1. IDENTIFICATION

Product Identifier
Product Name: Amalgambond Adhesive Agent

Other means of identification
SDS #: S374

Recommended use of the chemical and restrictions on use
Recommended Use: Dental Adhesive System.

Details of the supplier of the safety data sheet
Supplier Address: Parkell, Inc.
300 Executive Drive
Edgewood, NY 11717

Emergency Telephone Number
Company Phone Number: (631) 249-1134
Emergency Telephone (24 hr): INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Appearance: Clear, water-white liquid
Physical State: Liquid
Odor: Mild and pleasant

Classification

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

Hazards Not Otherwise Classified (HNOC)
May be harmful in contact with skin

Signal Word
Warning

Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace

Precautionary Statements - Response
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash it before reuse
If skin irritation or rash occurs: Get medical advice/attention

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Hydroxyethyl methacrylate</td>
<td>868-77-9</td>
<td>Proprietary</td>
</tr>
</tbody>
</table>

**If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.**

4. FIRST-AID MEASURES

First Aid Measures

Eye Contact
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Skin Contact
Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical advice/attention.

Inhalation
Remove to fresh air. Get medical attention if discomfort persists.

Ingestion
Do not induce vomiting without medical advice. Get immediate medical attention.

Most important symptoms and effects

Symptoms
Causes serious eye irritation. Causes skin irritation. May cause an allergic skin reaction. Prolonged exposure can lead to headaches, nausea, dizziness, and unconsciousness.

Indication of any immediate medical attention and special treatment needed

Notes to Physician
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Foam. Carbon dioxide (CO2). Dry chemical.

Unsuitable Extinguishing Media
Not determined.

Specific Hazards Arising from the Chemical
Vapors may travel to source of ignition and flash back. Heat can cause polymerization with rapid release of energy which may rupture the container explosively. Spontaneous polymerization may occur upon prolonged storage.

Hazardous Combustion Products
Carbon oxides.
Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Use water spray to cool exposed containers. Fight fire from safe distance/protected location.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Use personal protection recommended in Section 8.
For Emergency Responders Evacuate unprotected personnel from area. Remove all sources of ignition.
Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.
Methods for Clean-Up Contain and collect with an inert absorbent and place into an appropriate container for disposal. Do not release into sewers or waterways.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Use personal protection recommended in Section 8. Avoid contact with skin, eyes or clothing. Wash face, hands, and any exposed skin thoroughly after handling. Avoid breathing dust/fume/gas/mist/vapors/spray. Contaminated work clothing should not be allowed out of the workplace. Ground/bond container and receiving equipment. Use explosion proof equipment.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Check inhibitor levels every three months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Methoxyphenol</td>
<td>TWA: 5 mg/m³</td>
<td>(vacated) TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
<tr>
<td>150-76-5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appropriate engineering controls

Engineering Controls Ensure adequate ventilation, especially in confined areas. Eyewash stations. Showers.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Safety goggles or glasses.
Skin and Body Protection Impervious, neoprene gloves.
Respiratory Protection If necessary, use a self-contained breathing apparatus.
General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.
9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State  Liquid
Appearance  Clear, water-white liquid
Color  Water-white

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Melting Point/Freezing Point</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Boiling Point/Boiling Range</td>
<td>Not established</td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>&gt;300 °C / &gt;572 °F</td>
<td>Tag Closed Cup (butyl acetate = 1)</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>&gt;1</td>
<td></td>
</tr>
<tr>
<td>Flammability (Solid, Gas)</td>
<td>Liquid-not applicable</td>
<td></td>
</tr>
<tr>
<td>Upper Flammability Limits</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Lower Flammability Limit</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>0.1 mm HG</td>
<td></td>
</tr>
<tr>
<td>Vapor Density</td>
<td>&gt;1</td>
<td>(Air=1)</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.074</td>
<td>(Water = 1)</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Kinematic Viscosity</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Dynamic Viscosity</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>Not determined</td>
<td></td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
UNSTABLE.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization
Exposure to temperatures above 40°C (104°F), oxidizing agents, reducing agents, peroxides, or amines may cause hazardous polymerization to occur.

Conditions to Avoid

Incompatible Materials
Reducing agents. Oxidizing agents. UV light.

Hazardous Decomposition Products
Carbon oxides.
11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Causes serious eye irritation.

Skin Contact Causes skin irritation. May cause an allergic skin reaction. May be harmful in contact with skin.

Inhalation Avoid breathing vapors or mists.

Ingestion Do not ingest.

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Hydroxyethyl methacrylate</td>
<td>= 5050 mg/kg (Rat)</td>
<td>&gt; 3000 mg/kg (Rabbit)</td>
<td>-</td>
</tr>
<tr>
<td>868-77-9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-Methoxyphenol</td>
<td>= 1600 mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>150-76-5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization May cause an allergic skin reaction.

