

## SAFETY DATA SHEET

Preparation Date: 05/27/2015

Revision Date: 06/22/2018

Revision Number: G2

### 1. IDENTIFICATION

#### Product identifier

**Product code:** M1217  
**Product Name:** HEXAMETHYLENETETRAMINE, REAGENT, ACS

#### Other means of identification

**Synonyms:** 1,3,5,7-Tetraazaadamantane  
 1,3,5,7-Tetraazatricyclo (3.3.1.1(3,7))decane  
 1,3,5,7-Tetraazatricyclo(3.3.1.1(sup 3,7))decane  
 1,3,5,7-Tetraazatricyclo(3.3.1.1(sup 37))decane  
 Aminoformaldehyde  
 Ammonioformaldehyde  
 Esametilentetramina [Italian]  
 Formamine  
 Formin  
 Heterin  
 Hexaform  
 Hexamethylenamine  
 Hexamethyleneamine  
 Hexamethylenetetraamine  
 Hexamethylenetetramine  
 Hexamethylenetetraminum  
 Hexamethylentetramin [German]  
 Hexamethylentetramine  
 Hexamethylentetraminum  
 Hexamine  
 Hexaminum  
 Hexasan  
 Hexilmethylenamine  
 Metenamina [INN-Spanish]  
 Methenamin  
 Methenamine  
 Metramine  
 Uramin  
 Uratrine  
 Uritone  
 Urodeine  
 Urotropin  
 Urotropine  
 Xametrin  
**CAS #:** 100-97-0  
**RTECS #** MN4725000  
**CI#:** Not available

#### Recommended use of the chemical and restrictions on use

**Recommended use:** No information available.

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**Uses advised against** No information available

**Supplier:** Spectrum Chemical Mfg. Corp  
14422 South San Pedro St.  
Gardena, CA 90248  
(310) 516-8000

**Order Online At:** <https://www.spectrumchemical.com>  
**Emergency telephone number** Chemtrec 1-800-424-9300  
**Contact Person:** Martin LaBenz (West Coast)  
**Contact Person:** Ibad Tirmiz (East Coast)

## 2. HAZARDS IDENTIFICATION

### Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Serious eye damage/eye irritation	Category 2B
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Flammable solids	Category 2

### Label elements

#### **Danger**

#### **Hazard statements**

May cause an allergic skin reaction  
May cause allergy or asthma symptoms or breathing difficulties if inhaled  
Causes eye irritation  
Flammable solids



### Hazards not otherwise classified (HNOC)

Not Applicable

### Other hazards

May be harmful if inhaled  
Causes mild skin irritation

### **Precautionary Statements - Prevention**

Wash face, hands and any exposed skin thoroughly after handling  
Avoid breathing dust/fume/gas/mist/vapors/spray  
In case of inadequate ventilation wear respiratory protection  
Contaminated work clothing must not be allowed out of the workplace  
Keep away from heat/sparks/open flames/hot surfaces. — No smoking  
Ground/bond container and receiving equipment  
Use explosion-proof electrical/ventilating/lighting/.../equipment  
Wear protective gloves/protective clothing/eye protection/face protection

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### Precautionary Statements - Response

In case of fire: Use CO<sub>2</sub>, dry chemical, or foam to extinguish.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of water

If skin irritation or rash occurs: Get medical advice/attention

Wash contaminated clothing before reuse

IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

### Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Methenamine	100-97-0	100

## 4. FIRST AID MEASURES

### First aid measures

**General Advice:** National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.

**Skin Contact:** Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention if irritation develops. Consult a physician if necessary.

**Eye Contact:** Flush eyes with water for 15 minutes. Get medical attention.

**Inhalation:** Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:** Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

### Most important symptoms and effects, both acute and delayed

**Symptoms**  
Causes eye irritation  
Mild skin irritation  
May cause allergy or asthma symptoms or breathing difficulties if inhaled  
Coughing and wheezing  
Dyspnea (Shortness of breath and difficulty breathing)  
May cause abdominal pain, nausea, vomiting, diarrhea

### Indication of any immediate medical attention and special treatment needed

**Notes to Physician:** Treat symptomatically.

### Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

## 5. FIRE-FIGHTING MEASURES

### Extinguishing Media

**Suitable Extinguishing Media:** Dry chemical. Carbon dioxide (CO<sub>2</sub>). Water spray. Foam.

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**Unsuitable Extinguishing Media:** Do not use a solid (straight) water stream as it may scatter and spread fire.

### **Specific hazards arising from the chemical**

**Hazardous Combustion Products:** Carbon Monoxide, Carbon Dioxide. Nitrogen Oxides.

**Specific hazards:** Flammable solid. May be ignited by heat, sparks or flames. Container explosion may occur under fire conditions or when heated. Fire may produce irritating and/or toxic gases.

