Material Safety Data Sheet
Bond 1® Dual Cure Activator

1. Identification of the material and supplier

Names

Product name: Bond 1® Dual Cure Activator
ADG: UN1090
Manufacturer: Pentron Clinical
Unit 10, 112-118 Talavera Road
North Ryde, NSW 2113
Australia
Telephone no.: 1 800 643 603
Email general queries: kerraust.orders@sybrondental.com
Email technical queries: peter.green@sybrondental.com

Emergency telephone number: 61 401 690 670 (24 hours)

Uses

Area of application: Professional applications.
Material uses: Dental product: Total-etch bonding system
Product type: Liquid.

2. Hazards identification

Classification: F; R11, Xi; R36, R43, R66, R67

Risk phrases: R11- Highly flammable.
R36- Irritating to eyes.
R43- May cause sensitisation by skin contact.
R66- Repeated exposure may cause skin dryness or cracking.
R67- Vapours may cause drowsiness and dizziness.

Safety phrases: S24- Avoid contact with skin.
S37- Wear suitable gloves.

Statement of hazardous/dangerous nature: HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

Health effects are based on the uncured material.

3. Composition/information on ingredients

Mixture: Yes.

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>CAS number</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetone</td>
<td>67-64-1</td>
<td>&gt; 60</td>
</tr>
<tr>
<td>dibenzoyl peroxide</td>
<td>94-36-0</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Butylated hydroxytoluene</td>
<td>128-37-0</td>
<td>&lt;10</td>
</tr>
</tbody>
</table>

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

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.
4. First-aid measures

**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.

**Protection of first-aiders**: In case of major fire and large quantities: 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. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

**Advice to doctor**: No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

**Extinguishing media**

**Suitable**: Use dry chemical, CO₂, water spray (fog) or foam.

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

**Special exposure hazards**: 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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Highly flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

**Hazardous thermal decomposition products**: Decomposition products may include the following materials: carbon dioxide carbon monoxide

**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.

**Hazchem code**: •2YE

6. Accidental release measures

**Personal precautions**: Low release. For professional use only. Handling of product in very small amounts or in situations where release is highly unlikely

**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 for 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.
7. Handling and storage

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.

Storage: Store between the following temperatures: 2 to 12°C (35.6 to 53.6°F). Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Combustible liquid: Not applicable.

8. Exposure controls/personal protection

Occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetone</td>
<td>Safe Work Australia (Australia, 4/2013). STEL: 2375 mg/m³ 15 minutes. STEL: 1000 ppm 15 minutes. TWA: 1185 mg/m³ 8 hours. TWA: 500 ppm 8 hours.</td>
</tr>
<tr>
<td>dibenzoyl peroxide</td>
<td>Safe Work Australia (Australia, 4/2013). Skin sensitiser. TWA: 5 mg/m³ 8 hours.</td>
</tr>
<tr>
<td>Butylated hydroxytoluene</td>
<td>Safe Work Australia (Australia, 4/2013). TWA: 10 mg/m³ 8 hours.</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.

Exposure controls

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

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

Eyes: 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 or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Hands: 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.

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

Skin: No special measures are required for small quantities under normal and intended conditions of product use.
Bond 1® Dual Cure Activator

### 8. Exposure controls/personal protection

**Environmental exposure controls**: No special measures are required for small quantities under normal and intended conditions of product use.

### 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Liquid. [Clear.]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Yellowish./Yellow.</td>
</tr>
<tr>
<td>Odour</td>
<td>acetone</td>
</tr>
<tr>
<td>Boiling point</td>
<td>56°C (132.8°F)</td>
</tr>
<tr>
<td>Melting point</td>
<td>-95°C (-139°F)</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>24 kPa (180 mm Hg) [room temperature]</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.8</td>
</tr>
<tr>
<td>Flash point</td>
<td>Closed cup: -17.8°C (-0.04°F) [Acetone]</td>
</tr>
<tr>
<td>Flammable limits</td>
<td>Lower: 2.2%</td>
</tr>
<tr>
<td></td>
<td>Upper: 13%</td>
</tr>
<tr>
<td>Vapour density</td>
<td>2 [Air = 1]</td>
</tr>
<tr>
<td>pH</td>
<td>Not available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>465°C (869°F)</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in the following materials: cold water and hot water.</td>
</tr>
</tbody>
</table>

