SAFETY DATA SHEET

Preparation Date: 4/18/2016 **Revision Date:** 5/24/2018 **Revision Number:** G2

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
Acide sulfamique (French)
Ácido sulfámico (Spanish)
CAS #: 5329-14-6
RTECS # WO5950000
CI#: 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	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 it is involved in a fire the following can be released:. Sulfur Oxides. Nitrogen Oxides.

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

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	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WEEL
Sulfamic Acid	5329-14-6	None	None	None	None

Canada

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Sulfamic Acid	5329-14-6	None	None	None	None

Australia and Mexico

Components	CAS-No.	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

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

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

pH:
No information available

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)
Solubililty 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 ast 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 (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:
Ingestion. Inhalation. Skin. Eyes.

Acute Toxicity

Component Information

Sulfamic Acid	
CAS-No.	5329-14-6

LD50/oral/rat = 1450 mg/kg Oral LD50 Rat (LOLI and Euopean Chemicals Bureau IUCLID dataset) 3160 mg/kg (RTECS)
LD50/oral/mouse = 1312 mg/kg (RTECS)
LD50/dermal/rabbit = No information available
LD50/dermal/rat = = 1450 mg/kg Oral LD50
LC50/inhalation/rat = No information available

LC50/inhalation/mouse = No information available
Other LD50 or LC50information = 1050 mg/kg oral LD50 Guinea pig

Product Information

LD50/oral/rat =
VALUE- Acute Tox Oral = 1450 mg/kg

LD50/oral/mouse =
Value - Acute Tox Oral = 1312 mg/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 or foggy 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 (depression or 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	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Sulfamic Acid	5329-14-6	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)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

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: 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	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Sulfamic Acid	5329-14-6	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No:	UN2967
Proper Shipping Name:	Sulfamic acid
Hazard Class:	8
Subsidiary Class	No information available
Packing group:	III
Emergency Response Guide Number	154
Marine Pollutant	No data available
DOT RQ (lbs):	No information available
Special Provisions	IB8, IP3, T1, TP33
Symbol(s):	No information available
Description:	UN2967, Sulfamic acid, 8, III

TDG (Canada)

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

ADR

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

IMO / IMDG

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

RID

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

ICAO

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

15. REGULATORY INFORMATION

International Inventories

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Sulfamic Acid	5329-14-6	PresentACTIVE	Present KE-32336	Present	Present (1)-402	Present	Present	Present 226-218-8

U.S. Regulations

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	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Sulfamic Acid	5329-14-6	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
Sulfamic Acid	5329-14-6	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
Sulfamic Acid	5329-14-6	Not Applicable	Not Applicable

Canada

WHIMIS 2015 - GHS Classifications

WHMIS 2015 Hazard Classification Information: .

Component	WHMIS 2015 Hazard Classification
Sulfamic Acid 5329-14-6 (100)	Serious Eye Damage/Eye Irritation - Category 2: H319 Causes serious eye irritation.

Canada Hazardous Products Regulation This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

WHMIS 1988 Hazard Class
E Corrosive material

Components	WHMIS 1988
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	CAS-No.	Canada (DSL)	Canada (NDSL)
Sulfamic Acid	5329-14-6	Present	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
Sulfamic Acid	5329-14-6	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Sulfamic Acid	5329-14-6	Not listed

EU Classification

EU GHS - SV - CLP 1272/2008

Components	CAS-No.	EU GHS - SV - CLP (1272/2008)
Sulfamic Acid	5329-14-6	Skin corrosion/irritation - Skin Irrit. 2: H315 Causes skin irritation.; Serious Eye Damage/Eye Irritation - Eye Irrit. 2: H319 Causes serious eye irritation.; Hazardous to aquatic environment - chronic hazard - Aquatic Chronic 3: H412 Harmful to aquatic life with long lasting effects.016-026-00-0

EU - CLP (1272/2008)

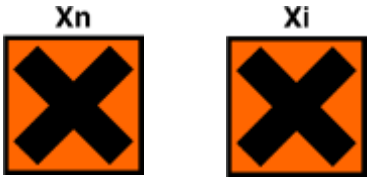
R-phrase(s)
R52 - Harmful to aquatic organisms.
R53 - May cause long-term adverse effects in the aquatic environment.
R36/38 - Irritating to eyes and skin.

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	CAS-No.	**Classification**	**Concentration Limits:**	**Safety Phrases**
Sulfamic Acid	5329-14-6	Xi; R36/38 R52-53	No information	S(2) S26 S28 S61

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

Indication of danger:
Xi - Irritant.



16. OTHER INFORMATION

Preparation Date: 4/18/2016
Revision Date: 5/24/2018
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