



8210 N. Austin Avenue, Morton Grove, IL 60053-0519, U.S.A.
 847-967-6000 800-323-8144
 (Monday - Friday: 7:30 a.m. - 4:00 p.m. CST)

Emergency Contact:
 INFOTRAC 800-535-5053 [U.S.A.]

Name: Pyridine
 Code: 270013

..... **MATERIAL SAFETY DATA SHEET**

SECTION 1 PRODUCT IDENTIFICATION

Name: Pyridine
 Code: 270013

SECTION 2 COMPOSITION, INFORMATION ON INGREDIENTS

Synonyms

Azabenzene, azine

CAS #: 110-86-1

MF: C₅H₅N

Ingredients

	<i>Concentration (%/wt)</i>
Pyridine (110-86-1)	NLT 99.0 %
Manufacturing Impurities.....	<1.0 %

SECTION 3 HAZARDS IDENTIFICATION

Precautionary Statements

See Sections 8 and 11 for further details.

Flammable, toxic, readily absorbed through skin.

..... **Emergency Overview**

NFPA Ratings (Scale 0-4); Health = 2; Fire = 3; Reactivity = 0

Liquid: Clear, colorless to yellow. Fishy stench.

Extremely flammable liquid and vapor. May cause flash fire. Keep away from ignition sources. Protect from static discharge. **Exposure levels of 3600 ppm is immediately dangerous to life and health.**

The properties of this material have not been fully investigated. Use due caution in handling and use of this material.

Severely irritating to eyes, skin, and mucous membranes. Harmful if swallowed, inhaled, or absorbed through skin. **Readily absorbed through skin.**

Emits toxic fumes under fire conditions—potential chemical or thermal decomposition products: carbon monoxide, carbon dioxide, nitrogen oxides, cyanide, and nitrogen

Standard chemical handling precautions: Avoid breathing mists/vapors. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

Target organs: central nervous system (CNS), liver, kidneys, nerves, bone marrow

See Sections 4, 5, 6, 8, 9, and 10.

Other Hazard Information

Primary Route(s) of Entry: Vapor/mist inhalation, Ingestion, Skin contact-- **Readily absorbed through skin.**

Eye: Can cause severe irritation and possible burns. May cause eye damage.

Skin: Can cause severe irritation and be readily absorbed through skin. May cause first-degree burns on short exposure. Prolonged exposure may cause second-degree burns.

Inhalation: Can cause severe respiratory tract irritation. Inhalation of high concentrations may cause central nervous system effects characterized by headache, nausea, vomiting, dizziness, unconsciousness, and coma. Prolonged exposure may result in dizziness and general weakness.

Ingestion: Can cause severe gastrointestinal irritation with nausea, vomiting, and diarrhea. May cause nervous system depression, kidney damage, and liver damage. May be harmful if swallowed.

Acute: See specific route above.

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Chronic: Prolonged or repeated skin contact may result in contact dermatitis. Chronic inhalation and ingestion may produce effects similar to acute inhalation and ingestion.
Symptoms: Results of overexposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting. Additional dose related side-effects may include: anorexia, headache, dizziness, tachycardia, nervousness, insomnia, skin disorders
Pre-existing conditions that may be aggravated: central nervous system, liver, or kidney problems

See Section 11 for additional toxicological data.

SECTION 4 FIRST AID MEASURES

Eye contact: Immediately flush eyes with copious amounts of water or eyewash solution for at least 15 minutes; lift eyelids occasionally. If irritation persists, consult physician.
Skin contact: Immediately remove contaminated clothing and shoes, then wash skin with soap and copious amounts of water. If irritation persists, consult physician.
Inhalation: Remove to fresh air. If not breathing, give artificial respiration and keep person warm and at rest. If breathing is difficult, give oxygen; consult physician.
Ingestion: Wash out mouth with water provided person is conscious; consult physician, and give 2-4 cupfuls of milk or water; DO NOT induce vomiting without first consulting physician.
Wash contaminated clothing before reuse.
Physician note: Symptomatic and supportive care. No specific antidote. Treatment based on physician judgment in response to reactions of the patient. Pre-existing conditions aggravated--See Section 4.

SECTION 5 FIRE FIGHTING MEASURES

Flash Point: 68°F; 19°C Method: cc Autoignition: 899°F; 481°C
OSHA Flammability Class: IB Explosion Limits: upper: 12.4%
NFPA: See Section 3 **Emergency Overview** on pg. 1 lower: 1.8%

Extinguishing Media

Carbon dioxide, dry chemical powder, sand, fog, or appropriate foam.
Water may be effective for cooling, but may not effect extinguishment.

Special Fire Fighting Procedures

Self-contained breathing apparatus (SCBA) and protective clothing to prevent contact with skin and eyes should be worn in fighting large fires involving chemicals.