Carcinogenicity Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Numerical measures of toxicity
Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Hydroxyethyl methacrylate</td>
<td></td>
<td>213 - 242: 96 h Pimephales promelas mg/L LC50 flow-through 227: 96 h Pimephales promelas mg/L LC50</td>
<td>EC50 = 3.66 mg/L 5 min EC50 = 4.30 mg/L 15 min EC50 = 4.61 mg/L 30 min</td>
<td></td>
</tr>
<tr>
<td>868-77-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-Methoxyphenol</td>
<td></td>
<td>84.3: 96 h Pimephales promelas mg/L LC50 flow-through 28.5: 96 h Oncorhynchus mykiss mg/L LC50 flow-through</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150-76-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence/Degradaability
Not determined.
Bioaccumulation
Not determined.

Mobility

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Partition Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Hydroxyethyl methacrylate</td>
<td>0.47</td>
</tr>
<tr>
<td>868-77-9</td>
<td></td>
</tr>
<tr>
<td>4-Methoxyphenol</td>
<td>1.34</td>
</tr>
<tr>
<td>150-76-5</td>
<td></td>
</tr>
</tbody>
</table>

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes
Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging
Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

Note
Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT
Not regulated

IATA
Not regulated

IMDG
Not regulated

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>ENCS</th>
<th>IECSC</th>
<th>KECL</th>
<th>PICCS</th>
<th>AICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Hydroxyethyl methacrylate</td>
<td>Present</td>
<td>X</td>
<td></td>
<td>Present</td>
<td>Present</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances
US Federal Regulations

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Methoxyphenol</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>150-76-5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Special Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Not determined</td>
<td>0</td>
<td>1</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Physical Hazards</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not determined</td>
<td>Not determined</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

Issue Date: 21-Feb-2013
Revision Date: 13-Jan-2015
Revision Note: New format

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet
1. IDENTIFICATION

Product Identifier
Product Name Amalgambond Base

Other means of identification
SDS # S372
UN/ID No UN1247

Recommended use of the chemical and restrictions on use
Recommended Use Dental Adhesive System.

Details of the supplier of the safety data sheet
Supplier Address
Parkell, Inc.
300 Executive Drive
Edgewood, NY 11717

Emergency Telephone Number
Company Phone Number (631) 249-1134
Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Appearance Colorless, transparent liquid
Physical State Liquid

Classification

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>Category 1</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Flammable Liquids</td>
<td>Category 2</td>
</tr>
</tbody>
</table>

Hazards Not Otherwise Classified (HNOC)
May be harmful if inhaled

Signal Word
Danger

Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause respiratory irritation
Highly flammable liquid and vapor
Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof equipment
Use only non-sparking tools
Take precautionary measures against static discharge

Precautionary Statements - Response
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Get medical attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
If skin irritation or rash occurs: Get medical advice/attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Get medical advice / attention
IN CASE OF FIRE: Use CO2, dry chemical, or foam for extinction

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Harmful to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>80-62-6</td>
<td>Proprietary</td>
</tr>
</tbody>
</table>

**If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.**
4. FIRST-AID MEASURES

First Aid Measures

**Eye Contact**
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

**Skin Contact**
Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention.

**Inhalation**
Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion**
Do not induce vomiting without medical advice. Immediately call a poison center or doctor/physician.

Most important symptoms and effects

**Symptoms**
Causes serious eye irritation and skin irritation. May cause an allergic skin reaction. Ingestion may cause headache, dizziness, nausea, tinnitus, dyspnea, etc. Inhalation can cause irritation of the upper respiratory tract and mucous membranes; at high concentrations, can cause symptoms similar to those which may be experienced upon ingestion.

Indication of any immediate medical attention and special treatment needed

**Notes to Physician**
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**
Foam. Dry chemical. Carbon dioxide (CO2).

**Unsuitable Extinguishing Media**
Not determined.

**Specific Hazards Arising from the Chemical**
Highly flammable liquid and vapor. When exposed to flame, product emits toxic fumes and gases.

**Hazardous Combustion Products**
Carbon monoxide.

**Sensitivity to Static Discharge**
Take precautionary measures against static discharge.

6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

**Personal Precautions**
Use personal protection recommended in Section 8.

**For Emergency Responders**
Remove all sources of ignition. Ventilate the area.

**Environmental Precautions**
Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.
**Methods and material for containment and cleaning up**

**Methods for Containment**
Prevent further leakage or spillage if safe to do so.

**Methods for Clean-Up**
Absorb small quantities on paper towels. Evaporate in safe place such as a fume hood. Allow sufficient time for evaporating vapors to completely clear the hood duct work. Burn the paper in a suitable location away from combustible materials. Large quantities can be collected and burned in a suitable combustion chamber.

---

**7. HANDLING AND STORAGE**

**Precautions for safe handling**

**Advice on Safe Handling**
Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Avoid contact with skin, eyes or clothing. Wash face, hands, and any exposed skin thoroughly after handling. Avoid breathing dust/fume/gas/mist/vapors/spray. Contaminated work clothing should not be allowed out of the workplace. Use only outdoors or in a well-ventilated area. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion proof equipment. Use only non-sparking tools. Take precautionary measures against static discharges.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions**
Keep container tightly closed and store in a cool, dry and well-ventilated place. Do not store under pure nitrogen or sparge with nitrogen or oxygen-free gas. Store locked up.

**Incompatible Materials**
Polymerization catalysts such as peroxides, persulfates, light, heat, nitric acid and other strong oxidizers, ammonia and amines, and halogens and halogen compounds.

