SAFETY DATA SHEET
Fusio™ Liquid Dentin

Section 1. Identification

<table>
<thead>
<tr>
<th>Product name</th>
<th>Fusio™ Liquid Dentin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other means of</td>
<td>Not available.</td>
</tr>
<tr>
<td>identification</td>
<td></td>
</tr>
<tr>
<td>Product type</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Relevant identified</td>
<td></td>
</tr>
<tr>
<td>uses of the substance</td>
<td></td>
</tr>
<tr>
<td>or mixture and uses</td>
<td></td>
</tr>
<tr>
<td>advised against</td>
<td></td>
</tr>
<tr>
<td>Product use</td>
<td>Dental product</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Pentron Clinical</td>
</tr>
<tr>
<td></td>
<td>1717 West Collins Avenue</td>
</tr>
<tr>
<td></td>
<td>Orange, CA  92867-5422</td>
</tr>
<tr>
<td></td>
<td>Telephone no.: 1-203-265-7397, Toll Free:</td>
</tr>
<tr>
<td></td>
<td>1-800-551-0283</td>
</tr>
<tr>
<td>Emergency telephone</td>
<td>CHEMTREC® (24 hours) U.S.: 1-800-424-9300</td>
</tr>
<tr>
<td>number (with hours of</td>
<td>International: +1-703-527-3887</td>
</tr>
<tr>
<td>operation)</td>
<td></td>
</tr>
<tr>
<td>e-mail address of</td>
<td><a href="mailto:edwin.varela@kavokerrgroup.com">edwin.varela@kavokerrgroup.com</a></td>
</tr>
<tr>
<td>person responsible</td>
<td></td>
</tr>
<tr>
<td>for this SDS</td>
<td></td>
</tr>
</tbody>
</table>

Section 2. Hazards identification

| HSNO Classification  | 6.3 - SKIN IRRITATION - Category B     |
|                      | 6.4 - EYE IRRITATION - Category A (Irritant) |
|                      | 6.8 - REPRODUCTIVE AND DEVELOPMENTAL TOXICITY (Fertility) - Category B |
|                      | Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 88.5% |
|                      | Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 88.5% |

This material is classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001 and has been classified according to the Hazardous Substances (Classifications) Regulations 2001.

This material is not classified as a dangerous good according to criteria in New Zealand Standard 5433:2007 Transport of Dangerous Goods on Land.

GHS label elements

| Signal word   | Warning |
|               | Causes mild skin irritation. |
|               | Causes serious eye irritation. |
|               | Suspected of damaging fertility. |

Precautionary statements

| Prevention    | Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear eye or face protection. |
|               | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Wash hands after handling. IF exposed or concerned: Get medical advice/attention. |
| Storage       | Store locked up. |
| Disposal      | Dispose of contents and container in accordance with all local, regional, national and international regulations. |

Symbol

| Other hazards which do not result in classification | None known. |

Version : 1 Date of issue/Date of revision : 4/16/2014.
Section 3. Composition/information on ingredients

Substance/mixture : Mixture
Other means of identification
CAS number/other identifiers
CAS number : Not applicable.
EC number : Mixture.
Product code : Not available.

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>glass, oxide, chemicals</td>
<td>&gt;=50 - &lt;75</td>
<td>65997-17-3</td>
</tr>
<tr>
<td>2,2'-ethylenedioxydiethyl dimethacrylate</td>
<td>&gt;=5 - &lt;10</td>
<td>109-16-0</td>
</tr>
<tr>
<td>2-hydroxyethyl methacrylate</td>
<td>&gt;=5 - &lt;10</td>
<td>868-77-9</td>
</tr>
<tr>
<td>diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide</td>
<td>&lt;0.5</td>
<td>75980-60-8</td>
</tr>
</tbody>
</table>

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

Inhalation : No special measures required. If inhaled, remove to fresh air. Get medical attention if symptoms occur.

Ingestion : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Get medical attention if adverse health effects persist or are severe.

Skin contact : No special measures required. In case of contact, immediately flush skin with plenty of water. Get medical attention if symptoms occur.

Eye contact : No special measures are required. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion : Irritating to mouth, throat and stomach.

Skin contact : Causes mild skin irritation.

Eye contact : Causes serious eye irritation.

Over-exposure signs/symptoms

Inhalation : Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations

Ingestion : Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations

Skin : Adverse symptoms may include the following: irritation redness reduced foetal weight increase in foetal deaths skeletal malformations

Version : 1 Date of issue/Date of revision : 4/16/2014.
Section 4. First-aid measures

Eyes
Adverse symptoms may include the following:
- pain or irritation
- watering
- redness

**Indication of immediate medical attention and special treatment needed, if necessary**

**Specific treatments**
- Not available.

**Notes to physician**
- Treat symptomatically.

**Protection of first-aiders**
- No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

**Suitable**
- In case of fire, use water, dry chemical powder or carbon dioxide.

**Not suitable**
- Do not use water jet.

**Specific hazards arising from the chemical**
- In a fire or if heated, a pressure increase will occur and the container may burst.

