



SIGMA-ALDRICH

Material Safety Data Sheet

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Section 1 - Product and Company Information

Product Name: Pyridine, ReagentPlus®, >99%
Product Number: P57506
Brand: Sigma-Aldrich
Company: Sigma-Aldrich
Address: 3050 Spruce Street, SAINT LOUIS, MO 63103 US
City, State, Zip, Country: SAINT LOUIS, MO 63103 US
Technical Phone: 800-325-5832
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Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

Table with 5 columns: Substance Name, CAS #, SARA 313, EC no, Annex I Index Number. Row 1: PYRIDINE, 110-86-1, Yes, 203-809-9, 613-002-00-7

Formula: C5H5N
Synonyms: Azabenzene, Azine, NCI-C55301, Piridina (Italian), Pirydyna (Polish), Pyridin (German), Pyridine (ACGIH:OSHA), RCRA waste number U196

Section 3 - Hazards Identification

Emergency Overview: Flammable (USA) Highly Flammable (EU). Harmful. Harmful by inhalation, in contact with skin and if swallowed. Risk of serious damage to eyes. Calif. Prop. 65 carcinogen. Readily absorbed through skin. Target organ(s): Liver. Kidneys.

HMIS Rating: Health: 2*, Flammability: 3, Reactivity: 0

NFPA Rating: Health: 2, Flammability: 3, Reactivity: 0

*additional chronic hazards present.

Section 4 - First Aid Measures

Oral Exposure: If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

Inhalation Exposure: If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

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

Eye Exposure: 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.

Section 5 - Fire Fighting Measures

Flammable Hazards: Yes

Explosion Hazards: Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions. Forms explosive mixtures in air.

Flash Point: 68 °F, 20 °C

Explosion Limits: Lower: 1.8 %, Upper: 12.4 %

Autoignition Temp: 482 °C, Flammability: Yes

Extinguishing Media Suitable: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Firefighting Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Specific Hazard(s): Emits toxic fumes under fire conditions. Vapor may travel considerable distance to source of ignition and flash back. Specific Method(s) of Fire Fighting: Use water spray to cool fire-exposed containers.

Section 6 - Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill: Evacuate area. Shut off all sources of ignition.

Procedure(s) of Personal Precaution(s): Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up: 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.

Section 7 - Handling and Storage

Handling User Exposure: Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

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Storage
Suitable

Keep container closed. Keep away from heat, sparks, and open flame. Packaged under nitrogen in SURE/SEAL bottles. SURE/SEAL is a trademark of Aldrich Chemical Company, Inc.

Special Requirements

Handle and store under nitrogen.

Section 8 - Exposure Controls / PPE**Engineering Controls**

Safety shower and eye bath. Use nonsparking tools. Use only in a chemical fume hood.

Personal Protective Equipment**Respiratory**

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate: use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand

Compatible chemical-resistant gloves.

Eye

Chemical safety goggles.

General Hygiene Measures

Wash thoroughly after handling. Remove and wash contaminated clothing promptly.

Exposure Limits

Country	Type	Value
Poland	NDS	5 MG/M3
Poland	NDSCh	30 MG/M3
Poland	NDSP	-

Exposure Limits, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	5 PPM
USA	MSHA Standard-air	TWA	5 PPM (15 MG/M3)
USA	OSHA	PEL	8H TWA 5 PPM (15 MG/M3)
New Zealand	OEL		
USA	Remarks: check ACGIH TLV		
USA	NIOSH	TWA	5 PPM

Section 9 - Physical/Chemical Properties**Appearance**

Physical State	Color	Odor
Liquid	Colorless	Unpleasant odor.

Molecular Weight: 79.1 AMU

Property	Value	At Temperature or Pressure
pH	8.5	
BP/BP Range	115 °C	760 mmHg
MP/MP Range	-42 °C	
Freezing Point		
Vapor Pressure	20 mmHg	25 °C
Vapor Density	2.72 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	0.978 g/cm3	
Bulk Density	N/A	

Odor Threshold	< 1 ppm
Volatile%	N/A
VOC Content	N/A
Water Content	N/A
Solvent Content	N/A
Evaporation Rate	N/A
Viscosity	N/A
Partition Coefficient	Log Kow: 0.65
Decomposition Temp.	N/A
Flash Point °F	68 °F
Flash Point °C	20 °C

Method: closed cup
Method: closed cup

Explosion Limits Lower: 1.8 %
Upper: 12.4 %

Flammability N/A
Autoignition Temp 482 °C
Refractive Index 1.51
Solubility
Solubility in Water: Soluble

N/A = not available

Section 10 - Stability and Reactivity**Stability**

Stable

Stable

Conditions to Avoid

Heat.

Materials to Avoid

Strong oxidizing agents, Strong acids.

Hazardous Decomposition Products**Hazardous Decomposition Products**

Carbon monoxide, carbon dioxide, and nitrogen oxides, Cyanides.

Hazardous Polymerization**Hazardous Polymerization**

Will not occur.

Section 11 - Toxicological Information**Route of Exposure****Skin Contact**

May cause skin irritation.

Skin Absorption

Readily absorbed through skin. Harmful if absorbed through skin.

Eye Contact

Causes severe eye irritation.

Inhalation

Harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.

Ingestion

Harmful if swallowed.

Target Organ(s) or System(s)

Liver, Kidneys, Nerves, Bone marrow.