---

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Exposure Guidelines**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>STEL: 100 ppm</td>
<td>TWA: 100 ppm</td>
<td>IDLH: 1000 ppm</td>
</tr>
<tr>
<td>80-62-6</td>
<td>TWA: 50 ppm</td>
<td>TWA: 410 mg/m³</td>
<td>TWA: 100 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(vacated) TWA: 100 ppm</td>
<td>TWA: 410 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(vacated) TWA: 410 mg/m³</td>
<td>TWA: 100 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA: 100 ppm</td>
</tr>
<tr>
<td>Polymerizable Methacrylates</td>
<td>TWA: 5 mg/m³</td>
<td>(vacated) TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
</tbody>
</table>

**Appropriate engineering controls**

**Engineering Controls**
Ensure adequate ventilation, especially in confined areas. Eyewash stations. Showers.

**Individual protection measures, such as personal protective equipment**

**Eye/Face Protection**
Safety glasses or full face shield.

**Skin and Body Protection**
Rubber or PVC gloves.

**Respiratory Protection**
NIOSH-approved respiratory protection for organic gases if needed.

**General Hygiene Considerations**
Handle in accordance with good industrial hygiene and safety practice.
### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical State</strong></td>
<td>Liquid</td>
<td></td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
<td>Colorless, transparent liquid</td>
<td></td>
</tr>
<tr>
<td><strong>Odor</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>Odor Threshold</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>Melting Point/Freezing Point</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>Boiling Point/Boiling Range</strong></td>
<td>101 °C / 214 °F</td>
<td></td>
</tr>
<tr>
<td><strong>Flash Point</strong></td>
<td>10 °C / 50 °F</td>
<td>Tag Closed Cup</td>
</tr>
<tr>
<td><strong>Evaporation Rate</strong></td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td><strong>Flammability (Solid, Gas)</strong></td>
<td>Liquid-not applicable</td>
<td></td>
</tr>
<tr>
<td><strong>Upper Flammability Limits</strong></td>
<td>8.2%</td>
<td></td>
</tr>
<tr>
<td><strong>Lower Flammability Limit</strong></td>
<td>1.7%</td>
<td></td>
</tr>
<tr>
<td><strong>Vapor Pressure</strong></td>
<td>40 mm HG</td>
<td></td>
</tr>
<tr>
<td><strong>Vapor Density</strong></td>
<td>3.45 (Air=1)</td>
<td></td>
</tr>
<tr>
<td><strong>Specific Gravity</strong></td>
<td>0.944 (Water = 1)</td>
<td></td>
</tr>
<tr>
<td><strong>Water Solubility</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>Solubility in other solvents</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>Partition Coefficient</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>Auto-ignition Temperature</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>Decomposition Temperature</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>Kinematic Viscosity</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>Dynamic Viscosity</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>Explosive Properties</strong></td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td><strong>Oxidizing Properties</strong></td>
<td>Not determined</td>
<td></td>
</tr>
</tbody>
</table>

### 10. STABILITY AND REACTIVITY

**Reactivity**
Not reactive under normal conditions.

**Chemical Stability**
Stable under recommended storage conditions.

**Possibility of Hazardous Reactions**
None under normal processing.

*Hazardous Polymerization*  
Hazardous polymerization may occur, especially when heated or catalyzed.

**Conditions to Avoid**

**Incompatible Materials**
Polymerization catalysts such as peroxides, persulfates, light, heat, nitric acid and other strong oxidizers, ammonia and amines, and halogens and halogen compounds.

**Hazardous Decomposition Products**
Thermal-oxidative degradation can produce toxic and corrosive materials, including carbon monoxide.
11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Causes serious eye irritation.

Skin Contact Causes skin irritation. May cause an allergic skin reaction.

Inhalation May cause respiratory irritation. May be harmful if inhaled.

Ingestion Do not ingest.

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate 80-62-6</td>
<td>= 7872 mg/kg (Rat)</td>
<td>&gt; 5 g/kg (Rabbit)</td>
<td>= 4632 ppm (Rat) 4 h = 400 ppm (Rat) 1 h</td>
</tr>
<tr>
<td>Polymerizable Methacrylates</td>
<td>= 1600 mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization May cause an allergic skin reaction.

Carcinogenicity Group 3 IARC components are "not classifiable as human carcinogens".

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate 80-62-6</td>
<td></td>
<td>Group 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend

IARC (International Agency for Research on Cancer)
Group 3 IARC components are "not classifiable as human carcinogens"

STOT - single exposure May cause respiratory irritation.

Numerical measures of toxicity
Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity
Harmful to aquatic life with long lasting effects.
Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>170: 96 h</td>
<td>Pimephales promelas mg/L LC50 flow-through 125.5 - 190.7: 96 h Pimephales promelas mg/L LC50 static 170 - 206: 96 h Lepomis macrochirus mg/L LC50 flow-through 153.9 - 341.8: 96 h Lepomis macrochirus mg/L LC50 static 79: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 79: 96 h Oncorhynchus mykiss mg/L LC50 static 326.4 - 426.9: 96 h Poecilia reticulata mg/L LC50 static</td>
<td>243 - 275: 96 h Pimephales promelas mg/L LC50 flow-through</td>
<td>69: 48 h Daphnia magna mg/L EC50</td>
</tr>
<tr>
<td>Methyl methacrylate</td>
<td>80-62-6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polymerizable Methacrylates</td>
<td>84.3: 96 h</td>
<td>Pimephales promelas mg/L LC50 flow-through 28.5: 96 h Oncorhynchus mykiss mg/L LC50 flow-through</td>
<td>80-62-6</td>
<td></td>
</tr>
<tr>
<td>Polymerizable Methacrylates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Partition Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>0.7</td>
</tr>
<tr>
<td>80-62-6</td>
<td></td>
</tr>
<tr>
<td>Polymerizable Methacrylates</td>
<td>1.34</td>
</tr>
</tbody>
</table>

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes
Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging
Disposal should be in accordance with applicable regional, national and local laws and regulations.

