1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Name: MICROLOX TFM

Other means of identification
Product Code: 287
UN/ID No.: UN1760
Synonyms: None

Recommended use of the chemical and restrictions on use
Recommended Use: Membrane safe CIP acid.
Uses advised against: No information available

Manufacturer Address
Anderson Chemical Company, 325 South Davis Avenue, Litchfield, MN 55355 (320-693-2477)

Emergency telephone number
Chemtrec 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification
Acute toxicity - Oral: Category 4
Skin corrosion/irritation: Category 1 Sub-category B
Serious eye damage/eye irritation: Category 1

Label elements

Emergency Overview

Danger
Hazard statements
Causes severe skin burns and eye damage
Causes serious eye damage
Harmful if swallowed

Appearance: aqueous solution
Physical state: liquid
Odor: Mild

Precautionary Statements - Prevention
Wash hands and exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Wear eye/face protection
Wear protective gloves

Precautionary Statements - Response
Specific treatment (see Section 4 on this label)
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 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 if you feel unwell. Do not induce vomiting. Rinse mouth.

Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved landfill

Hazards not otherwise classified (HNOC)

Other Information

3. COMPOSITION-INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>Weight-%</th>
<th>Trade Secret</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfamic acid</td>
<td>5329-14-6</td>
<td>2.5</td>
<td></td>
</tr>
</tbody>
</table>

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

First aid measures

Eye contact
Flush immediately with water for 15 minutes. Lift upper and lower eyelids for complete rinsing. Get immediate medical attention.

Skin Contact
Flush with water for 15 minutes. If irritation persists after rinsing, get medical attention. Remove contaminated clothing and wash before reuse.

Inhalation
Remove victim to fresh air. If breathing difficulty occurs or persists, get medical attention.

Ingestion
Rinse mouth with water. Give water to dilute. Do not induce vomiting. Get immediate medical attention. Never give anything by mouth to a semi-comatose, comatose, convulsing or unconscious person.

Most important symptoms and effects, both acute and delayed

Symptoms
Can cause severe burns and tissue damage to the upper respiratory tract. Causes skin burns. Harmful if absorbed through skin. Causes serious eye damage. Symptoms may include stinging, tearing, redness and swelling. May irritate or burn the mouth, throat or stomach. Overexposure may cause nausea, diarrhea, and/or vomiting.

Indication of any immediate medical attention and special treatment needed

Note to physicians
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
None known.
Specific hazards arising from the chemical
If the stock solution container breaks, the solution should be handled with care as it is corrosive. Contact with metals may evolve flammable hydrogen gas.

 Explosion data
 Sensitivity to Mechanical Impact  None.
 Sensitivity to Static Discharge  None.

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  Evacuate nonessential personnel. Ventilate area. Wear appropriate personal protection equipment. Remove all sources of ignition.

Environmental precautions  See Section 12 for additional ecological information.

Methods for containment
Methods for cleaning up  Completely contain spilled material with dikes or sand bags, etc. Prevent additional discharge of material if able to do so safely. Recover as much material as possible into containers for disposal or reuse. Remaining material may be diluted with water and neutralized. Flush spill area with water. Neutralization products, both solid and liquid, must be recovered for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Advice on safe handling  Do not get in eyes, on skin, or clothing. Do not breathe vapors or mists. Do not ingest. Wash thoroughly after handling. Wear protective clothing/equipment. Use with adequate ventilation.

Conditions for safe storage, including any incompatibilities
Storage Conditions  Keep containers tightly closed and properly labeled. Containers that have been emptied will retain product residue and should be handled as if they were full. Store in a cool, dry, well-ventilated place away from incompatible materials. Wash hands before eating, drinking, using tobacco, applying make-up or using the toilet. Do not store, use, and/or consume foods, beverages, tobacco in areas where this product is stored.

Incompatible materials  Strong bases, active metals (like sodium), oxidizers (ie: chlorine, oxygen, permanganates, perchlorates, percarbonates, peroxides, chromates, hypochlorites, nitric acid, and sulfuric acid), cyanide and sulfide salts. Contact with some metals can generate explosive hydrogen gas.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure Guidelines
Appropriate engineering controls  .

