

SAFETY DATA SHEET

Preparation Date: 4/18/2016

Revision Date: 4/18/2016

Revision Number: G1

1. IDENTIFICATION

Product identifier

Product code: S1700
Product Name: SULFAMIC ACID, REAGENT, ACS

Other means of identification

Synonyms: Amidosulfonic acid;
 Amidosulfuric acid;
 Aminosulfonic acid;
 Sulfamidic acid;
 Sulphamic acid

CAS #: 5329-14-6
RTECS # WO5950000
Cl#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: Chemical intermediate. In organic synthesis.
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)

| | |
|-----------------------------------|------------|
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

Label elements

Danger

Hazard statements

Causes skin irritation

Causes serious eye damage



Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

May be harmful if swallowed

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling

Wear protective gloves

Wear eye/face protection

Precautionary Statements - Response

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: Wash with plenty of water

If skin irritation occurs: Get medical advice/attention

Take off contaminated clothing and wash it before reuse

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Components | CAS-No. | Weight % |
|----------------------------|-----------|----------|
| Sulfamic Acid 5329-14-6 | 5329-14-6 | 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 skin irritation persists, call a physician.

Eye Contact:

Flush eyes with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.

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 Severe skin and eye irritation or burns

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: The product is not flammable. If it is involved in a fire, extinguish the fire using an agent suitable for the type of surrounding fire.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products: If this product is involved in a fire, the following can be released: sulfur oxides; nitrogen oxides; ammonia

Specific hazards: No information available.

Special Protective Actions for Firefighters

Specific Methods: No information available.

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. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Avoid dust formation. Remove all sources of ignition.

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 Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. Keep away from incompatible materials.

Safe Handling Advice

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Avoid dust formation. Do not ingest. Do not breathe vapors/dust. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Materials:

Nitric acid. Sodium. Potassium. Bases. Oxidizing agents. Chlorine.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

| Components | OSHA | NIOSH | ACGIH | AIHA WHEEL |
|----------------------------|------|-------|-------|------------|
| Sulfamic Acid 5329-14-6 | None | None | None | None |

Canada

| Components | Alberta | British Columbia | Ontario | Quebec |
|----------------------------|---------|------------------|---------|--------|
| Sulfamic Acid 5329-14-6 | None | None | None | None |

Australia and Mexico

| Components | Australia | Mexico |
|----------------------------|-----------|--------|
| Sulfamic Acid 5329-14-6 | None | None |

Appropriate engineering controls

Engineering measures to reduce exposure:

Ensure adequate ventilation. 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

Personal Protective Equipment

Eye protection: Goggles

Skin and body protection: Long sleeved clothing. Chemical resistant apron. Gloves.

Respiratory protection: Effective dust mask. or. Wear respirator with dust filter.

Hygiene measures:

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|---|---|---|
| Physical state: Solid | Appearance: Crystals. Crystalline. | Color: White. |
| Odor: Odorless. | Taste No information available | Formula: H3NSO3 |
| Molecular/Formula weight: 97.09 | Flammability: No information available | Flashpoint (°C/°F): No information available. |
| Flash Point Tested according to: Not available | Autoignition Temperature (°C/°F): No information available | Lower Explosion Limit (%): No information available |
| Upper Explosion Limit (%): No information available | pH: No information available | Melting point/range(°C/°F): 205 °C/401 °F |
| Decomposition temperature(°C/°F): 209 °C/408 °F | Boiling point/range(°C/°F): No information available | Bulk density: No information available |
| Density (g/cm3): No information available | Specific gravity: 2.15 | Vapor pressure @ 20°C (kPa): No information available |
| Evaporation rate: No information available | Vapor density: No information available | VOC content (g/L): No information available |
| Odor threshold (ppm): No information available | Partition coefficient (n-octanol/water): No information available | Viscosity: No information available |
| Miscibility: No information available | Solubility: Soluble in Water Sparingly soluble in alcohol Sparingly soluble in Methanol Slightly soluble in Acetone Insoluble in Ether Insoluble in Carbon disulfide Insoluble in Carbon tetrachloride Freely soluble in nitrogenous bases (e.g. liquid ammonia), and nitrogen containing organic solvents (e.g.pyridine, formamide, dimethylformamide) Solubility in Water: 12.8% by weight in water at 0 deg. C; 17.57% by weight in water at 20 deg. C; 22.77% by weight in water at 40 deg. C. Soluble in 6.5 parts water at 0 deg. C. Soluble in 2 parts water at 80 deg. C Solubility decreases the solubility of Sulfamic acid in water. Solubility in Formamide: 0.1667% by weight at 25 deg. C. Solubility in Methanol: 0.0412% by weight at 25 Solubility in Ethanol: 0.0167% by weight at 25 deg. C. Solubility in Acetone: 0.0040% by weight at 25 deg. C. | |

