16 FURTHER INFORMATION

The product may at heat development, polymerise spontaneously when the expiry date and/or the storage temperature is considerable exceeded.

When pouring the liquid into smaller containers, use dark glass bottles or aluminium containers only. Do not use transparent containers. Also check the labelling on the new containers concerning the hazard category and the risk and safety phrases.

All information is based on the present state of knowledge and experience. The material safety data sheet serves to describe the product only with regard to safety requirements. Vertex-Dental BV can not been held responsible for the completeness of this material safety data sheet.