Unusual Fire and Explosion Hazards

Extremely flammable liquid and vapors.
Vapors are heavier than air, may travel long distances along the ground to ignition sources and flash back.
Vapor-air mixtures are explosive above flash point, within above stated limits.
Containers may build pressure or rupture when heated.
Container explosion may occur under fire conditions.
Water spray may be used to cool fire-exposed containers.
Emits toxic fumes under fire conditions.

Hazardous Combustion or Decomposition Products

carbon monoxide, carbon dioxide, and nitrogen oxides

SECTION 6 ACCIDENTAL RELEASE MEASURES

Eliminate all ignition sources.

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Evacuate unnecessary people from area. Isolate spilled material.
 Ventilate area.
 Wear protective clothing to prevent contact with skin and eyes (lab coat, gloves, safety glasses).
 Wear NIOSH/MSHA approved respirator for organic vapor/mists and dust to prevent inhalation.
 Use spark proof tools.
 Contain and recover material when possible.
 If neat or in solution, mix with sand or similar inert adsorbent material.
 Sweep up, seal in appropriate hazardous waste container, and hold for proper waste disposal.
 Wash spill site after material pickup is complete.
 Do not allow material to enter drains or water courses.

SECTION 7 HANDLING AND STORAGE.....

General Handling Measures

Ground and bond containers or use inert gas purge when transferring or handling material.
 Use spark proof tools and explosion proof equipment.
 Empty containers retain product residue, (liquid/vapor), and can be dangerous.
 See Section 8 Below.

Special Storage Instructions

Store in a tightly closed vessel in area suitable for flammable liquids, away from ignition and heat sources.
 Store in a cool, dry place with adequate ventilation.

Special Handling Instructions

Exposure levels of 3600 ppm is immediately dangerous to life and health--Adequately ventilate.
 Since material is readily adsorbed through skin, immediately remove contaminated clothing.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION.....

Airborne Exposure Limits

Pyridine 110-86-1	TWA (8H)		STEL		Ceiling		skin
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
OSHA - PEL and VPEL	5	15	NE	NE	NE	NE	NE
ACGIH - TLV	5	16	NE	NE	NE	NE	NE

NE = Not established

Special/Other Control Measures

Odor threshold: NE

Personal Protective Equipment (PPE)

Chemical safety eyewear.
 Compatible chemical-resistant gloves.
 NIOSH/MSHA approved respirator for organic vapor/mists and dust.
 Protective Clothing (i.e., lab coat, etc.)

Other Standard Safety Equipment and Engineering Preventive Measures

Safety shower and eye wash
 Mechanical exhaust required. Use adequate general and/or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

General Precautions and Handling Measures

Avoid ingestion, inhalation, and contact with eyes, skin, and clothing. *Material is readily absorbed through skin.*



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Avoid prolonged or repeated exposure
 Wash thoroughly after handling

SECTION 9 **PHYSICAL AND CHEMICAL PROPERTIES**

Chemical Family: amine

Use: Analytical solvent

Appearance, Odor, and Other Properties

<i>Appearance:</i> clear, colorless to yellow liquid	<i>Odor:</i> strong fishy stench
<i>Freeze/MP:</i> -42°C (-44°F)	<i>Solubility in Water:</i> miscible in water; volatile in steam
<i>bp (1atm):</i> 115.3°C (239°F)	<i>Water Reactive:</i> NE
<i>FW:</i> 79.10	<i>Specific Gravity (H₂O = 1.0):</i> 0.978
<i>VP (mmHg):</i> 16mm (20°C)	<i>Vapor Density (air=1):</i> 2.73
<i>% Volatiles:</i> 100% (21°C)	<i>Evap. Rate (BuAc = 1.0):</i> NE
<i>pH:</i> 8.5 (0.2 M soln)	<i>Refractive Index (n_D²⁰):</i> 1.5100
<i>Soluble in Organic Solvents:</i> NE	

SECTION 10 **STABILITY AND REACTIVITY**

Stability

Stable

Incompatibilities

Acids
 Acid chlorides
 Strong oxidizers
 Chloroformates
 Bromine trifluorate
 Mixtures with formamide, iodine, and sulfur trioxide, maleic anhydride

Precautions

Avoid incompatibilities.
 Protect from heat, flames, sparks, and ignition sources.
 Keep out of water supplies and sewers.

Hazardous Combustion or Decomposition Products

carbon monoxide, carbon dioxide, nitrogen oxides, and hydrogen cyanide

Hazardous Polymerization

None

SECTION 11 **TOXICOLOGICAL INFORMATION**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

RTECS # UR8400000 Only selected Registry of Toxic Effects of Chemical Substances data (RTECS) is presented here. See actual entry in RTECS for complete information.

