# 1. IDENTIFICATION

<table>
<thead>
<tr>
<th><strong>Product Name</strong></th>
<th>TOKUYAMA SHIELD FORCE PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identified uses</strong></td>
<td>Protective sealant for treatment of hypersensitive dentin. For dental professionals only.</td>
</tr>
<tr>
<td><strong>Supplier</strong></td>
<td>Tokuyama Dental America Inc.</td>
</tr>
<tr>
<td><strong>Contact Person</strong></td>
<td><a href="http://www.tokuyama-dental.com/tdc/contact.html">http://www.tokuyama-dental.com/tdc/contact.html</a></td>
</tr>
<tr>
<td><strong>Manufacturer</strong></td>
<td>Tokuyama Dental Corporation</td>
</tr>
<tr>
<td><strong>Emergency Telephone</strong></td>
<td>California Poison Control System - San Francisco Division</td>
</tr>
<tr>
<td><strong>Supplier</strong></td>
<td>Tel: (877) 378 3548 (Toll-Free)</td>
</tr>
</tbody>
</table>

- **Tokuyama Dental Corporation**
  - 38-9, Taitou 1-chome, Taitou-ku, Tokyo
  - 110-0016, Japan
  - TEL: +81-3-3835-2261

- **California Poison Control System - San Francisco Division**
  - Bldg 5 Rm 2A21, 1001 Potrero Ave, San Francisco
  - Emergency telephone number: +1 800 222 1222
  - E-mail address: coadmin@calpoison.org
  - http://www.calpoison.org

- **Nationa Capital Poison Center**
  - 3201 New Mexico Ave, Ste 310, Washington DC
  - Emergency telephone number: +1 800 222 1222
  - Telephone number: +1 202 362 3867
  - Facsimile number: +1 202 362 8377
  - E-mail address: pc@poison.org
  - http://www.poison.org

## 2. HAZARD(S) IDENTIFICATION

<table>
<thead>
<tr>
<th><strong>Appearance</strong></th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Color</strong></td>
<td>Light green</td>
</tr>
<tr>
<td><strong>Odor</strong></td>
<td>Characteristic</td>
</tr>
</tbody>
</table>

- **GHS Pictogram**
  - ![](image)  
  - ![](image)  
  - ![](image)

- **Signal Word**
  - Danger

- **Hazard Statements**
  - H225 Highly flammable liquid and vapour.
  - H315 Causes skin irritation.
  - H317 May cause an allergic skin reaction.
  - H319 Causes serious eye irritation.
  - H336 May cause drowsiness or dizziness.
  - H361fd Suspected of damaging fertility or the unborn child.
  - H412 Harmful to aquatic life with long lasting effects.

- **Precautionary Statements**
  - P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
TOKUYAMA SHIELD FORCE PLUS

Use only outdoors or in a well-ventilated area.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.
Avoid breathing vapour/spray.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTER or doctor/physician if you feel unwell.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local regulations.

Contains

2-HYDROXYETHYL METHACRYLATE
bisphenol A di(2-hydroxy propoxy) dimethacrylate
diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
PROPAN-2-OL
triethylene glycol dimethacrylate

GHS Classification

Physical and Chemical Hazards Flam. Liq. 2 - H225
Human health Skin Irrit. 2 - H315; Eye Irrit. 2 - H319; Skin Sens. 1 - H317; Repr. 2 - H361fd; STOT SE 3 - H336
Environment Aquatic Chronic 3 - H412

Hazard Not Otherwise Classified (HNOC)
Not applicable.

OSHA Regulatory Status
This Product is Hazardous under the OSHA Hazard Communication Standard.

General Information
May cause irritation to the respiratory system. Solvent vapors are hazardous and may cause nausea, sickness and headaches. Vapors may cause drowsiness and dizziness. IF SWALLOWED: Slightly irritating. (DIGESTIVE SYSTEM.) The liquid is irritating to eyes and skin. Product has a defatting effect on skin. May cause sensitization by skin contact.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No.</th>
<th>GHS Classification</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-HYDROXYETHYL METHACRYLATE</td>
<td>868-77-9</td>
<td>Skin Irrit. 2 - H315; Eye Irrit. 2 - H319; Skin Sens. 1 - H317</td>
<td>10-30%</td>
</tr>
<tr>
<td>bisphenol A di(2-hydroxy propoxy) dimethacrylate</td>
<td>1585-94-2</td>
<td>Skin Sens. 1 - H317; Aquatic Chronic 3 - H412</td>
<td>10-20%</td>
</tr>
<tr>
<td>camphorquinone</td>
<td>10373-78-1</td>
<td>Skin Irrit. 2 - H315; Eye Irrit. 2 - H319; STOT SE 3 - H335</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>
## 4. FIRST-AID MEASURES

### Description of first aid measures

#### General Information
Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.

#### Inhalation
Move the exposed person to fresh air at once.
TOKUYAMA SHIELD FORCE PLUS

Ingestion
Immediately rinse mouth and drink plenty of water (200-300 ml). Get medical attention if any discomfort continues.