### **Special Protective Actions for Firefighters**

**Specific Methods:** Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out.

**Special Protective Equipment 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:** Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Remove all sources of ignition. All equipment used when handling the product must be grounded. Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment.

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas.

### **Methods and material for containment and cleaning up**

**Methods for containment** Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

**Methods for cleaning up** Use appropriate tools to put the spilled solid in a suitable waste disposal container. Use only non-sparking tools. Clean contaminated surface thoroughly.

## **7. HANDLING AND STORAGE**

### **Precautions for safe handling**

#### **Technical Measures/Precautions:**

Provide sufficient air exchange and/or exhaust in work rooms. Keep away from incompatible materials. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

#### **Safe Handling Advice**

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Do not breathe dust. Do not smoke. Keep away from heat and sources of ignition. Use only in well-ventilated areas. Handle in accordance with good industrial hygiene and safety practice.

## Conditions for safe storage, including any incompatibilities

### **Technical Measures/Storage Conditions:**

Hygroscopic. Do not store above 25°C/77°F. Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Store in a segregated and approved area. Store away from incompatible materials.

### **Incompatible Materials:**

Oxidizing agents  
Sodium Peroxide  
Iodine  
1-bromopentaborane  
Iodoform  
Hydrochloric acid solution  
Sulfuric acid  
Nitric acid  
Metals  
Aluminum  
Zinc  
Sodium hydroxide  
Potassium hydroxide

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

### Control parameters

#### **National occupational exposure limits**

##### **United States**

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WEEL
Methenamine	100-97-0	None	None	None	None

##### **Canada**

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Methenamine	100-97-0	None	None	0.35 ppm STEL 2 mg/m <sup>3</sup> STEL	None

##### **Australia and Mexico**

Components	CAS-No.	Australia	Mexico
Methenamine	100-97-0	None	None

### Appropriate engineering controls

#### **Engineering measures to reduce exposure:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

### Individual protection measures, such as personal protective equipment

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## Personal Protective Equipment

<b>Eye protection:</b>	Goggles
<b>Skin and body protection:</b>	Chemical resistant apron Long sleeved clothing Gloves
<b>Respiratory protection:</b>	Wear respirator with dust filter. Be sure to use an approved/certified respirator or equivalent.
<b>Hygiene measures:</b>	Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical state:</b> Solid	<b>Appearance:</b> Crystalline powder.	<b>Color:</b> Colorless. White.
<b>Odor:</b> Odorless.	<b>Taste</b> No information available.	<b>Formula:</b> C6H12N4
<b>Molecular/Formula weight:</b> 140.19	<b>Flammability:</b> Flammable solid	<b>Flashpoint (°C/°F):</b> 250°C/ 482°F
<b>Flash Point Tested according to:</b> Closed cup	<b>Autoignition Temperature (°C/°F):</b> > 371°C/ > 700°F	<b>Lower Explosion Limit (%):</b> No information available
<b>Upper Explosion Limit (%):</b> No information available	<b>Melting point/range(°C/°F):</b> 263-280°C/ 505.4-536°F	<b>Decomposition temperature(°C/°F):</b> No information available
<b>Boiling point/range(°C/°F):</b> No information available	<b>Bulk density:</b> No information available	<b>Density (g/cm3):</b> No information available
<b>Specific gravity:</b> 1.33	<b>pH:</b> No information available	<b>Vapor pressure @ 20°C (kPa):</b> No information available
<b>Evaporation rate:</b> No information available	<b>Vapor density:</b> 4.9	<b>VOC content (g/L):</b> No information available
<b>Odor threshold (ppm):</b> No information available	<b>Partition coefficient (n-octanol/water):</b> -2.84	<b>Viscosity:</b> No information available
<b>Miscibility:</b> No information available	<b>Solubility:</b> Soluble in cold water Insoluble in diethyl ether Insoluble in Chloroform Insoluble in Alcohol Soluble in Ethanol	

## 10. STABILITY AND REACTIVITY

### Reactivity

Explosive reaction with acetic acid + acetic anhydride + ammonium nitrate + nitric acid

Reactive with oxidizing agents

Reacts violently with sodium peroxide, 1-bromopentaborane, iodine, iodoform. Incompatible with metals (aluminum and zinc) and strong bases (sodium hydroxide and potassium hydroxide)

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### Chemical stability

**Stability:** Hygroscopic. Stable under recommended storage conditions.

**Possibility of Hazardous Reactions:** Hazardous polymerization does not occur

**Conditions to avoid:** Heat. Ignition sources. Incompatible materials. Exposure to moisture.

**Incompatible Materials:** Oxidizing agents  
Sodium Peroxide  
Iodine  
1-bromopentaborane  
Iodoform  
Hydrochloric acid solution  
Sulfuric acid  
Nitric acid  
Metals  
Aluminum  
Zinc  
Sodium hydroxide  
Potassium hydroxide