10. STABILITY AND REACTIVITY

Reactivity

Mixing with fuming nitric acid results in violent release of nitrous oxide
When in solution, it slowly hydrolyzes forming ammonium bisulfate

Chemical stability

Stability: Stable under recommended storage conditions

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Incompatible materials.

Incompatible Materials: Nitric acid. Sodium. Potassium. Bases. Oxidizing agents. Chlorine.

Hazardous decomposition products: Sulfur oxides. Nitrogen oxides (NO_x).

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:

Ingestion. Inhalation. Skin. Eyes.

Acute Toxicity

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (inhalation-dust/mist) 1450mg/l

Component Information

Sulfamic Acid - 5329-14-6

LD50/oral/rat = 1450 mg/kg Oral LD50 Rat (LOLI and European Chemicals Bureau IUCLID dataset)
3160 mg/kg (RTECS)

LD50/oral/mouse = 1312 mg/kg (RTECS)

LD50/dermal/rabbit = No information available

LD50/dermal/rat = No information available

LC50/inhalation/rat = No information available

LC50/inhalation/mouse = No information available

Other LD50 or LC50 information = 1050 mg/kg oral LD50 Guinea pig

Product Information

LD50/oral/rat =

VALUE- Acute Tox Oral = 1450mg/kg

LD50/oral/mouse =

Value - Acute Tox Oral = 1312mg/kg

LD50/dermal/rabbit

VALUE-Acute Tox Dermal = No information available

LD50/dermal/rat

VALUE -Acute Tox Dermal = No information available

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:** Causes skin irritation. Moderately to strongly irritating. Symptoms may include redness, itching and pain. May cause blisters.**Eye Contact:** Causes severe eye irritation and possible burns. Redness and pain. May cause blurred vision. Possible eye damage. May cause corneal damage.**Inhalation** Irritating to respiratory system. It can irritate the lungs. Symptoms may include coughing and shortness of breath. It may cause pulmonary edema.**Ingestion** May be harmful if swallowed. May cause abdominal pain, nausea, vomiting, diarrhea. May cause epigastric pain. Irritating to mouth, throat and stomach. May cause severe gastrointestinal tract irritation and possible burns. May cause thirst. May cause dysphagia (difficulty swallowing; pain while swallowing). May cause perforation of the digestive tract. There is burning pain in the mouth and throat as well as white necrotic lesions in the mouth, esophagus and stomach. May affect behavior/central nervous system (excitement).**Aspiration hazard** No information available**Delayed and immediate effects as well as chronic effects from short and long-term exposure****Chronic Toxicity** Chronic exposure may affect the liver and kidneys
Prolonged or repeated inhalation can cause respiratory tract irritation, bronchospasm, chronic bronchitis with coughing, wheezing, phlegm and/or shortness of breath**Sensitization:** No information available**Mutagenic Effects:** No information available**Carcinogenic effects:** Not considered carcinogenic

| Components | IARC | ACGIH - Carcinogens | NTP | OSHA HCS - Carcinogens | Australia - Notifiable Carcinogenic Substances | Australia - Prohibited Carcinogenic Substances |
|---------------|------------|---------------------|------------|------------------------|--|--|
| Sulfamic Acid | Not listed | Not listed | Not listed | Not listed | Not listed | Not listed |

Reproductive toxicity No data is available**Reproductive Effects:** No information available**Developmental Effects:** No information available**Product code:** S1700**Product name:** SULFAMIC ACID,
REAGENT, ACS**8 / 13**

Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure No information available
STOT - repeated exposure No information available
Target Organs: Kidneys. Liver. Respiratory system. Lungs.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: Aquatic environment.