US EPA Waste Number

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>RCRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>U162</td>
</tr>
<tr>
<td>80-62-6</td>
<td></td>
</tr>
</tbody>
</table>

California Hazardous Waste Status

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Hazardous Waste Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>Toxic</td>
</tr>
<tr>
<td>80-62-6</td>
<td>Ignitable</td>
</tr>
</tbody>
</table>
14. TRANSPORT INFORMATION

**Note**
Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

**DOT**
- **UN/ID No**: UN1247
- **Proper Shipping Name**: Methyl methacrylate monomer, stabilized
- **Hazard Class**: 3
- **Packing Group**: II

**IATA**
- **UN/ID No**: UN1247
- **Proper Shipping Name**: Methyl methacrylate monomer, stabilized
- **Hazard Class**: 3
- **Packing Group**: II

**IMDG**
- **UN/ID No**: UN1247
- **Proper Shipping Name**: Methyl methacrylate monomer, stabilized
- **Hazard Class**: 3
- **Packing Group**: II
- **Marine Pollutant**: This material may meet the definition of a marine pollutant

15. REGULATORY INFORMATION

**International Inventories**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>ENCS</th>
<th>IECSC</th>
<th>KECL</th>
<th>PICCS</th>
<th>AICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>Present</td>
<td>X</td>
<td></td>
<td>Present</td>
<td>Present</td>
<td>X</td>
<td>Present</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- **TSCA**: United States Toxic Substances Control Act Section 8(b) Inventory
- **DSL/NDSL**: Canadian Domestic Substances List/Non-Domestic Substances List
- **EINECS/ELINCS**: European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
- **ENCS**: Japan Existing and New Chemical Substances
- **IECSC**: China Inventory of Existing Chemical Substances
- **KECL**: Korean Existing and Evaluated Chemical Substances
- **PICCS**: Philippines Inventory of Chemicals and Chemical Substances
- **AICS**: Australian Inventory of Chemical Substances

**US Federal Regulations**

**CERCLA**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Hazardous Substances RQs</th>
<th>CERCLA/SARA RQ</th>
<th>Reportable Quantity (RQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>1000 lb</td>
<td></td>
<td>RQ 1000 lb final RQ</td>
</tr>
<tr>
<td>80-62-6</td>
<td></td>
<td></td>
<td>RQ 454 kg final RQ</td>
</tr>
</tbody>
</table>

**SARA 313**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate - 80-62-6</td>
<td>80-62-6</td>
<td>Proprietary</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**CWA (Clean Water Act)**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>1000 lb</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl methacrylate</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>80-62-6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polymerizable Methacrylates</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Special Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td>3</td>
<td>2</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Physical Hazards</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not determined</td>
<td>Not determined</td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

Issue Date: 21-Feb-2013
Revision Date: 13-Jan-2015
Revision Note: New format

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet
1. IDENTIFICATION

Product Identifier
Product Name Amalgambond Dentin Activator

Other means of identification
SDS # S394
UN/ID No UN2582

Recommended use of the chemical and restrictions on use
Recommended Use Dental Adhesive System.

Details of the supplier of the safety data sheet
Supplier Address Parkell, Inc.
300 Executive Drive
Edgewood, NY 11717

Emergency Telephone Number
Company Phone Number (631) 249-1134
Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Appearance Green-yellow, thick liquid
Physical State Liquid

Classification
Skin corrosion/irritation Category 1 Sub-category C
Serious eye damage/eye irritation Category 1
Flammable Liquids Category 3

Hazards Not Otherwise Classified (HNOC)
May be harmful if swallowed

Signal Word
Danger

Hazard Statements
Causes severe skin burns and eye damage
Flammable liquid and vapor
Precautionary Statements - Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof equipment
Use only non-sparking tools
Take precautionary measures against static discharge

Precautionary Statements - Response
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a poison center or doctor/physician
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
If skin irritation persists: Get medical advice/attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a poison center or doctor/physician
IF SWALLOWED: Call a poison center or doctor/physician
Rinse mouth
Do not induce vomiting
IN CASE OF FIRE: Use CO2, dry chemical, or foam for extinction

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric Acid</td>
<td>77-92-9</td>
<td>Proprietary</td>
</tr>
<tr>
<td>Iron(III) Chloride, Ferric Chloride</td>
<td>7705-08-0</td>
<td>Proprietary</td>
</tr>
</tbody>
</table>

*If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.*

4. FIRST-AID MEASURES

First Aid Measures

Eye Contact  
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

Skin Contact  
Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If irritation persists, seek medical attention.