**Hazardous thermal decomposition products**
- Decomposition products may include the following materials:
  - carbon dioxide
  - carbon monoxide
  - nitrogen oxides
  - metal oxide/oxides

**Hazchem code**
- Not available.

**Special precautions for fire-fighters**
- In case of major fire and large quantities: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

**Special protective equipment for fire-fighters**
- Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

**Environmental precautions**
- Low release. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**Methods and materials for containment and cleaning up**
- **Small spill**
  - Small Quantity. For professional use only. Absorb with an inert material and place in an appropriate waste disposal container.

- **Large spill**
  - Small Quantity. For professional use only. Absorb with an inert material and place in an appropriate waste disposal container.

Section 7. Handling and storage

**Precautions for safe handling**
- No special measures are required for small quantities under normal and intended conditions of product use. For professional use only. Put on appropriate personal protective equipment (see Section 8). Handle with care and dispose of in a safe manner.

**Conditions for safe storage, including any incompatibilities**
- Store between the following temperatures: 2 to 8°C (35.6 to 46.4°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use.
Section 8. Exposure controls/personal protection

**Control parameters**

### Occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>glass, oxide, chemicals</td>
<td>NZ OSH (New Zealand, 2/2013).</td>
</tr>
<tr>
<td></td>
<td>WES-TWA: 5 f/ml 8 hours. Form: inhalable fiber</td>
</tr>
<tr>
<td></td>
<td>WES-TWA: 1 f/ml 8 hours. Form: resolvable fiber</td>
</tr>
</tbody>
</table>

**Recommended monitoring procedures**

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

**Appropriate engineering controls**

No special measures are required for small quantities under normal and intended conditions of product use.

**Environmental exposure controls**

No special measures are required for small quantities under normal and intended conditions of product use.

**Individual protection measures**

**Hygiene measures**

No special measures are required for small quantities under normal and intended conditions of product use.

**Respiratory protection**

No special measures are required for small quantities under normal and intended conditions of product use.

**Hand protection**

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

**Eye protection**

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

**Skin protection**

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 9. Physical and chemical properties

**Appearance**

**Physical state**

Liquid. [Paste.]

**Colour**

Various

**Odour**

Fruity./Ester.

**Odour threshold**

Not available.

**pH**

3 to 4

**Melting point**

Not available.

**Boiling point**

Not available.

**Flash point**

Not available.

** Burning rate**

Not applicable.

** Burning time**

Not applicable.

** Evaporation rate**

Not available.

**Version**

1

**Date of issue/Date of revision**

4/16/2014.
Section 9. Physical and chemical properties

- **Vapour pressure**: Not available.
- **Vapour density**: Not available.
- **Relative density**: ~1.8
- **Solubility**: Very slightly soluble in the following materials: cold water and hot water.
- **Partition coefficient: n-octanol/water**: Not available.
- **Auto-ignition temperature**: Not available.
- **Decomposition temperature**: Not available.
- **SADT**: Not available.
- **Viscosity**: Not available.
- **Physical/chemical properties comments**: Content (%) (solids): >=65

**Aerosol product**
- **Type of aerosol**: Not applicable.
- **Heat of combustion**: Not available.
- **Ignition distance**: Not applicable.
- **Enclosed space ignition - Time equivalent**: Not applicable.
- **Enclosed space ignition - Deflagration density**: Not applicable.
- **Flame height**: Not applicable.
- **Flame duration**: Not applicable.

Section 10. Stability and reactivity

- **Chemical stability**: The product is stable.
- **Possibility of hazardous reactions**: Under normal conditions of storage and use, hazardous reactions will not occur.
- **Conditions to avoid**: Protect from sunlight. Initiators. Avoid excessive heat.
- **Incompatible materials**: Reactive or incompatible with the following materials: oxidizing materials and reducing materials. Peroxide.
- **Hazardous decomposition products**: Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous polymerisation will not occur. Long term: Polymerisation.

Section 11. Toxicological information

- **Information on the likely routes of exposure**
  - **Inhalation**: Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
  - **Ingestion**: Irritating to mouth, throat and stomach.
  - **Skin contact**: Causes mild skin irritation.
  - **Eye contact**: Causes serious eye irritation.

- **Symptoms related to the physical, chemical and toxicological characteristics**
Section 11. Toxicological information

Inhalation: Adverse symptoms may include the following:
- reduced foetal weight
- increase in foetal deaths
- skeletal malformations

Ingestion: Adverse symptoms may include the following:
- reduced foetal weight
- increase in foetal deaths
- skeletal malformations

Skin contact: Adverse symptoms may include the following:
- irritation
- redness
- reduced foetal weight
- increase in foetal deaths
- skeletal malformations

Eye contact: Adverse symptoms may include the following:
- pain or irritation
- watering
- redness

### Acute toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,2'-ethylenedioxydiethyl dimethacrylate</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>10837 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>2-hydroxyethyl methacrylate</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>4230 mg/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

### Irritation/Corrosion

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Score</th>
<th>Exposure</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,2'-ethylenedioxydiethyl dimethacrylate</td>
<td>Skin - Moderate irritant</td>
<td>Mouse</td>
<td>-</td>
<td>336 hours 25 Percent Intermittent</td>
<td>-</td>
</tr>
</tbody>
</table>

### Sensitisation

Not available.