Skin Contact
Wash the skin immediately with soap and water.

Eye Contact
Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Contact physician if irritation persists.

Most important symptoms and effects, both acute and delayed

Inhalation
Irritating to respiratory system. Vapors may cause drowsiness and dizziness.

Ingestion
Slightly irritating. (DIGESTIVE SYSTEM.)

Skin Contact
Irritating to skin. Product has a defatting effect on skin. May cause sensitization by skin contact.

Eye Contact
Irritating and may cause redness and pain.

Indication of any immediate medical attention and special treatment needed

Notes To The Physician
CAUTION! First aid personnel must be aware of own risk during rescue! Wear suitable protective clothing.

5. FIRE-FIGHTING MEASURES

Auto Ignition Temperature (°C)
Not available.

Flammability Limit - Lower(%)  
Not available.

Flammability Limit - Upper(%)  
Not available.

Flash point (°C)  
20.0 °C

Extinguishing Media
Fire can be extinguished using: Foam. Carbon dioxide or dry powder.

Specific Hazards
When heated and in case of fire, irritating vapors/gases may be formed.

Special Fire Fighting Procedures
Avoid breathing fire vapors.

Protective Equipment For Fire-Fighters
Wear full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Wear protective clothing as described in Section 8 of this material safety data sheet.

Environmental Precautions
Do not discharge into drains, water courses or onto the ground.

Spill Clean Up Methods
Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate. Absorb in vermiculite, dry sand or earth and place into containers. Do not contaminate water sources or sewer.

Reference to other sections
For personal protection, see section 8.

7. HANDLING AND STORAGE

Handling
Do not handle until all safety precautions have been read and understood. All handling to take place in well-ventilated area.

Storage
Store under refrigerated conditions at temperatures between 0 to 10°C (32 to 50°F). Keep away from heat, direct sunlight, sparks and open flames.

Storage Class
Flammable liquid storage.
Specific end use(s)
The identified uses for this product are detailed in Section 1.2.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>STD</th>
<th>TWA (8-hrs)</th>
<th>STEL (15 min)</th>
<th>Notes</th>
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<tbody>
<tr>
<td>dibutyl hydroxy toluene</td>
<td>ACGIH</td>
<td>2 mg/m³</td>
<td></td>
<td>A4</td>
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<tr>
<td>PROPAN-2-OL</td>
<td>ACGIH</td>
<td>200 ppm</td>
<td>400 ppm</td>
<td>A4</td>
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<tr>
<td>PROPAN-2-OL</td>
<td>PEL</td>
<td>400 ppm</td>
<td>980 mg/m³</td>
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<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>IDLH</th>
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<tbody>
<tr>
<td>PROPAN-2-OL</td>
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</table>

ACGIH = American Conference of Governmental Industrial Hygienists.
A4: Not Classifiable as a Human Carcinogen.

Protective Equipment

Engineering Measures
Provide adequate general and local exhaust ventilation.

Respiratory Equipment
In case of inadequate ventilation use suitable respirator.

Hand Protection
Wear protective gloves.

Eye Protection
Wear approved safety goggles.

Other Protection
Wear appropriate clothing to prevent any possibility of skin contact.

Hygiene Measures
DO NOT SMOKE IN WORK AREA! Wash hands at the end of each work shift and before eating, smoking and using the toilet. Wash promptly with soap & water if skin becomes contaminated. Promptly remove any clothing that becomes contaminated. Use appropriate skin cream to prevent drying of skin. When using do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Light green</td>
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<tr>
<td>Odor</td>
<td>Characteristic</td>
</tr>
<tr>
<td>Solubility</td>
<td>No information available.</td>
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<tr>
<td>Initial boiling point and boiling range</td>
<td>Not available.</td>
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<tr>
<td>Melting point (°C)</td>
<td>Not available.</td>
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<tr>
<td>Relative density</td>
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<tr>
<td>Vapor density (air=1)</td>
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<tr>
<td>Vapor pressure</td>
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<tr>
<td>Evaporation rate</td>
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<tr>
<td>pH-Value, Conc. Solution</td>
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<tr>
<td>pH-Value, Diluted Solution</td>
<td>2.0</td>
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</tbody>
</table>
TOKUYAMA SHIELD FORCE PLUS

Viscosity
Not available.

Decomposition temperature (°C)
Not available.

Odour Threshold, Lower
Not available.

Odour Threshold, Upper
Not available.

Flash point
20.0 °C

Auto Ignition Temperature (°C)
Not available.

Flammability Limit - Lower(%)
Not available.

Flammability Limit - Upper(%)
Not available.

Partition Coefficient (N-Octanol/Water)
Not available.

Explosive properties
Not available.

Other Flammability
Not available.

Oxidising properties
Not available.

10. STABILITY AND REACTIVITY

Reactivity
No information available.

Stability
HIGHLY FLAMMABLE!
Hazardous reactions:
Not available.

Conditions To Avoid
Keep away from heat, sparks and open flame. Protect against direct sunlight.