Inhalation  
Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Immediately call a poison center or doctor/physician.

Ingestion  
Do not induce vomiting. If substantial quantities are ingested, give person 2 or 3 glasses of milk or water to drink. Get medical attention.
Most important symptoms and effects

Symptoms
Causes severe skin burns and eye damage. Inhalation is not a hazard unless misted or heated at high temperature. Mist inhalation may cause coughing or sneezing. May be irritating to the mouth, throat and stomach.

Indication of any immediate medical attention and special treatment needed

Notes to Physician
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Alcohol resistant foam. Carbon dioxide (CO2). Dry chemical.

Unsuitable Extinguishing Media
Not determined.

Specific Hazards Arising from the Chemical
Flammable liquid and vapor. When exposed to flame, product emits toxic fumes and gases.

Sensitivity to Static Discharge
Take precautionary measures against static discharge.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions
Use personal protection recommended in Section 8.

Environmental Precautions
Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment
Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up
For small spills and residues, absorb with paper towels. Pick up and place in polyolefin bottle for disposal. Flush spill area with water.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling
Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Avoid contact with skin, eyes or clothing. Wash face, hands, and any exposed skin thoroughly after handling. Do not breathe dust/fume/gas/mist/vapors/spray. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion proof equipment. Use only non-sparking tools. Take precautionary measures against static discharges.

Conditions for safe storage, including any incompatibilities

Storage Conditions
Keep container tightly closed and store in a cool, dry and well-ventilated place. Store away from direct sunlight. Store locked up.

Incompatible Materials
Bases. Strong alkalis.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric Acid 77-92-9</td>
<td>-</td>
<td>15 mg/m³ (Total)</td>
<td>-</td>
</tr>
<tr>
<td>Iron(III) Chloride, Ferric Chloride 7705-08-0</td>
<td>TWA: 1 mg/m³ Fe</td>
<td>(vacated) TWA: 1 mg/m³ Fe</td>
<td>TWA: 1 mg/m³ Fe</td>
</tr>
</tbody>
</table>

Appropriate engineering controls

Engineering Controls
Ensure adequate ventilation, especially in confined areas. Eyewash stations. Showers.

Individual protection measures, such as personal protective equipment

Eye/Face Protection
Wear chemical safety goggles or glasses. Do not wear contact lenses.

Skin and Body Protection
Wear protective gloves and protective clothing.

Respiratory Protection
No protection is ordinarily required under normal conditions of use and with adequate ventilation.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Green-yellow, thick liquid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Green-yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melting Point/Freezing Point</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiling Point/Boiling Range</td>
<td>100 °C / 212 °F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>&gt;38 °C / &gt;100 °F</td>
<td>Tag Closed Cup</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not established</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flammability (Solid, Gas)</td>
<td>Liquid-Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Flammability Limits</td>
<td>Not established</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Flammability Limit</td>
<td>Not established</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not established</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not established</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>Not established</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kinematic Viscosity</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic Viscosity</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

   Hazardous Polymerization   Hazardous polymerization does not occur.

Conditions to Avoid
Keep separated from incompatible substances. Keep out of reach of children.

Incompatible Materials
Bases. Strong alkalis.

Hazardous Decomposition Products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

   Eye Contact   Causes severe eye damage.
   Skin Contact  Causes severe skin burns.
   Inhalation    Avoid breathing vapors or mists.
   Ingestion     May be harmful if swallowed.

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyvinyl alcohol</td>
<td>&gt; 20 g/kg  ( Rat )</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9002-89-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Citric Acid</td>
<td>= 3000 mg/kg  ( Rat )</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>77-92-9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron(III) Chloride, Ferric Chloride</td>
<td>= 316 mg/kg  ( Rat )</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7705-08-0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Information on physical, chemical and toxicological effects

Symptoms
Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity
Group 3 IARC components are "not classifiable as human carcinogens".

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyvinyl alcohol</td>
<td></td>
<td>Group 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9002-89-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend
- IARC (International Agency for Research on Cancer)
  Group 3 IARC components are "not classifiable as human carcinogens"

Numerical measures of toxicity
Not determined
12. ECOLOGICAL INFORMATION

Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric Acid 77-92-9</td>
<td></td>
<td>1516: 96 h Lepomis macrochirus mg/L LC50 static</td>
<td>120: 72 h Daphnia magna mg/L EC50</td>
<td></td>
</tr>
<tr>
<td>Iron(III) Chloride, Ferric Chloride 7705-08-0</td>
<td></td>
<td>75.6: 96 h Gambusia affinis mg/L LC50 static 20.26: 96 h Lepomis macrochirus mg/L LC50 semi-static 20.95 - 22.56: 96 h Pimephales promelas mg/L LC50 semi-static</td>
<td>27.9: 48 h Daphnia magna mg/L EC50 9.6: 48 h Daphnia magna mg/L EC50 Static</td>
<td></td>
</tr>
</tbody>
</table>

Persistence/Degradability

Not determined.

Bioaccumulation

Not determined.

