1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Code: 30900
Trade Name: MICROPOSIT 351 DEVELOPER
Manufacturer/Supplier: Shipley Company
Address: 455 Forest St., Marlborough, Massachusetts 01752
Phone Number: (508) 481-7950
Emergency Phone Number: (508) 481-7950
Chemtrec #: (800) 424-9300
MSDS first issued: 26 September 1996
MSDS data revised: 29 January 2001
Prepared By: Environmental, Health & Safety Department
Local Sales Company: Shipley Company, 455 Forest Street, Marlboro, MA 01752

2. COMPOSITION/INFORMATION ON THE INGREDIENTS

Components without CAS numbers are Trade Secret

<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS# / Codes</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
<td>&lt; 5.00</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>&gt; 80.00</td>
</tr>
<tr>
<td>Sodium tetraborate decahydrate</td>
<td>1303-96-4</td>
<td>&lt; 10.00</td>
</tr>
<tr>
<td>Inorganic Borates</td>
<td></td>
<td>&lt; 1.00</td>
</tr>
</tbody>
</table>

3. HAZARD IDENTIFICATION

- Main Hazards: Corrosive - Skin - Eye
- Routes of Entry: Inhalation - Skin Contact
- Carcinogenic Status: Not considered carcinogenic by NTP, IARC and OSHA
- Target Organs: Eye - Skin
- Health Effects - Eyes: Liquid will cause severe conjunctival irritation, corneal damage, and may result in loss of vision. Vapor or mist will cause severe conjunctival irritation and corneal damage.
- Health Effects - Skin: Material will cause chemical burns. Effects may be delayed.
- Health Effects - Ingestion: Swallowing may have the following effects:
  - corrosion of mouth, throat and digestive tract
- Health Effects - Inhalation: Exposure to vapor or mist may have the following effects:
  - severe irritation of nose, throat and respiratory tract
- Health Effects - Inhalation: Exposure to mist at high concentrations may have the following effects:
  - severe irritation to nose, throat and respiratory tract and possibly lung damage

4. FIRST AID MEASURES

First Aid - Eyes: Immediately flush the eye with plenty of water for at least 20 minutes, holding the eye open. Obtain medical attention immediately.
First Aid - Skin: Immediately flush the skin with large quantities of water, preferably under a shower. Remove contaminated clothing while flushing skin. Continue washing for at least 20 minutes. Contaminated clothing should be washed or dry-cleaned before re-use. Obtain medical attention immediately.
First Aid - Ingestion: Do not induce vomiting. Wash out mouth with water. Have victim drink 1-3 glasses of water to dilute stomach contents. Obtain medical attention immediately. Never administer anything by mouth if a victim is losing consciousness, is unconscious or is convulsing. Remove from exposure. If there is difficulty in breathing, give oxygen. Obtain medical attention immediately.
First Aid - Inhalation: Treat symptomatically. Treat skin burns conventionally.
Advice to Physicians: None known.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Use dry chemical. Use water spray, fog or alcohol resistant foam.
Special Fire-Fighting Procedures: Use dry chemical.
Unusual Fire & Explosion Hazards: None known.
Protective Equipment for Fire-Fighting: Wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Spill Procedures: Spills may be absorbed with appropriate absorbent material for alkaline materials. Transfer into suitable containers for recovery or disposal.
Personal Precautions: Wear appropriate protective clothing. Wear respiratory protection. Material can create slippery conditions underfoot.
Environmental Precautions: Prevent the material from entering drains or water courses. Advise Authorities if spillage has entered water course or sewer or has contaminated soil or vegetation.

7. HANDLING AND STORAGE

Handling: Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Emergency shower and eye wash facilities should be readily available. Avoid inhaling vapor. Keep container tightly closed when not in use.
Storage: Store in original containers. Storage area should be:
  - cool - dry - well ventilated - out of direct sunlight - away from incompatible materials

Other: None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Standards
- Sodium hydroxide: OSHA: PEL 2mg/m^3 8h TWA. ACGIH: TLV 2mg/m^3 Ceiling limit. UK EH40: OES 2mg/m^3 15min TWA.
- Sodium tetraborate decahydrate: OSHA: PEL 10mg/m^3 8h TWA. ACGIH: TLV 5mg/m^3 8h TWA.