Sulfamic Acid - 5329-14-6

Freshwater Fish Species Data: 14.2 mg/L LC50 Pimephales promelas 96 h static 1

Persistence and degradability: No information available

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 | RCRA - F Series Wastes | RCRA - K Series Wastes | RCRA - P Series Wastes | RCRA - U Series Wastes |
|---------------|------------------------|------------------------|------------------------|------------------------|
| Sulfamic Acid | None | None | None | None |

14. TRANSPORT INFORMATION

DOT

UN-No: UN2967
Proper Shipping Name: Sulfamic acid
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
ERG No: 154
Marine Pollutant No data available
DOT RQ (lbs): No information available
Special Provisions No Information available
Symbol(s):

TDG (Canada)

Product code: S1700

Product name: SULFAMIC ACID,
REAGENT, ACS

14. TRANSPORT INFORMATION

UN-No: UN2967
Proper Shipping Name: Sulfamic acid
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
Marine Pollutant: No Information available

ADR

UN-No: UN2967
Proper Shipping Name: Sulphamic acid
Hazard Class: 8
Packing Group: III
Subsidiary Risk: No information available

IMO / IMDG

UN-No: UN2967
Proper Shipping Name: Sulphamic acid
Hazard Class: 8
Subsidiary Risk: P
Packing Group: III
Marine Pollutant: No information available
EMS: F-A

RID

UN-No: UN2967
Proper Shipping Name: Sulphamic acid
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III

ICAO

UN-No: UN2967
Proper Shipping Name: Sulphamic acid
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III

IATA

UN-No: UN2967
Proper Shipping Name: Sulphamic acid
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
ERG Code: 8L
Special Provisions: No information available

15. REGULATORY INFORMATION

International Inventories

| Components | U.S. TSCA | KOREA KECL | Philippines (PICCS) | Japan ENCS | CHINA | Australia (AICS) | EINECS-No. |
|----------------------|-----------|------------------|---------------------|-----------------|---------|------------------|-------------------|
| <i>Sulfamic Acid</i> | Present | Present KE-32336 | Present | Present (1)-402 | Present | Present | Present 226-218-8 |

U.S. Regulations

Product code: S1700

Product name: SULFAMIC ACID,
REAGENT, ACS

10 / 13

Sulfamic Acid

New Jersey RTK Hazardous Substance List: 1770

FDA - Food Additives Generally Recognized as Safe (GRAS): 21 CFR 186.1093

FDA - 21 CFR - Total Food Additives 186.1093

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 | Carcinogen | Developmental Toxicity | Male Reproductive Toxicity | Female Reproductive Toxicity: |
|---------------|------------|------------------------|----------------------------|-------------------------------|
| Sulfamic Acid | Not Listed | Not Listed | Not Listed | Not Listed |

CERCLA/SARA

| Components | 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 <i>de minimis</i> |
|---------------|---|---|--|---------------------------------|---|
| Sulfamic Acid | None | None | None | None | None |

U.S. TSCA

| Components | TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS) | TSCA 8(d) -Health and Safety Reporting |
|---------------|---|--|
| Sulfamic Acid | Not Applicable | Not Applicable |

Canada

WHMIS hazard class:

E Corrosive material

Sulfamic Acid

E

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 - |
|---------------|------------------------------------|
| Sulfamic Acid | 1 % |

Inventory

| Components | Canada (DSL) | Canada (NDSL) |
|---------------|--------------|---------------|
| Sulfamic Acid | Present | Not Listed |

| Components | CEPA Schedule I - Toxic Substances |
|---------------|------------------------------------|
| Sulfamic Acid | Not listed |

| Components | CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting |
|---------------|---|
| Sulfamic Acid | Not listed |

EU Classification**R-phrase(s)**

R52 - Harmful to aquatic organisms.

R53 - May cause long-term adverse effects in the aquatic environment.

R36/38 - Irritating to eyes and skin.

S -phrase(s)

S 2 - Keep out of the reach of children.

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S28 - After contact with skin, wash immediately with plenty of water

S61 - Avoid release to the environment. Refer to special instructions/safety data sheets.

| Components | Classification | Concentration Limits: | Safety Phrases |
|---------------|----------------------|-----------------------|----------------|
| Sulfamic Acid | Xi; R36/38 R52-53 | No information | S2 S26 S28 S61 |

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

Indication of danger:

Xi - Irritant.

Xn



Xi

**16. OTHER INFORMATION**

16. OTHER INFORMATION

Preparation Date: 4/18/2016
Revision Date: 4/18/2016
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