Material Safety Data Sheet
Tris Borate EDTA, TBE

Section 1 - Chemical Product and Company Identification

MSDS Name: Tris Borate EDTA, TBE
Company Name: KERAFAST
Address: 391 TECHNOLOGY WAY, SUITE 168
City: WINSTON-SALEM
State: NC
ZIP: 27101
Country: US
Info Phone Num: 617-336-3228/1-800-546-1760
Emergency Phone Num: 617-336-3228

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>7732-18-5</td>
<td>Water</td>
</tr>
<tr>
<td>77-86-1</td>
<td>Tris (hydroxymethyl) aminomethane</td>
</tr>
<tr>
<td>10043-35-3</td>
<td>Boric acid</td>
</tr>
<tr>
<td>60-00-4</td>
<td>Ethylenediaminetetraacetic acid (EDTA)</td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Appearance: Clear liquid.
Caution! May cause eye and skin irritation. May cause respiratory and digestive tract irritation. May cause central nervous system effects. May cause kidney damage. May cause adverse reproductive effects based upon animal studies.

Target Organs: Kidneys, central nervous system.

POTENTIAL HEALTH EFFECTS
Eye: May cause eye irritation.
Skin: May cause skin irritation.
Ingestion: May cause irritation of the digestive tract. May cause kidney damage. May cause central nervous system effects.
Inhalation: May cause respiratory tract irritation.
Chronic: Chronic poisoning by boron compounds, borism, may be little more than dry skin and mucous membranes, followed by appearance of a red tongue, patchy alopecia (hair loss), cracked lips, and
conjunctivitis. Prolonged absorption of boron compounds may cause anorexia, vomiting, mild diarrhea, skin rash, alopecia, convulsions, weakness, confusion, menstrual disorders, and anemia.

Section 4 - First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

**Skin:** Get medical aid if irritation develops or persists. Wash clothing before reuse. Flush skin with plenty of soap and water.

**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

**Extinguishing Media:** Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.

**Flash Point:** Not available.

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 1; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Provide ventilation.

Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep containers tightly closed.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Good general ventilation should be sufficient to control airborne levels.

OSHA Vacated PELs: Water: No OSHA Vacated PELs are listed for this chemical. Tris (hydroxymethyl) aminomethane: No OSHA Vacated PELs are listed for this chemical. Boric acid: No OSHA Vacated PELs are listed for this chemical. Ethylenediaminetetraacetic acid (EDTA): No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: Clear
Odor: odorless
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: Not available.
Decomposition Temperature: Not available.
Solubility: Soluble in water.
Specific Gravity/Density: Not available.
Molecular Formula: Mixture
Molecular Weight: Not available.

Section 10 - Stability and Reactivity
**Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions. Decarboxylates above 150°C.

**Conditions to Avoid:** Incompatible materials.

**Incompatibilities with Other Materials:** EDTA is incompatible with: strong oxidizing agents, strong bases, copper, copper alloys, aluminum. Tris is incompatible with strong oxidizing agents, strong acids and strong bases. Boric acid is incompatible with acetic anhydride and potassium. Forms borate salts with basic compounds.

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, nitrogen oxides (NOx) and ammonia (NH₃).

**Hazardous Polymerization:** Will not occur.

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**Section 11 - Toxicological Information**

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** Boric acid has selectively damaged the testes, sperm production and fertility in rats and dogs.

**Mutagenicity:** No information found

**Neurotoxicity:** No information found

**Other Studies:**

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**Section 12 - Ecological Information**

**Ecotoxicity:** No data available. EDTA: Catfish (tap water) 129ppm/96H.

**Environmental:** EDTA: Biological Oxygen Demand (BOD): 1%, 5 days.

**Physical:** No information available.

**Other:** None.

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**Section 13 - Disposal Considerations**

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

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**Section 14 - Transport Information**
US DOT
Shipping Name: Not regulated as a hazardous material

Canada TDG
No information available.

Section 15 - Regulatory Information

US FEDERAL

TSCA
- CAS# 7732-18-5 is listed on the TSCA inventory.
- CAS# 77-86-1 is listed on the TSCA inventory.
- CAS# 10043-35-3 is listed on the TSCA inventory.
- CAS# 60-00-4 is listed on the TSCA inventory.

Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.

Section 12b
None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs
- CAS# 60-00-4: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPG.

SARA Codes
- CAS # 77-86-1: immediate.
- CAS # 10043-35-3: immediate, delayed.

Section 313
No chemicals are reportable under Section 313.

Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:
CAS# 60-00-4 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**
CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
CAS# 77-86-1 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
CAS# 10043-35-3 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
CAS# 60-00-4 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Massachusetts.

**California Prop 65**
California No Significant Risk Level: None of the chemicals in this product are listed.

**European/International Regulations**
**European Labeling in Accordance with EC Directives**
**Hazard Symbols:**
Not available.
**Risk Phrases:**
**Safety Phrases:**

**WGK (Water Danger/Protection)**
CAS# 7732-18-5: No information available.
CAS# 77-86-1: 1
CAS# 10043-35-3: 1
CAS# 60-00-4: 2

**Canada - DSL/NDSL**
CAS# 7732-18-5 is listed on Canada's DSL List.
CAS# 77-86-1 is listed on Canada's DSL List.
CAS# 10043-35-3 is listed on Canada's DSL List.
CAS# 60-00-4 is listed on Canada's DSL List.

**Canada - WHMIS**
This product has a WHMIS classification of D2B.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**
CAS# 10043-35-3 is listed on the Canadian Ingredient Disclosure List.

**Section 16 - Additional Information**

**DISCLAIMER:**
For research use only. Not for drug, household or other uses.