Materials To Avoid
Strong oxidizing agents.

Hazardous Decomposition Products
Toxic gases are generated when heated.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:
Not available.

Skin Corrosion/Irritation:
Irritating to skin. Product has a defatting effect on skin.

Serious eye damage/irritation:
Irritating and may cause redness and pain.

Respiratory or skin sensitisation:
Respiratory sensitisation
Not available.

Skin sensitisation
May cause sensitization by skin contact.

Germ cell mutagenicity:
Not available.
TOKUYAMA SHIELD FORCE PLUS

Carcinogenicity:
IARC Carcinogenicity
Butylated hydroxytoluene (BHT), PROPA-2-OL: IARC Group 3  Not classifiable as to its carcinogenicity to humans.
NTP - Carcinogenicity
Not listed.
OSHA - Carcinogenicity
Not listed.

Reproductive Toxicity:
No information available.

Specific target organ toxicity - single exposure:
May cause irritation to the respiratory system. Vapors may cause drowsiness and dizziness.

Specific target organ toxicity - repeated exposure:
STOT - Repeated exposure
Not available.

Aspiration hazard:
Viscosity
Not available.

12. ECOLOGICAL INFORMATION

Ecotoxicity
The product contains a substance which is harmful to aquatic organisms and which may cause long term adverse effects in the aquatic environment.

Toxicity
No data available.

Degradability
No data available.

Bioaccumulative potential
No data available on bioaccumulation.

Partition coefficient
Not available.

Mobility:
No information available.

Results of PBT and vPvB assessment
This product does not contain any PBT or vPvB Substances.

Other adverse effects
Not known.

13. DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose of waste and residues in accordance with local authority requirements.

14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>UN No. (DOT/TDG)</th>
<th>1133</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN No. (IMDG)</td>
<td>1133</td>
</tr>
<tr>
<td>UN No. (ICAO)</td>
<td>1133</td>
</tr>
<tr>
<td>DOT Proper Shipping Name</td>
<td>ADHESIVES, CONTAINING A FLAMMABLE LIQUID</td>
</tr>
<tr>
<td>TDG Proper Shipping Name</td>
<td>ADHESIVES, CONTAINING A FLAMMABLE LIQUID</td>
</tr>
<tr>
<td>DOT Hazard Class</td>
<td>3</td>
</tr>
</tbody>
</table>

DOT Hazard Label
Flammable Liquid
TOKUYAMA SHIELD FORCE PLUS

TDG Class 3
TDG Label(s) 3
IMDG Class 3
ICAO Class 3
Transport Labels

DOT Pack Group II
IMDG Pack Group II
Air Pack Group II
Environmentally Hazardous Substance/Marine Pollutant No.

EMS F-E, S-D
Special precautions for user Not available.
Transport in Bulk according to Annex II of MARPOL 73/78 and the IBC Code Notes Not applicable.

15. REGULATORY INFORMATION

Regulatory Status (US)
This Product is Hazardous under the OSHA Hazard Communication Standard.
Regulatory References

US Federal Regulations
SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities
None of the ingredients are listed.
CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)
None of the ingredients are listed.
SARA Extremely Hazardous Substances EPCRA Reportable Quantities
None of the ingredients are listed.
SARA 313 Emission Reporting
The following ingredients are listed.
PROPAN-2-OL
CAA Accidental Release Prevention
None of the ingredients are listed.
SARA (311/312) Hazard Categories
Fire Acute Chronic
OSHA Highly Hazardous Chemicals
None of the ingredients are listed.

US State Regulations
California Proposition 65 Carcinogens and Reproductive Toxins
None of the ingredients are listed.
California Air Toxics "Hot Spots" (A-I)
The following ingredients are listed.
PROPAN-2-OL
California Air Toxics "Hot Spots" (A-II)
None of the ingredients are listed.
TOKUYAMA SHIELD FORCE PLUS

Massachusetts "Right To Know" List
The following ingredients are listed.
dibutyl hydroxy toluene
MEQUINOL
PROPAN-2-OL

Rhode Island "Right To Know" List
The following ingredients are listed.
dibutyl hydroxy toluene
MEQUINOL
PROPAN-2-OL

Minnesota "Right To Know" List
The following ingredients are listed.
dibutyl hydroxy toluene
MEQUINOL
PROPAN-2-OL

New Jersey "Right To Know" List
The following ingredients are listed.
dibutyl hydroxy toluene
MEQUINOL
PROPAN-2-OL

Pennsylvania "Right To Know" List
The following ingredients are listed.
dibutyl hydroxy toluene
MEQUINOL
PROPAN-2-OL

International Inventories

EU - EINECS/ELINCS
All ingredients are listed or exempt.

Canada – DSL/NDSL
All ingredients are listed or exempt.

US - TSCA
All ingredients are listed or exempt.

US – TSCA 12(b) Export Notification
None of the ingredients are listed.

16. OTHER INFORMATION

Revision Comments

<table>
<thead>
<tr>
<th>Revision Date</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/12/2018</td>
<td>3</td>
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</table>

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