Mobility

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Partition Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric Acid 77-92-9</td>
<td>-1.72</td>
</tr>
<tr>
<td>Iron(III) Chloride, Ferric Chloride 7705-08-0</td>
<td>-4</td>
</tr>
</tbody>
</table>

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

California Hazardous Waste Status

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Hazardous Waste Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Chloride, Ferric Chloride 7705-08-0</td>
<td>Toxic Corrosive</td>
</tr>
</tbody>
</table>
14. TRANSPORT INFORMATION

Note
Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT
- UN/ID No: UN2582
- Proper Shipping Name: Ferric chloride solution
- Hazard Class: 8
- Packing Group: III

IATA
- UN/ID No: UN2582
- Proper Shipping Name: Ferric chloride solution
- Hazard Class: 8
- Packing Group: III

IMDG
- UN/ID No: UN2582
- Proper Shipping Name: Ferric chloride solution
- Hazard Class: 8
- Packing Group: III

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>ENCS</th>
<th>IECSC</th>
<th>KECL</th>
<th>PICCS</th>
<th>AICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric Acid</td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Present</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron(III) Chloride, Ferric Chloride</td>
<td>Present</td>
<td>X</td>
<td></td>
<td>Present</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- **TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
- **DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
- **EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
- **ENCS** - Japan Existing and New Chemical Substances
- **IECSC** - China Inventory of Existing Chemical Substances
- **KECL** - Korean Existing and Evaluated Chemical Substances
- **PICCS** - Philippines Inventory of Chemicals and Chemical Substances
- **AICS** - Australian Inventory of Chemical Substances

US Federal Regulations

CERCLA

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Hazardous Substances RQs</th>
<th>CERCLA/SARA RQ</th>
<th>Reportable Quantity (RQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Chloride, Ferric Chloride</td>
<td>1000 lb</td>
<td></td>
<td>RQ 1000 lb final RQ</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RQ 454 kg final RQ</td>
</tr>
</tbody>
</table>

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

CWA (Clean Water Act)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Chloride, Ferric Chloride</td>
<td>1000 lb</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Chloride, Ferric Chloride</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7705-08-0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Special Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not determined</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Not determined</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Physical Hazards</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not determined</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Not determined</td>
<td></td>
</tr>
</tbody>
</table>

Issue Date: 21-Feb-2013
Revision Date: 13-Jan-2015
Revision Note: New format

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet
1. IDENTIFICATION

Product Identifier
Product Name Amalgambond HPA Powder

Other means of identification
SDS # S376

Recommended use of the chemical and restrictions on use
Recommended Use Dental Adhesive System.

Details of the supplier of the safety data sheet
Supplier Address Parkell, Inc.
300 Executive Drive
Edgewood, NY 11717

Emergency Telephone Number

Company Phone Number (631) 249-1134
Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Appearance Tan powder
Physical State Solid

Classification
This chemical does not meet the hazardous criteria set forth by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymethylmethacrylate (PMMA)</td>
<td>Proprietary</td>
<td>Proprietary</td>
</tr>
</tbody>
</table>

**If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.**

4. FIRST-AID MEASURES

First Aid Measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention if irritation occurs.
Skin Contact Wash off immediately with plenty of water.
Inhalation Remove to fresh air. Get medical attention for any breathing difficulty.
Ingestion Clean mouth with water and drink afterwards plenty of water.
Most important symptoms and effects

Symptoms
Direct contact with eyes may cause temporary irritation.

Indication of any immediate medical attention and special treatment needed

Notes to Physician
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Unsuitable Extinguishing Media
Not determined.

Specific Hazards Arising from the Chemical
Combustion products may be toxic.

Hazardous Combustion Products
Carbon monoxide. Carbon dioxide (CO2).

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions
Use personal protection recommended in Section 8.

Environmental Precautions
Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment
Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up
Sweep up and shovel into suitable containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling
Handle in accordance with good industrial hygiene and safety practice. Use personal protection recommended in Section 8. Avoid contact with skin, eyes or clothing.

Conditions for safe storage, including any incompatibilities

Storage Conditions
Keep container tightly closed and store in a cool, dry and well-ventilated place. Store away from other materials which may cause cross-contamination.

Incompatible Materials
None known based on information supplied.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zirconium Oxide</td>
<td>STEL: 10 mg/m³ Zr TWA: 5 mg/m³ Zr</td>
<td>TWA: 5 mg/m³ Zr (vacated) TWA: 5 mg/m³ Zr (vacated) STEL: 10 mg/m³ Zr</td>
<td>IDLH: 25 mg/m³ Zr TWA: 5 mg/m³ except Zirconium tetrachloride Zr STEL: 10 mg/m³ Zr</td>
</tr>
</tbody>
</table>

Appropriate engineering controls

- **Engineering Controls**: Ensure adequate ventilation, especially in confined areas. Eyewash stations. Showers.

Individual protection measures, such as personal protective equipment

- **Eye/Face Protection**: Use safety glasses.
- **Skin and Body Protection**: Use rubber or PVC gloves.
- **Respiratory Protection**: No protection is ordinarily required under normal conditions of use and with adequate ventilation.

**General Hygiene Considerations**: Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Melting Point/Freezing Point</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Boiling Point/Boiling Range</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Flammability (Solid, Gas)</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Upper Flammability Limits</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Lower Flammability Limit</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.96</td>
<td>(Water = 1)</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Nil</td>
<td></td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Kinematic Viscosity</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Dynamic Viscosity</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>Not determined</td>
<td></td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization
Hazardous polymerization does not occur.

