1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Code 31100
Trade Name MICROPOSIT 352 DEVELOPER
Manufacturer/Supplier Shipley Company
Address 455 Forest St.
            Marlborough, Massachusetts 01752
Phone Number (508) 481-7950
Emergency Phone Number (508) 481-7950
Chemical# (800) 424-9300
MSDS first issued 26 August 1996
MSDS data revised 28 June 1996
Prepared By: Amy C. Nichols
Local Sales Company Shipley Company, 455 Forest Street, Marlboro, MA 01752
            (508-461-7950)

2. COMPONENTS INFORMATION ON THE INGREDIENTS

<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS#  / Codes Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>water</td>
<td>7732-18-5 95.00 - 98.00</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2 0.10 - 1.00</td>
</tr>
<tr>
<td>sodium tetraborate decahydrate</td>
<td>1300-88-4 1.00 - 5.00</td>
</tr>
<tr>
<td>Boric acid</td>
<td>10048-88-3 0.01 - 1.00</td>
</tr>
</tbody>
</table>

3. HAZARD IDENTIFICATION

Main Hazards - Corrosive - Skin - Eye - Respiratory System

Routes of Entry Inhalation, ingestion, eye and skin contact.

Carcinogenic Status Not considered carcinogenic by NTP, IARC and OSHA

Target Organs - Eye - Skin - Respiratory System

Health Effects - Eyes Liquid, mist or vapor may cause severe damage and may result in loss of vision.

Health Effects - Skin Material will cause chemical burns.

Health Effects - Ingestion Swelling may have the following effects:
- convolution of mouth, throat and digestive tract
3. HAZARD IDENTIFICATION

Health Effects - Inhalation
Exposure to vapor or mist may have the following effects:
- irritation of nose, throat and respiratory tract
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 15 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. Obtain medical attention immediately.

First Aid - Inhalation
Remove from exposure. If there is difficulty in breathing, give oxygen. Obtain medical attention immediately.

Advice to Physicians
Treat symptomatically. Treat skin burns conventionally.

5. FIRE FIGHTING MEASURES

Extinguishing Media
Use dry chemical. Use water spray, fog or alcohol resistant foam.

Special Fire-Fighting Procedures
No specific measures necessary.

Unusual Fire & Explosion Hazards
None known.

Protective Equipment for Fire-Fighting
Wear full protective clothing and self-contained breathing apparatus.
6. ACCIDENTAL RELEASE MEASURES

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spill Procedures</td>
<td>Spills may be absorbed with appropriate absorbent material for alkaline materials. Transfer into suitable containers for recovery or disposal.</td>
</tr>
<tr>
<td>Personal Precautions</td>
<td>Wear appropriate protective clothing. Wear respiratory protection. Material can create slippery conditions underfoot.</td>
</tr>
<tr>
<td>Environmental Precautions</td>
<td>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.</td>
</tr>
</tbody>
</table>

7. HANDLING AND STORAGE

<table>
<thead>
<tr>
<th>Handling</th>
<th>Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Ensure any broken and wet work surfaces should be readily available. Avoid inhaling vapour. Keep container tightly closed when not in use.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>Store in original container, in a cool, dry, well-ventilated area. Secure from incompatible materials. This product is flammable.</td>
</tr>
</tbody>
</table>

Other
None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Occupational Exposure Standards</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>OSHA: PEL 2mg/m³ 8h TWA, ACGIH: TLV 2mg/m³ Ceiling limit. UK EH40: OES 2mg/m³ 15min TWA.</td>
</tr>
<tr>
<td>sodium tetraborate decahydrate</td>
<td>OSHA: PEL 10mg/m³ 8h TWA, ACGIH: TLV 5mg/m³ 8h TWA.</td>
</tr>
</tbody>
</table>

Engineering Control Measures
Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (local exhaust), and control of process conditions.

Respiratory Protection
Respiratory protection if there is a risk of exposure to high vapor concentrations. The specific respirator selected must be based on the airborne concentration found in the workplace and must not exceed the working limits of the respirator.

Hand Protection
Neoprene gloves.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection
Chemical goggles and face shield.

Body Protection
- rubber apron

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State
Liquid

Color
Clear

Odor
Odorless

VOC (g/l)
0.0

Specific Gravity
1.014

pH
>13

Boiling Range/Point (°C/F)
129 / 289

Flash Point (Pitoc) (°C/F)
Not applicable.

Explosion Limits (%)
Not applicable.

Solubility in Water
Completely soluble.

Vapor Density (Air = 1)
Not applicable.

Evaporation Rate
Not applicable.

Vapor Pressure
Sodium hydroxide: 6.3 mmHg at 25 °C. 18 mmHg at 51 °C.

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) 140-340 mg/kg. Dermal LD50 (rabbit) 2000 mg/kg.
Sodium tetrametate dehydrates: Oral LD50 (rat) 4500-
11. TOXICOLOGICAL INFORMATION

5000mg/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 involatile and water soluble 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 78.6mg/litre: - bluegills

13. DISPOSAL CONSIDERATIONS

Product Disposal
Dispose of in accordance with all applicable local and national regulations.

Container Disposal
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
UN Number: UN1824
### 14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>UN Packaging Group</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.O.S. 1:</td>
<td>None.</td>
</tr>
<tr>
<td>N.O.S. 2:</td>
<td>None.</td>
</tr>
<tr>
<td>Subsidiary Risks</td>
<td>None.</td>
</tr>
<tr>
<td>ADR/ RID Substance</td>
<td>None.</td>
</tr>
<tr>
<td>Identification Number</td>
<td>Sodium Hydroxide (1000#)</td>
</tr>
<tr>
<td>CERCLA RQ</td>
<td>None.</td>
</tr>
<tr>
<td>Marine Pollutant</td>
<td>None.</td>
</tr>
</tbody>
</table>

### 15. REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>TSCA Listed</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA Exemptions</td>
<td>E</td>
</tr>
<tr>
<td>WHMIS Classification</td>
<td>All components have been checked for inclusion on the Massachusetts Substance List (MSL). Those components present at the de minimus concentration have been identified in the hazardous ingredients section of the MSDS.</td>
</tr>
<tr>
<td>MA Right To Know Law</td>
<td>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.</td>
</tr>
<tr>
<td>SARA TITLE III-Section 311/312 Categorization (40 CFR 370)</td>
<td>Immediate, delayed health hazard</td>
</tr>
<tr>
<td>SARA TITLE III-Section 313 (40 CFR 372)</td>
<td>This product does not contain a chemical which is listed in Section 313 at or above de minimus concentrations.</td>
</tr>
</tbody>
</table>

### 16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA Rating- FIRE</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFPA Rating- HEALTH</td>
<td>2</td>
</tr>
<tr>
<td>NFPA Rating- REACTIVITY</td>
<td>0</td>
</tr>
<tr>
<td>NFPA Rating- SPECIAL</td>
<td>None.</td>
</tr>
<tr>
<td>Revisions Highlighted</td>
<td>Hazard Identification, Transport Information, WHMIS Classification</td>
</tr>
<tr>
<td>Abbreviations</td>
<td>CAS#: Chemical Abstract Services Number, ACGIH: American Conference of Governmental Industrial Hygienists</td>
</tr>
</tbody>
</table>
16. OTHER INFORMATION

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.