### Conclusion/Summary

Skin: Kligman score: Grade I (weak sensitizer)

### Potential chronic health effects

**General**: No known significant effects or critical hazards.

**Inhalation**: No known significant effects or critical hazards.

**Ingestion**: No known significant effects or critical hazards.

**Skin contact**: No known significant effects or critical hazards.

**Eye contact**: No known significant effects or critical hazards.

**Carcinogenicity**: No known significant effects or critical hazards.

**Mutagenicity**: No known significant effects or critical hazards.

**Teratogenicity**: No known significant effects or critical hazards.

**Developmental effects**: No known significant effects or critical hazards.

**Fertility effects**: Suspected of damaging fertility.

### Chronic toxicity

Not available.

**Carcinogenicity**: Not available.

**Mutagenicity**: Not available.
Section 11. Toxicological information

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Experiment</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fusio™ Liquid Dentin</td>
<td>471 Bacterial Reverse Mutation Test</td>
<td>Subject: Bacteria</td>
<td>Negative</td>
</tr>
</tbody>
</table>

**Teratogenicity**
Not available.

**Reproductive toxicity**
Not available.

**Specific target organ toxicity**
Not available.

**Aspiration hazard**
Not available.

**Numerical measures of toxicity**

<table>
<thead>
<tr>
<th>Test</th>
<th>ATE value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>9538.2 mg/kg</td>
</tr>
</tbody>
</table>

Section 12. Ecological information

**Ecotoxicity**: No known significant effects or critical hazards.

**Aquatic and terrestrial toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-hydroxyethyl methacrylate</td>
<td>Acute LC50 227000 μg/l Fresh water</td>
<td>Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling)</td>
<td>96 hours</td>
</tr>
</tbody>
</table>

**Persistence/degradability**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Result</th>
<th>Dose</th>
<th>Inoculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-hydroxyethyl methacrylate</td>
<td>301C Ready Biodegradability - Modified MITI Test (I)</td>
<td>92 to 100 % - 14 days</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Aquatic half-life**: Not available.

**Photolysis**: Readily

**Biodegradability**: Not available.

**Bioaccumulative potential**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP&lt;sub&gt;ow&lt;/sub&gt;</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,2’-ethylenedioxydiethyl dimethacrylate</td>
<td>1.88</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>2-hydroxyethyl methacrylate</td>
<td>0.42</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>diphenyl(2,4, 6-trimethylbenzoyl) phosphine oxide</td>
<td>-</td>
<td>53 to 72</td>
<td>low</td>
</tr>
</tbody>
</table>

**Mobility in soil**

| Soil/water partition coefficient (K<sub>oc</sub>) | Not available. |

**Other adverse effects**: No known significant effects or critical hazards.
Section 13. Disposal considerations

This material and its container must be disposed of in a safe way.

Section 14. Transport information

<table>
<thead>
<tr>
<th>Regulatory information</th>
<th>UN number</th>
<th>Proper shipping name</th>
<th>Classes</th>
<th>PG*</th>
<th>Label</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Zealand Class</td>
<td>Not regulated.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>ADG Class</td>
<td>Not regulated.</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>UN Class</td>
<td>Not regulated.</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>ADR/RID Class</td>
<td>Not regulated.</td>
<td>-</td>
<td>-</td>
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<tr>
<td>IATA Class</td>
<td>Not regulated.</td>
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<tr>
<td>IMDG Class</td>
<td>Not regulated.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

PG* : Packing group

Section 15. Regulatory information

New Zealand Inventory of Chemicals (NZIoC) : Not determined.

HSNO Approval Number : Not available.

HSNO Group Standard : Not available.

HSNO Classification : 6.3 - SKIN IRRITATION - Category B
                      6.4 - EYE IRRITATION - Category A (Irritant)
                      6.8 - REPRODUCTIVE AND DEVELOPMENTAL TOXICITY (Fertility) - Category B

Australia inventory (AICS) : Not determined.

Safety, health and environmental regulations specific for the product : No known specific national and/or regional regulations applicable to this product (including its ingredients).

Section 16. Other information

History
Date of issue/Date of revision : 4/16/2014.
Date of previous issue : No previous validation.
Version : 1
Prepared by : IHS

Key to abbreviations : ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
                      ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
                      ATE = Acute Toxicity Estimate
                      BCF = Bioconcentration Factor
                      GHS = Globally Harmonized System of Classification and Labelling of Chemicals
                      IATA = International Air Transport Association
                      IBC = Intermediate Bulk Container
                      IMDG = International Maritime Dangerous Goods
                      LogPow = logarithm of the octanol/water partition coefficient

Version : 1
Date of issue/Date of revision : 4/16/2014.
Section 16. Other information

RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
UN = United Nations

References:
- GHS - Globally Harmonized System of Classification and Labeling of Chemicals
- International transport regulations

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.