Signs and Symptoms of Exposure

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Dose-related side effects may include: anorexia, nausea, vomiting, headache, dizziness, tachycardia, nervousness, insomnia, skin disorders

RTECS Number: UR8400000

Toxicity Data

Oral - Rat: 891 mg/kg(LD50)

Skin - Rabbit: 1,121 mg/kg(LD50)

Inhalation - Rat: 9,015 ppm(LC50)

Oral - Rat: 891 mg/kg (LD50)

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Ptoisis.
Behavioral:Somnolence (general depressed activity).
Behavioral:Coma.

Inhalation - Rat: 28,500 mg/m3 (LC50)

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Lacrimation,
Behavioral:Somnolence (general depressed activity).
Lungs, Thorax, or Respiration:Dyspnea.

Intraperitoneal - Rat: 866 MG/KG (LD50)

Subcutaneous - Rat: 866 MG/KG (LD50)

Intravenous - Rat: 360 MG/KG (LD50)

Remarks: Behavioral:Sleep.
Behavioral:Somnolence (general depressed activity).
Lungs, Thorax, or Respiration:Dyspnea.

Oral - Mouse: 1500 mg/kg (LD50)

Remarks: Behavioral:Sleep.
Behavioral:Somnolence (general depressed activity).
Lungs, Thorax, or Respiration:Dyspnea.

Intraperitoneal - Mouse: 950 MG/KG (LD50)

Subcutaneous - Mouse: 1250 MG/KG (LD50)

Remarks: Behavioral:Sleep.
Behavioral:Somnolence (general depressed activity).
Lungs, Thorax, or Respiration:Dyspnea.

Intravenous - Mouse: 420 MG/KG (LD50)

Remarks: Behavioral:Sleep.
Behavioral:Somnolence (general depressed activity).
Lungs, Thorax, or Respiration:Dyspnea.

Intravenous - Dog: 880 MG/KG (LD50)

Remarks: Cardiac: Change in rate.
Vascular:BP lowering not characterized in autonomic section.
Lungs, Thorax, or Respiration:Respiratory depression.

Skin - Rabbit: 1121 mg/kg (LD50)

Remarks: Behavioral:Ataxia.
Gastrointestinal:Changes in structure or function of salivary glands.
Liver:Other changes.

Skin - Guinea pig: 1000 mg/kg (LD50)

Oral - Mammal: 1500 mg/kg (LD50)

Inhalation - Mammal: 10,000 mg/m3 (LC50)

Irritation Data

Eyes - Rabbit: 90 % 24 HR

Remarks: Application of 90% solution resulted in severe reaction with clouding of the cornea and scarring of the conjunctiva.
Permanent mild stromal opalescence and subepithelial vascularization occurred.

Skin - Rabbit: 500 mg 24H

Remarks: Mild irritation effect

Chronic Exposure - Carcinogen

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH,
NTP, or EPA classification.

Rat - Oral: 24024 MG/KG 2Y C

Result: Tumorigenic:Neoplastic by RTECS criteria. Kidney, Ureter, Bladder:Tumors.

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Mouse - Oral: 25480 MG/KG 2Y C

Result: Tumorigenic:Carcinogenic by RTECS criteria, Liver:Tumors.

IARC Carcinogen List

Rating
Group 3

NTP Carcinogen List

Rating

Clear evidence.
Some evidence.

Species

Mouse
Rat

Route

Drinking
Drinking

ACGIH Carcinogen List

Rating

A3

Section 12 - Ecological Information

Acute Ecotoxicity Tests

Test Type

LC50 Fish

Species

Pimephales promelas (Fathead minnow)

Time:

Value:

96.0 h

93.8 mg/l

Test Type

EC50 Daphnia

Species

Daphnia magna

Time:

Value:

48.0 h

940 mg/l

Test Type

LC50 Fish

Species

Cyprinus carpio

Time:

Value:

96.0 h

26 mg/l

Test Type

EC50 Daphnia

Species

Daphnia magna

Time:

Value:

48.0 h

1,140 mg/l

Test Type

EC50 Daphnia

Species

Daphnia pulex

Time:

Value:

48.0 h

520 mg/l

Test Type

EC50 Algae

Species

SELENASTRUM

Time:

Value:

72.0 h

100 - 180 mg/l

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Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation

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.

Section 14 - Transport Information

DOT

Proper Shipping Name: Pyridine

UN#: 1282

Class: 3

Packing Group: Packing Group II

Hazard Label: Flammable liquid

PIH: Not PIH

IATA

Proper Shipping Name: Pyridine

IATA UN Number: 1282

Hazard Class: 3

Packing Group: II

Section 15 - Regulatory Information

EU Directives Classification

Symbol of Danger: F Xn

Indication of Danger

Highly Flammable, Harmful.

Risk Statements R: 11 20/21/22

Highly flammable, Harmful by inhalation, in contact with skin and if swallowed.

Safety Statements S: 26 28

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of soap-suds.

US Classification and Label Text

Indication of Danger

Flammable (USA) Highly Flammable (EU), Harmful.

Risk Statements

Harmful by inhalation, in contact with skin and if swallowed, Risk of serious damage to eyes.

Safety Statements

Keep away from sources of ignition - no smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

US Statements

Calif. Prop. 65 carcinogen. Readily absorbed through skin. Target organ(s): Liver, Kidneys.

United States Regulatory Information

SARA Listed: Yes

Deminimis: 1 %

Notes: This product is subject to SARA section 313 reporting requirements.

TSCA Inventory Item: Yes

United States - State Regulatory Information

California Prop - 65

This product is or contains chemical(s) known to the state of California to cause cancer.

Canada Regulatory Information

WHMIS Classification

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

Disclaimer

For R&D use only. Not for drug, household or other uses.

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. Copyright 2007 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.