Irritation Data

skn rbt 10 mg/24H OPEN mld; skn rbt 500 mg/24H mld
 eye rbt 2 mg open sev

Toxicity Data

ihl rat LC50 28500 mg/m³/1H
 orl rat LD50 891 mg/kg
 skn rbt LD50 1121 mg/kg

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<i>Carcinogenicity</i>	OSHA	IARC	NTP	ACGIH	NIOSH	Notes
Pyridine 110-86-1	NL	NL	NL	NL	NL	

NL = Not Listed as a carcinogen;

Teratogenicity

No studies in mammals was found. Tests in the hydra did not suggest the material should be tested in mammals.

Reproductive Effects

No data available.

Neurotoxicity

Pyridine can act as a general anesthetic and effect the peripheral nervous system.

Mutagenicity

Pyridine's mutagenicity potential is equivocal. Both negative and positive test results can be found in the RTECS data.

Miscellaneous

No data available.

Acute Effects and Symptoms

See specific route responses in Section 3 **Hazards Identification** above.

Readily absorbed through the skin.

Chronic Effects

See specific route responses in Section 3 **Hazards Identification** above.

Target organs: central nervous system, liver, kidneys, nerves, bone marrow

SECTION 12 ECOLOGICAL INFORMATION.....

Data not yet available.

Standard Chemical Precautions:

Keep out of water supplies and sewers, air, and soil.

SECTION 13 DISPOSAL CONSIDERATIONS.....

That which cannot be recovered or recycled, should be disposed of in accordance with all applicable Federal, State, and local environmental regulations.

RCRA waste code(s): U196, D038

RCRA Hazard Class (40CFR 261): Ignitable

SECTION 14 TRANSPORT INFORMATION.....

Ship in accordance with all applicable local, State, Federal, and International transportation regulations.

The following is a summary only. Check regulations for complete information:

U. S. Department of Transportation (49CFR171.101)

Shipping Name: Pyridine

ID Number: UN1282

Hazard Class or Division: 3

Packing Group: PG II

Labeling: Flammable liquid

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SECTION 15 REGULATORY INFORMATION

Reviews, Standards, and Regulations

..... Pyridine
 110-86-1
 TSCA:..... Y
 EINECS:..... Y
 Number..... 203-809-9
 CERCLA [Section 103 (40 CFR 302.4)]: Y
 RQ (lbs) 1,000
 RCRA Waste Code..... U196
 OSHA Process Safety [29 CFR 1910.119]: NL
 TQ (lbs)..... NA
 Clean Air Act
 [Section 112r (40 CFR 68)]:..... NL
 TQ (lbs)..... NA
 Contains Ozone Depleters (Class I or Class II) N
 [Section 103 (40 CFR 302.4)]:..... NL
 State Lists: NL
 States..... CA,FL,PN,MN,MA
 On CA 65 Significant Risk Level NL
 SARA Title III Notification [40 CFR 302.4]:
 Section 302/304 (EHS) Ingredient [40 CFR 355.3]..... NL
 TPQ (lbs)..... NA
 RQ (lbs) NA
 Section 313 Ingredient [40 CFR 372.65]..... Y

Hazard Classes

Sara	Acute	Chronic	Fire	Pressure	Reactivity
Title III	Y	Y	Y	N	N
	Health	Flammability	Reactivity	Special Hazards	
NFPA	2	3	0	None	
HMIS	2	3	0	None	

Risk Phrases:

Caution: The properties of this material have not been fully investigated.
 R11 Highly flammable
 R20/21/22 Harmful by inhalation, in contact with skin, and if swallowed.
 R36/37/38 Irritating to eyes (severely), respiratory system, and skin.

Safety Phrases:

S16 Keep away from ignition sources--no smoking
 S23/24/25 Do not breath vapors. Avoid contact with skin and eyes
 S26/28 In case of contact with eyes or skin, rinse immediately with plenty of water.
 S 33 Take precautionary measures against static discharges.
 S36/37/39 Wear suitable protective clothing, gloves, and eye/face protection.

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SECTION 16 **OTHER INFORMATION**

Miscellaneous

The health and toxicological hazards of this compound have not been fully investigated; therefore, this substance must be handled only by, or under close supervision of those qualified in the handling and use of potentially hazardous substances.

This MSDS was revised as follows:

Updated to the current format to eliminate some unnecessary duplication of information.

<i>Section</i>	<i>Changes</i>
2	Re-arranged synonyms, CAS # and MF order
2	Updated ingredients format
2, 8	Moved exposure limits from Section 2 to 8 (Updated the PELs with the correct information)
3, 11	Eliminated some of the duplication in Section 3 and 11
3, 11	Moved carcinogenicity data to from Section 3 to Section 11
7	Eliminated duplication--removed incompatibilities.
9	Added pH
9	Updated water solubility
11	Removed incorrect Chronic information
13	Updated RCRA Class (characteristics)
15	Updated Risk and Safety Phrases

Disclaimer

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Approved of by: MBF

This is the last page of this MSDS.

Reviewed and re-approved of with no changes by: Jon Pilli

07/21/2008