**Hazardous decomposition products:** Carbon oxides. Nitrogen oxides (NOx).

### Other Information

**Corrosivity:** No information available

**Special Remarks on Corrosivity:** No information available

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

**Principal Routes of Exposure:**  
Inhalation. Ingestion.

### Acute Toxicity

### Component Information

Methenamine
CAS-No.   100-97-0

**LD50/oral/rat** = > 20000 mg/kg Oral LD50 Rat  
**LD50/oral/mouse** = 569 mg/kg  
**LD50/dermal/rabbit** = No information available  
**LD50/dermal/rat** = > 2000 mg/kg Dermal LD50  
**LC50/inhalation/rat** = No information available  
**LC50/inhalation/mouse** = No information available  
**Other LD50 or LC50 information** = No information available

### Product Information

**LD50/oral/rat** =

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VALUE- Acute Tox Oral = 9200 mg/kg

LD50/oral/mouse =

Value - Acute Tox Oral = 569 mg/kg

LD50/dermal/rabbit

VALUE-Acute Tox Dermal = No information available

LD50/dermal/rat

VALUE -Acute Tox Dermal = >2000 mg/kg

LC50/inhalation/rat

VALUE-Vapor = No information available

VALUE-Gas = No information available

VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse

VALUE-Vapor = No information available

VALUE - Gas = No information available

VALUE - Dust/Mist = No information available

### Symptoms

**Skin Contact:** Mild skin irritation.

**Eye Contact:** Mild eye irritation.

**Inhalation** Causes respiratory tract (nose, throat, lungs), and mucous membrane irritation. It may affect the urinary system. May affect metabolism.

**Ingestion** Causes gastrointestinal tract irritation/distress with anorexia, nausea, abdominal pain/cramps, vomiting and diarrhea. May affect the urinary system (bladder, kidneys-dysuria), behavior/central nervous system (headache, excitement, muscle contraction, spasticity, tremor). May affect respiration (dyspnea). May cause muscle cramps.

**Aspiration hazard** No information available.

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

**Chronic Toxicity** Skin: Sensitizer. May cause allergic skin reaction (allergic contact dermatitis). Inhalation: May cause allergic respiratory reaction (occupational asthma).

**Sensitization:** May cause sensitization by inhalation. May cause sensitization by skin contact.

**Mutagenic Effects:** May affect genetic material  
Experiments with bacteria and/or yeast have shown mutagenic effects

**Carcinogenic effects:** Not considered carcinogenic.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Methenamine	100-97-0	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

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**Reproductive toxicity** No data is available

**Reproductive Effects:** No information available  
**Developmental Effects:** No information available  
**Teratogenic Effects:** No information available

**Specific Target Organ Toxicity**

**STOT - single exposure** No information available.  
**STOT - repeated exposure** No information available.  
**Target Organs:** No information available.

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

**Ecotoxicity effects:** Aquatic environment.

*Methenamine - 100-97-0*

**Freshwater Fish Species Data:** 44600 - 55600 mg/L LC50 Pimephales promelas 96 h flow-through 1  
**Water Flea Data:** 29868 - 43390 mg/L EC50 Daphnia magna 48 h

**Persistence and degradability:** 22% (by BOD), 48% (by HPLC), 45% (by TOC)

**Bioaccumulative potential:** No information available.

**Mobility:** No information available.

**13. DISPOSAL CONSIDERATIONS**

**Disposal Methods**

**Waste from residues / unused products:**  
 Waste must be disposed of in accordance with Federal, State and Local regulation.

**Contaminated packaging:**  
 Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Methenamine	100-97-0	None	None	None	None

**14. TRANSPORT INFORMATION**

**DOT**

**UN-No:** UN1328  
**Proper Shipping Name:** Hexamethylenetetramine  
**Hazard Class:** 4.1  
**Subsidiary Class** No information available  
**Packing group:** III  
**Emergency Response Guide** 133

**Number**  
**Marine Pollutant** No data available  
**DOT RQ (lbs):** No information available  
**Special Provisions** A1, IB8, IP3, T1, TP33  
**Symbol(s):** No information available  
**Description:** UN1328, Hexamethylenetetramine, 4.1, III

**TDG (Canada)**  
**UN-No:** UN1328  
**Proper Shipping Name:** Hexamethylenetetramine  
**Hazard Class:** 4.1  
**Subsidiary Risk:** No information available  
**Packing Group:** III  
**Marine Pollutant** No Information available  
**Description:** UN1328, Hexamethylenetetramine, 4.1, III