### 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**: Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
- **Materials to avoid**: Reactive or incompatible with the following materials: oxidizing materials, reducing materials, acids and alkalis. Ammonia. Amines. Phosphorous oxychloride. Chlorinated compounds.
- **Hazardous decomposition products**: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

### 11. Toxicological information

**Potential acute health effects**

- **Inhalation**: Vapours may cause drowsiness and dizziness.
- **Ingestion**: No known significant effects or critical hazards.
- **Skin contact**: Defatting to the skin. May cause skin dryness and irritation. May cause sensitisation by skin contact.
- **Eye contact**: Irritating to eyes.

**Acute toxicity**

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Australia
11. Toxicological information

### Product/ingredient name | Result | Species | Dose | Exposure | Observation
---|---|---|---|---|---
acetone | LC50 Inhalation Vapour | Rat | 76 mg/l | 4 hours | -
 | LC50 Inhalation Vapour | Rat | 30000 ppm | 4 hours | -
 | LD50 Dermal | Rabbit | >15800 mg/kg | - | -
 | LD50 Oral | Rat | 5800 mg/kg | - | -
 | LD50 Oral | Rat | 6400 mg/kg | - | -
 | LD50 Oral | Rat | 890 mg/kg | - | -

**Conclusion/Summary**: Based on the criteria of the protocol, this product is considered non-cytotoxic per ISO 10993-5.

### Potential chronic health effects

#### Chronic toxicity

**Conclusion/Summary**: Not available.

### 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>
</table>
acetone | Eyes - Mild irritant | Rabbit | - | 10 microliters | -
 | Eyes - Moderate irritant | Rabbit | - | 24 hours 20 milligrams | -
 | Eyes - Severe irritant | Rabbit | - | 20 milligrams | -
 | Skin - Mild irritant | Rabbit | - | 24 hours 500 milligrams | -
 | Skin - Mild irritant | Rabbit | - | 395 milligrams | -

dibenzoyl peroxide | Eyes - Mild irritant | Rabbit | - | 24 hours 500 milligrams | -

Butylated hydroxytoluene | Eyes - Moderate irritant | Rabbit | - | 48 hours 500 milligrams | -

**Conclusion/Summary**: Not available.

#### Sensitiser

**Conclusion/Summary**: Not available.

#### Carcinogenicity

**Conclusion/Summary**: Not available.

#### Mutagenicity

**Conclusion/Summary**: Not available.

#### Teratogenicity

**Conclusion/Summary**: Not available.

#### Reproductive toxicity

**Conclusion/Summary**: Not available.

#### Chronic effects

**Conclusion/Summary**: Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

#### Carcinogenicity

**Conclusion/Summary**: No known significant effects or critical hazards.

#### Mutagenicity

**Conclusion/Summary**: No known significant effects or critical hazards.

#### Teratogenicity

**Conclusion/Summary**: No known significant effects or critical hazards.

#### Developmental effects

**Conclusion/Summary**: No known significant effects or critical hazards.

#### Fertility effects

**Conclusion/Summary**: No known significant effects or critical hazards.

### Over-exposure signs/symptoms

- **Acetone**
  - **LC50 Inhalation Vapour**: Rat, 76 mg/l, 4 hours
  - **LD50 Oral**: Rat, >15800 mg/kg
  - **LD50 Dermal**: Rabbit, 5800 mg/kg

- **Dibenzoyl peroxide**
  - **LD50 Oral**: Rat, 6400 mg/kg

- **Butylated hydroxytoluene**
  - **LD50 Oral**: Rat, 890 mg/kg

**Conclusion/Summary**: Not available.
11. Toxicological information

**Inhalation**: Adverse symptoms may include the following:
- nausea or vomiting
- headache
- drowsiness/fatigue
- dizziness/vertigo

**Ingestion**: No specific data.

**Skin**: Adverse symptoms may include the following:
- irritation
- redness
- dryness
- cracking

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

**Target organs**: Contains material which may cause damage to the following organs: blood, kidneys, liver, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

