According to 91/155/EEC
Classified as Hazardous according to the criteria of EU Annex 1 and NOHSC.

1 - Product and Company Information

Product Name        FORMAMIDINESULFINIC ACID, 98+%
Product Number      F16001
Company              Sigma-Aldrich Pty, Ltd
                     Unit 2, 14 Anella Avenue
                     Castle Hill NSW 1765
                     Australia
Technical Phone #    +61 2 9841 0555
Fax                  +61 2 9841 0500
Emergency Phone #    +61 2 9841 0566

2 - Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Product Name</th>
<th>CAS #</th>
<th>EC no</th>
<th>Annex I Index Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORMAMIDINESULFINIC ACID</td>
<td>1758-73-2</td>
<td>217-157-8</td>
<td>None</td>
</tr>
</tbody>
</table>

Formula                  CH4N2O2S
Molecular Weight         108.12 AMU
Synonyms                 Aminoiminomethanesulfinic acid; Degussa F; Formamidine sulfinate; LorinolR; Manofast; NSC 34540; Tec Light; Thiourea dioxide

3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT
Spontaneously flammable in air. Harmful if swallowed. Irritating to eyes, respiratory system and skin.

4 - First Aid Measures

AFTER INHALATION
If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

AFTER SKIN CONTACT
In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

AFTER EYE CONTACT
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

AFTER INGESTION
If swallowed, wash out mouth with water provided person is
conscious. Call a physician.

5 - Fire Fighting Measures

CONDITIONS OF FLAMMABILITY
Catches fire if exposed to air.

EXTINGUISHING MEDIA
Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

SPECIAL RISKS
Specific Hazard(s): Pyrophoric material. Emits toxic fumes under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

6 - Accidental Release Measures

PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL
Evacuate area. Shut off all sources of ignition. Use nonsparking tools.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP
Avoid raising dust. Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

7 - Handling and Storage

HANDLING
Directions for Safe Handling: Avoid contact with eyes, skin, and clothing. Avoid breathing dust. Avoid prolonged or repeated exposure.

STORAGE
Conditions of Storage: Keep container closed. Keep away from heat, sparks, and open flame. Handle and store under nitrogen. Store at 2-8°C

SPECIAL REQUIREMENTS: Moisture sensitive.

8 - Exposure Controls / Personal Protection

ENGINEERING CONTROLS
Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

GENERAL HYGIENE MEASURES
Wash thoroughly after handling.

PERSONAL PROTECTIVE EQUIPMENT
9 - Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Physical State: Solid</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Faintly yellow</td>
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</tr>
<tr>
<td>Form</td>
<td>Crystalline</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>4</td>
<td>20 °C Concentration: 10 g/l</td>
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<tr>
<td>BP/MP Range</td>
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<tr>
<td>MP/MP Range</td>
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<tr>
<td>Flash Point</td>
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<tr>
<td>Flammability</td>
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<td></td>
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<tr>
<td>Autoignition Temp</td>
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<tr>
<td>Oxidizing Properties</td>
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<tr>
<td>Explosive Properties</td>
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<tr>
<td>Explosion Limits</td>
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<tr>
<td>Vapor Pressure</td>
<td>&lt; 0.27 mmHg</td>
<td>30 °C</td>
</tr>
<tr>
<td>SG/Density</td>
<td>1.68 g/cm³</td>
<td>20 °C</td>
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<tr>
<td>Partition Coefficient</td>
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<tr>
<td>Viscosity</td>
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<tr>
<td>Vapor Density</td>
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<tr>
<td>Saturated Vapor Conc.</td>
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<td>Evaporation Rate</td>
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<tr>
<td>Bulk Density</td>
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<tr>
<td>Decomposition Temp.</td>
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<tr>
<td>Solvent Content</td>
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</tr>
<tr>
<td>Water Content</td>
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</tr>
<tr>
<td>Surface Tension</td>
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</tr>
<tr>
<td>Conductivity</td>
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<tr>
<td>Miscellaneous Data</td>
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</tr>
<tr>
<td>Solubility</td>
<td>Solubility in Water:soluble</td>
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<tr>
<td>Other Solvents: INSOLUBLE IN ORGANIC SOLVENTS</td>
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<td></td>
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</tbody>
</table>

10 - Stability and Reactivity

STABILITY
Stable: Unstable.
Conditions of Instability: May decompose on exposure to moist air or water.
Conditions to Avoid: Strong reducing agent. Violent exothermic decomposition occurs above 100°C with emission of large amounts of sulfur oxides, ammonia, carbon monoxide, carbon dioxide, nitrogen oxides and hydrogen sulfide. Prolonged exposure to moisture and temperatures above 50°C may also cause violent exothermic decomposition.
Materials to Avoid: Strong oxidizing agents, Strong bases.

HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Nitrogen oxides, Sulfur oxides, Ammonia.

HAZARDOUS POLYMERIZATION
Hazardous Polymerization: Will not occur

11 - Toxicological Information

ACUTE TOXICITY
LD50
Oral Rat 1,120 mg/kg LD50 Skin Rat > 2,000 mg/kg

IRRITATION DATA
Skin Rabbit Remarks: Moderate irritation effect
Eyes Rabbit Remarks: Moderate irritation effect

SIGNS AND SYMPTOMS OF EXPOSURE
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

ROUTE OF EXPOSURE
Skin Contact: Causes skin irritation.
Skin Absorption: May be harmful if absorbed through the skin.
Eye Contact: Causes eye irritation.
Inhalation: May be harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract. Material may be irritating to mucous membranes and upper respiratory tract.
Ingestion: Harmful if swallowed.

12 - Ecological Information

ECOTOXICOLOGICAL EFFECTS

Test Type: LC50 Fish
Time: 96 h
Value: 416 mg/l

Test Type: EC50 Daphnia
Species: Daphnia magna
Time: 24 h
Value: 390 mg/l

Test Type: EC50 Algae
Species: Scenedesmus subspicatus
Time: 72 h
Value: 32 mg/l

13 - Disposal Considerations

SUBSTANCE DISPOSAL
Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

14 - Transport Information

RID/ADR
UN#: 3341
Class: 4.2
PG: II
Proper Shipping Name: Thiourea dioxide

IMDG
UN#: 3341
Class: 4.2
PG: II
Proper Shipping Name: Thiourea dioxide
Marine Pollutant: No
Severe Marine Pollutant: No

IATA
UN#: 3341
Class: 4.2
PG: II
Proper Shipping Name: Thiourea dioxide

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES
INDICATION OF DANGER: F Xn
Highly Flammable. Harmful.
R-PHRASES: 17 22 36/37/38
Spontaneously flammable in air. Harmful if swallowed.
Irritating to eyes, respiratory system and skin.
S-PHRASES: 6 26 36/37
Keep under nitrogen. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and gloves.

COUNTRY SPECIFIC INFORMATION

Germany
WGK: 1

SWITZERLAND
SWISS POISON CLASS: 3

16 - Other Information

WARRANTY
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.
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