**ADR**  
**UN-No:** UN1328  
**Proper Shipping Name:** Hexamethylene-tetramine  
**Hazard Class:** 4.1  
**Packing Group:** III  
**Subsidiary Risk:** No information available  
**Description:** UN1328, Hexamethylene-tetramine, 4.1, III

**IMO / IMDG**  
**UN-No:** UN1328  
**Proper Shipping Name:** Hexamethylenetetramine  
**Hazard Class:** 4.1  
**Subsidiary Risk:** No information available  
**Packing Group:** III  
**Marine Pollutant** No information available  
**EMS:** F-A  
**Description** UN1328, Hexamethylenetetramine, 4.1, III

**RID**  
**UN-No:** UN1328  
**Proper Shipping Name:** Hexamethylenetetramine  
**Hazard Class:** 4.1  
**Subsidiary Risk:** No information available  
**Packing Group:** III  
**Description:** UN1328, Hexamethylenetetramine, 4.1, III

**ICAO**  
**UN-No:** UN1328  
**Proper Shipping Name:** Hexamethylenetetramine  
**Hazard Class:** 4.1  
**Subsidiary Risk:** No information available  
**Packing Group:** III  
**Description:** UN1328, Hexamethylenetetramine, 4.1, III

**IATA**  
**UN-No:** UN1328  
**Proper Shipping Name:** Hexamethylenetetramine  
**Hazard Class:** 4.1  
**Subsidiary Risk:** No information available  
**Packing Group:** III  
**ERG Code:** 3L  
**Special Provisions** No information available

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**Description:** UN1328, Hexamethylenetetramine, 4.1, III

**15. REGULATORY INFORMATION**

**International Inventories**

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Methenamine	100-97-0	PresentACTIVE	Present KE-18615	Present	Present (5)-1155	Present	Present	Present 202-905-8

**U.S. Regulations**

Methenamine

New Jersey RTK Hazardous Substance List: 0996

**California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.**

**Chemicals Known to the State of California to Cause Cancer:**

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

**Chemicals Known to the State of California to Cause Reproductive Toxicity:**

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Methenamine	100-97-0	Not Listed	Not Listed	Not Listed	Not Listed

**CERCLA/SARA**

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
Methenamine	100-97-0	None	None	None	None	None

**U.S. TSCA**

Components	CAS-No.	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Methenamine	100-97-0	Not Applicable	Not Applicable

**Canada**

**WHMIS 2015 - GHS Classifications**

WHMIS 2015 Hazard Classification Information:

Component  
Methenamine  
100-97-0 ( 100 )

WHMIS 2015 Hazard Classification  
Flammable solids - Category 2: H228 Flammable solid.;  
Respiratory sensitizers - Category 1: H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.; Skin sensitizers - Category 1B: H317 May cause allergic skin reaction.;  
Combustible Dust - Category 1: May form combustible dust concentrations in air (if 5% or more by weight of its composition has a particle size <500 µm)

**Canada Hazardous Products Regulation** This product has been classified according to the hazard criteria of the HPR (Hazardous

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Products Regulation) and the SDS contains all of the information required by the HPR

**WHMIS 1988 Hazard Class**

B4 Flammable solid

**Components**

Methenamine

WHMIS 1988

B4

**Canada Controlled Products Regulation:**

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Components	WHMIS Ingredient Disclosure List -
Methenamine	0.1 %

**Inventory**

Components	CAS-No.	Canada (DSL)	Canada (NDSL)
Methenamine	100-97-0	Present	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
Methenamine	100-97-0	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Methenamine	100-97-0	Not listed

**EU Classification**

**EU GHS - SV - CLP 1272/2008**

Components	CAS-No.	EU GHS - SV - CLP (1272/2008)
Methenamine	100-97-0	Flammable solids - Flam. Sol. 2: H228 Flammable solid.; Skin sensitizers - Skin Sens. 1: H317 May cause allergic skin reaction.612-101-00-2

**EU - CLP (1272/2008)**

**R-phrase(s)**

R11 - Highly flammable.

R43 - May cause sensitization by skin contact.

**S -phrase(s)**

S 2 - Keep out of the reach of children.

S24 - Avoid contact with skin.

S37 - Wear suitable gloves.

Components	CAS-No.	Classification	Concentration Limits:	Safety Phrases
Methenamine	100-97-0	F; R11 R43	No information	S: (2)-24-37

**The product is classified in accordance with Annex VI to Directive 67/548/EEC**

**Indication of danger:**

F - Highly flammable.

Xi - Irritant.

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**F****Xi****16. OTHER INFORMATION**

**Preparation Date:** 05/27/2015  
**Revision Date:** 06/22/2018  
**Prepared by:** Sonia Owen

**Disclaimer:**

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

**End of Safety Data Sheet**