Engineering Control Measures: Engineering methods to prevent or control exposure are preferred. Methods include process or personal enclosure, mechanical ventilation (local exhaust), and control of process conditions.
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Clear</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>VOC (g/l)</td>
<td>0.0</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.084</td>
</tr>
<tr>
<td>pH</td>
<td>&gt;13</td>
</tr>
<tr>
<td>Boiling Range/Point (°C/F)</td>
<td>129 / 289</td>
</tr>
<tr>
<td>Flash Point (PMCC) (°C/F)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Explosion Limits (%)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Completely soluble.</td>
</tr>
<tr>
<td>Vapor Density (Air = 1)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Sodium hydroxide: 6.3 mmHg at 26 °C. 18 mmHg at 51 °C.</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

- **Stability**: Stable under normal conditions.
- **Conditions to Avoid**: Contact with incompatible materials.
- **Incompatibilities**: Acids - Aldehydes - Hydrocarbon solvents - Aromatic hydrocarbons - Reducing agents.
- **Hazardous Polymerization**: Will not occur.
- **Hazardous Decomposition Products**: None known.

11. TOXICOLOGICAL INFORMATION

- **Acute Data**: Sodium hydroxide: Oral LD50 (rat) 140-340mg/kg. Dermal LD50 (rabbit) 2000mg/kg.
- **Chronic/Subchronic Data**: No relevant studies identified.
- **Genotoxicity**: No adverse effects are expected.
- **Reproductive/Developmental Toxicity**: No adverse reproductive or fetal developmental effects are expected.
- **Additional Data**: None.

12. ECOLOGICAL INFORMATION

- **Mobility**: The product will dissolve rapidly in water. The product is insoluble in water and will partition to the aqueous phase.
- **Persistence/Degradability**: The product is expected to be readily biodegradable.
- **Bio-accumulation**: Product is not expected to bioaccumulate.
- **Ecotoxicity**: Sodium Hydroxide:
  - Tests on the following species gave a TLM96 of 125mg/litre: - mosquito fish
  - Tests on the following species gave a TLM24 of 76.6mg/litre: - bluegills

13. DISPOSAL CONSIDERATIONS

- **Product Disposal**: Dispose of in accordance with all applicable local and national regulations. Labels should not be removed from containers until they have been cleaned. Empty containers may contain hazardous residues. Dispose of containers with care.

14. TRANSPORT INFORMATION

- **DOT Ground**: Sodium hydroxide solution
- **UN Proper Shipping Name**: Sodium hydroxide solution
- **UN Class**: (8) Corrosive
- **UN Number**: UN1824
- **UN Packaging Group**: II
- **N.O.S. 1**: Not applicable.
- **N.O.S. 2**: Not applicable.
- **Subsidiary Risks**: None.
- **CERCLA RQ**: Sodium Hydroxide (1000#)
- **Marine Pollutant**: None.

15. REGULATORY INFORMATION

- **TSCA Listed**: All components of this product are listed on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory) or are exempted from listing because a Low Volume Exemption has been granted in accordance with 40 CFR 723.50. This product is not subject to a Section 5(e) Consent Order or Significant New Use Rule (SNUR).
- **TSCA Exemptions**: TSCA Sec.12(b) Export Notification
  - This product does not contain any substances subject to Section 12(b) export notification.
- **WHMIS Classification**: E
- **California Proposition 65**: This product does not contain materials which the State of California has found to cause cancer, birth defects or other reproductive harm.
- **SARA TITLE III-Section 311/312 Categorization (40 CFR 370)**
  - Immediate, delayed health hazard
- **SARA TITLE III-Section 313 (40 CFR 372)**
  - This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

16. OTHER INFORMATION

- **NFPA Rating- FIRE**: 0
- **NFPA Rating- HEALTH**: 3
- **NFPA Rating- REACTIVITY**: 1
- **NFPA Rating- SPECIAL**: None.
- **Revisions Highlighted**: First Aid Measures

- **TSCA Sec.12(b) Export Notification**
Abbreviations

- CAS#: Chemical Abstract Services Number
- ACGIH: American Conference of Governmental Industrial Hygienists
- OSHA: Occupational Safety and Health Administration
- TLV: Threshold Limit Value
- PEL: Permissible Exposure Limit
- STEL: Short Term Exposure Limit
- NTP: National Toxicology Program
- IARC: International Agency for Research on Cancer
- R: Risk
- S: Safety
- LD50: Lethal Dose 50%
- LC50: Lethal Concentration 50%
- BOD: Biological Oxygen Demand
- Koc: Soil Organic Carbon Partition Coefficient
- TLm: Median Tolerance Limit

Disclaimer

The data contained herein is based on information that Shipley Company believes to be reliable, but no expressed or implied warranty is made with regard to the accuracy of such data or its suitability for a given situation. Such data relates only to the specific product described and not to such products in combination with any other product and no agent of Shipley Company is authorized to vary any of such data. Shipley Company and its agents disclaim all liability for any action taken or foregone on reliance upon such data.