Showers
Eyewash stations
Ventilation systems.
Individual protection measures, such as personal protective equipment

**Eye/face protection**
Wear safety glasses with side shields (or goggles).

**Skin and body protection**
If contact is anticipated, wear protective clothing appropriate to use conditions.

**Respiratory protection**
If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

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>aqueous solution</td>
<td></td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>clear colorless</td>
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</tr>
<tr>
<td><strong>Odor</strong></td>
<td>Mild</td>
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</tr>
<tr>
<td><strong>Odor threshold</strong></td>
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</tr>
<tr>
<td><strong>Property</strong></td>
<td><strong>Values</strong></td>
<td><strong>Remarks • Method</strong></td>
</tr>
<tr>
<td>pH</td>
<td>2.6</td>
<td>1% Solution</td>
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<tr>
<td>Melting point/freezing point</td>
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<td></td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
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<td></td>
</tr>
<tr>
<td>Flash point</td>
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<td></td>
</tr>
<tr>
<td>Evaporation rate</td>
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<td></td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
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<td></td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
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<td></td>
</tr>
<tr>
<td>Upper flammability limit:</td>
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<td></td>
</tr>
<tr>
<td>Lower flammability limit:</td>
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<td></td>
</tr>
<tr>
<td>Vapor pressure</td>
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<td></td>
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<tr>
<td>Vapor density</td>
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<tr>
<td>Specific Gravity</td>
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<tr>
<td>Water solubility</td>
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<tr>
<td>Solubility in other solvents</td>
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</tr>
<tr>
<td>Partition coefficient</td>
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<td></td>
</tr>
<tr>
<td>Autoignition temperature</td>
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<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
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</tr>
<tr>
<td>Kinematic viscosity</td>
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<td></td>
</tr>
<tr>
<td>Dynamic viscosity</td>
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<td></td>
</tr>
<tr>
<td>Explosive properties</td>
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<tr>
<td>Oxidizing properties</td>
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</table>

Other Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
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</thead>
<tbody>
<tr>
<td>Softening point</td>
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<tr>
<td>Molecular weight</td>
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<tr>
<td>VOC Content (%)</td>
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<tr>
<td>Density</td>
<td>No information available</td>
</tr>
<tr>
<td>Bulk density</td>
<td>No information available</td>
</tr>
</tbody>
</table>

### 10. STABILITY AND REACTIVITY

**Reactivity**
No data available

**Chemical stability**
Stable under recommended storage conditions.
Possibility of Hazardous Reactions
None under normal processing.

Conditions to avoid
Heat, flames and sparks.

Incompatible materials
Strong bases, active metals (like sodium), oxidizers (ie: chlorine, oxygen, permanganates, perchlorates, percarbonates, peroxides, chromates, hypochlorites, nitric acid, and sulfuric acid), cyanide and sulfide salts. Contact with some metals can generate explosive hydrogen gas.

Hazardous Decomposition Products

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information
No data available

Inhalation
May cause irritation of respiratory tract.

Eye contact
Risk of serious damage to eyes.

Skin Contact
Contact causes severe skin irritation and possible burns.

Ingestion
No data available.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfamic acid 5329-14-6</td>
<td>= 1450 mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Information on toxicological effects

Symptoms
No information available.

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

Sensitization
No information available.

Germ cell mutagenicity
No information available.

Carcinogenicity
No information available.

Reproductive toxicity
No information available.

STOT - single exposure
No information available.

STOT - repeated exposure
No information available.

Aspiration hazard
No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

0.5% of the mixture consists of components(s) of unknown hazards to the aquatic environment

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfamic acid 5329-14-6</td>
<td>-</td>
<td>14.2: 96 h Pimephales promelas mg/L LC50 static</td>
<td>-</td>
</tr>
</tbody>
</table>

Persistence and degradability
No information available.
Bioaccumulation
No information available.

Other adverse effects
No information available

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
Do not reuse container.

14. TRANSPORT INFORMATION

DOT
Regulated

UN/ID No. UN1760

Proper shipping name Corrosive Liquid, N.O.S.

Hazardous ingredients (Hydroxyacetic Acid/ Citric Acid)

Hazard Class 8

Packing Group III

15. REGULATORY INFORMATION

International Inventories

TSCA Complies

DSL/NDSL Complies

EINECS/ELINCS Complies

ENCS Does not comply

IECSC Complies

KECL Complies

PICCS Complies

AICS Complies

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
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

SARA 311/312 Hazard Categories
- Acute health hazard: Yes
- Chronic Health Hazard: No
- Fire hazard: No
- Sudden release of pressure hazard: No
- Reactive Hazard: No

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)

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). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

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>Sulfamic acid</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5329-14-6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

U.S. EPA Label Information

EPA Pesticide Registration Number: Not Applicable

16. OTHER INFORMATION

NFPA
- Health hazards: 3
- Flammability: 0
- Instability: 0
- Physical and Chemical Properties: -

HMIS
- Health hazards: 3
- Flammability: 0
- Physical hazards: 0
- Personal protection: X

Prepared By: lmt
Issue Date: 13-Jun-2018
Revision Date: 13-Jun-2018
Revision Note: No information available

Disclaimer
The information provided in this Material 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