Conditions to Avoid
Keep out of reach of children.

Incompatible Materials
None known based on information supplied.

Hazardous Decomposition Products
Carbon monoxide. Carbon dioxide (CO2).

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact
Avoid contact with eyes.

Skin Contact
Avoid contact with skin.

Inhalation
Avoid inhalation of dust.

Ingestion
Do not ingest.

Component Information
Not available

Information on physical, chemical and toxicological effects

Symptoms
Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity
Group 3 IARC components are "not classifiable as human carcinogens".

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymethylmethacrylate (PMMA)</td>
<td></td>
<td>Group 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend
IARC (International Agency for Research on Cancer)
Group 3 IARC components are "not classifiable as human carcinogens"

Numerical measures of toxicity
Not determined
12. ECOLOGICAL INFORMATION

Ecotoxicity
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Component Information
Not available

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility
Not determined

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes
Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging
Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

Note
Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT
Not regulated

IATA
Not regulated

IMDG
Not regulated

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>ENCS</th>
<th>IECSC</th>
<th>KECL</th>
<th>PICCS</th>
<th>AICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymethylmethacrylate (PMMA)</td>
<td>Present</td>
<td>X</td>
<td></td>
<td>Present</td>
<td></td>
<td>X</td>
<td>Present</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:

- **TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
- **DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
- **EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
- **ENCS** - Japan Existing and New Chemical Substances
- **IECSC** - China Inventory of Existing Chemical Substances
- **KECL** - Korean Existing and Evaluated Chemical Substances
- **PICCS** - Philippines Inventory of Chemicals and Chemical Substances
- **AICS** - Australian Inventory of Chemical Substances
US Federal Regulations

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zirconium Oxide</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>1314-23-4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

NFPA
- Health Hazards: 0
- Flammability: 0
- Instability: 0
- Special Hazards: Not determined

HMIS
- Health Hazards: Not determined
- Flammability: Not determined
- Physical Hazards: Not determined
- Personal Protection: Not determined

Issue Date: 21-Feb-2013
Revision Date: 13-Jan-2015
Revision Note: New format

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End of Safety Data Sheet
1. IDENTIFICATION

**Product Identifier**
**Product Name** 4-Meta Universal Catalyst-V

**Other means of identification**
**SDS #** S371

**Recommended use of the chemical and restrictions on use**
**Recommended Use** Dental Adhesive System.

**Details of the supplier of the safety data sheet**
**Supplier Address**
Parkell, Inc.
300 Executive Drive
Edgewood, NY 11717

**Emergency Telephone Number**
**Company Phone Number** (631) 249-1134
**Emergency Telephone (24 hr)** INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

**Appearance** Colorless, transparent liquid  **Physical State** Liquid  **Odor** Like n-butanol

**Classification**
- Acute toxicity - Oral Category 4
- Acute toxicity - Dermal Category 4
- Skin corrosion/irritation Category 1 Sub-category B
- Serious eye damage/eye irritation Category 1
- Pyrophoric Liquids Category 1
- Substances or mixtures which, in contact with water, emit flammable gases Category 2

**Signal Word** Danger

**Hazard Statements**
- Harmful if swallowed
- Harmful in contact with skin
- Causes severe skin burns and eye damage
- Catches fire spontaneously if exposed to air
- In contact with water releases flammable gases
Precautionary Statements - Prevention
Wear protective gloves/protective clothing/eye protection/face protection
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Do not allow contact with air
Do not allow contact with water
Handle under inert gas

Precautionary Statements - Response
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a poison center or doctor/physician
Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages
Wash contaminated clothing before reuse
If irritation develops or persists seek medical attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a poison center or doctor/physician
IF SWALLOWED: Call a poison center or doctor/physician
Rinse mouth
Do not induce vomiting
IN CASE OF FIRE: Use CO2, dry chemical, or foam for extinguition

Precautionary Statements - Storage
Store locked up
Store in a dry place. Store in a closed container
Store contents under inert gas

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>tri-n-butylborane (TBB)</td>
<td>122-56-5</td>
<td>Proprietary</td>
</tr>
<tr>
<td>Tributyl Borate</td>
<td>688-74-4</td>
<td>Proprietary</td>
</tr>
</tbody>
</table>

*If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.*

4. FIRST-AID MEASURES

First Aid Measures

**Eye Contact**
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

**Skin Contact**
Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. Wash contaminated clothing before reuse. Get medical attention if irritation develops or persists.

**Inhalation**
Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Immediately call a poison center or doctor/physician.

**Ingestion**
Rinse mouth. Do not induce vomiting. Promptly drink several glasses of water or milk to dilute. Get medical attention.
Most important symptoms and effects

**Symptoms**
Causes severe skin burns and eye damage. May be irritating to the mouth, throat and stomach. Can cause respiratory tract irritation; may cause dizziness, dullness, headache. Higher concentrations can produce central nervous system depression and narcosis.