12. Ecological information

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

### Aquatic ecotoxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acetone</strong></td>
<td>Acute EC50 20.565 mg/l Marine water</td>
<td>Algae - Ulva pertusa</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 6000000 μg/l Fresh water</td>
<td>Crustaceans - Gammarus pulex</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 10000 μg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 100 mg/l Fresh water</td>
<td>Fish - Pimephales promelas - Juvenile (Fledgling, Hatching, Weanling)</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 4.95 mg/l Marine water</td>
<td>Algae - Ulva pertusa</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.016 ml/L Fresh water</td>
<td>Crustaceans - Daphniidae</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.1 ml/L Fresh water</td>
<td>Daphnia - Daphnia magna - Neonate</td>
<td>21 days</td>
</tr>
<tr>
<td><strong>Butylated hydroxytoluene</strong></td>
<td>Acute EC50 0.77 mg/l Fresh water</td>
<td>Daphnia</td>
<td>48 hours</td>
</tr>
</tbody>
</table>

**Conclusion/Summary**: Not available.

### Other ecological information

#### 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><strong>Acetone</strong></td>
<td>OECD 301B Ready Biodegradability - CO2 Evolution Test 301D Ready Biodegradability - Closed Bottle Test</td>
<td>90.9 % - 28 days</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Butylated hydroxytoluene</strong></td>
<td>&lt;10 % - 20 days</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Conclusion/Summary**: Not available.

### Photolysis/Biodegradability

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Aquatic half-life</th>
<th>Photolysis</th>
<th>Biodegradability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acetone</strong></td>
<td>-</td>
<td>-</td>
<td>Readily</td>
</tr>
<tr>
<td><strong>Butylated hydroxytoluene</strong></td>
<td>-</td>
<td>-</td>
<td>Not readily</td>
</tr>
</tbody>
</table>
12. Ecological information

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>acetone</td>
<td>-0.23</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>dibenzoyl peroxide</td>
<td>3.2</td>
<td>-</td>
<td>high</td>
</tr>
<tr>
<td>Butylated hydroxytoluene</td>
<td>5.1</td>
<td>330 to 1800</td>
<td>high</td>
</tr>
</tbody>
</table>

Other adverse effects: No known significant effects or critical hazards.

13. Disposal considerations

Methods of disposal: The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

14. Transport information

International transport regulations

<table>
<thead>
<tr>
<th>Regulation</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>ADG</td>
<td>UN1090</td>
<td>ACETONE solution</td>
<td>3</td>
<td>II</td>
<td></td>
<td>Hazchem code -2YE</td>
</tr>
<tr>
<td>ADR</td>
<td>UN1090</td>
<td>ACETONE solution</td>
<td>3</td>
<td>II</td>
<td></td>
<td>Hazard identification number 33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Limited quantity 1 L</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tunnel code (D/E)</td>
</tr>
<tr>
<td>IMDG</td>
<td>UN1090</td>
<td>ACETONE solution</td>
<td>3</td>
<td>II</td>
<td></td>
<td>Emergency schedules (EmS) F-E, S-D</td>
</tr>
<tr>
<td>IATA</td>
<td>UN1090</td>
<td>Acetone solution</td>
<td>3</td>
<td>II</td>
<td></td>
<td>Passenger and Cargo Aircraft Quantity limitation: 5 L</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Packaging instructions: 353</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cargo Aircraft Only Quantity limitation: 60 L</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Packaging instructions: 364</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Limited Quantities - Passenger Aircraft Quantity limitation: 1 L</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Packaging instructions: Y341</td>
</tr>
</tbody>
</table>

PG*: Packing group
15 . Regulatory information

Standard Uniform Schedule of Medicine and Poisons
Not regulated.

Control of Scheduled Carcinogenic Substances

Australia inventory (AICS) : All components are listed or exempted.

EU Classification : F; R11
                 : Xi; R36
                 : R43, R66, R67

16 . Other information

Person who prepared the MSDS : IHS

Date of previous issue : No previous validation.
Date of issue/ Date of revision : 9/5/2014.
Version : 1

Indicates information that has changed from previously issued version.

Disclaimer

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.