**Indication of any immediate medical attention and special treatment needed**

**Notes to Physician**
Treat symptomatically.

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5. **FIRE-FIGHTING MEASURES**

**Suitable Extinguishing Media**

**Unsuitable Extinguishing Media**
Not determined.

**Specific Hazards Arising from the Chemical**
Highly flammable liquid, reactive with water and air to generate heat and flammable gases.

**Hazardous Combustion Products**
Flammable gas and toxic gas may be released by reaction with water or air.

**Protective equipment and precautions for firefighters**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

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6. **ACCIDENTAL RELEASE MEASURES**

**Personal precautions, protective equipment and emergency procedures**

**Personal Precautions**
Use personal protection recommended in Section 8.

**For Emergency Responders**
Remove all sources of ignition. Ventilate the area.

**Environmental Precautions**
Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

**Methods and material for containment and cleaning up**

**Methods for Containment**
Prevent further leakage or spillage if safe to do so.

**Methods for Clean-Up**
Contain and collect with an inert absorbent and place into an appropriate container for disposal.

**Prevention of Secondary Hazards**
Contents may develop pressure by decomposition.

---

7. **HANDLING AND STORAGE**

**Precautions for safe handling**

**Advice on Safe Handling**
Handle in accordance with good industrial hygiene and safety practice. Use personal protection recommended in Section 8. Avoid contact with skin, eyes or clothing. Wash face, hands, and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust/fume/gas/mist/vapors/spray. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Do not allow contact with water or air. Handle under inert gas. Protect from moisture. Protect container from physical damage.
Conditions for safe storage, including any incompatibilities

Storage Conditions
Store in a tightly closed container in a dry, dark, and well-ventilated area at a cool (5-30°C / 41-86°F) and stable temperature. Store away from ignition sources and flammable solids with large surface areas such as guaze and cotton. Store locked up.

Incompatible Materials
Strong oxidizers. Halogenated hydrocarbons. Flammable solids with large surface areas such as gauze or cotton.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines
No exposure limits noted for ingredient(s). The following information is given as general guidance.

Appropriate engineering controls

Engineering Controls
Ensure adequate ventilation, especially in confined areas. Eyewash stations. Showers.

Individual protection measures, such as personal protective equipment

Eye/Face Protection
Use safety glasses or chemical splash goggles.

Skin and Body Protection
Use impervious protective gloves to prevent skin contact.

Respiratory Protection
No protection is ordinarily required under normal conditions of use and with adequate ventilation.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
<td>Odor</td>
<td>Like n-butanol</td>
</tr>
<tr>
<td>Appearance</td>
<td>Colorless, transparent liquid</td>
<td>Odor Threshold</td>
<td>Not determined</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless, transparent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melting Point/Freezing Point</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiling Point/Boiling Range</td>
<td>56 °C / 133 °F</td>
<td>(acetone)</td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>Unknown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flammability (Solid, Gas)</td>
<td>Liquid-not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Flammability Limits</td>
<td>13% (acetone)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Flammability Limit</td>
<td>2% (acetone)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not known</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not known</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>approx. 0.8</td>
<td></td>
<td>(Water = 1)</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Decomposes, partly soluble</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kinematic Viscosity</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic Viscosity</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Reacts with water or air.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization
Hazardous polymerization does not occur.

Conditions to Avoid
Keep separated from incompatible substances. Avoid temperatures beyond 30°C (86°F), refrigeration, fluctuating temperature, direct sunlight, and ignition sources. Keep out of reach of children.

Incompatible Materials
Strong oxidizers. Halogenated hydrocarbons. Flammable solids with large surface areas such as gauze or cotton.

Hazardous Decomposition Products
Carbon monoxide, butanol, boron oxide, and borane.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact
Causes severe eye damage.

Skin Contact
Causes severe skin burns. Harmful in contact with skin.

Inhalation
Avoid breathing vapors or mists.

Ingestion
Harmful if swallowed.

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>tri-n-butylborane (TBB) 122-56-5</td>
<td>= 1125 mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Information on physical, chemical and toxicological effects

Symptoms
Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity
Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Numerical measures of toxicity
Not determined
12. ECOLOGICAL INFORMATION

Ecotoxicity
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Component Information
Not available

Persistence/Degradability
Not determined.

Bioaccumulation
Not determined.

Mobility
Not determined

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes
Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging
Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

Note
Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT
Please contact manufacturer for most current information

IATA
Please contact manufacturer for most current information

IMDG
Please contact manufacturer for most current information

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDLS</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>ENCS</th>
<th>IECSC</th>
<th>KECL</th>
<th>PICCS</th>
<th>AICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>tri-n-butylborane (TBB)</td>
<td>Present</td>
<td>X</td>
<td>Present</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tributyl Borate</td>
<td>Present</td>
<td>X</td>
<td>Present</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<td></td>
</tr>
</tbody>
</table>

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDLS - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances
US Federal Regulations

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributyl Borate 688-74-4</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Special Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not determined</td>
<td>Not determined</td>
<td>Not determined</td>
<td>Not determined</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Physical Hazards</th>
<th>Personal Protection</th>
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<tbody>
<tr>
<td></td>
<td>Not determined</td>
<td>Not determined</td>
<td>Not determined</td>
<td>Not determined</td>
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Issue Date: 23-Apr-2013
Revision Date: 13-Jan-2015
Revision Note: New format

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet