



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: Acetonitrile  
 Code: 270010

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

**SECTION 1 ..... PRODUCT IDENTIFICATION .....**

Name: Acetonitrile  
 Code: 270010

**SECTION 2 ..... COMPOSITION, INFORMATION ON INGREDIENTS .....**

*Synonyms*

Methyl Cyanide; Ethyl Nitrile; Cyanomethane

CAS #: 75-05-8

MF: CH<sub>3</sub>CN

*Ingredients*

	<i>Concentration (%/wt)</i>	
Acetonitrile (75-05-8) .....	NLT	99.0 %
Manufacturing Impurities .....		<1.0 %

**SECTION 3 ..... HAZARDS IDENTIFICATION .....**

*Precautionary Statements*

See Sections 8 and 11 for further details.

Flammable liquid, toxic, hygroscopic, readily absorbed through skin.

..... **Emergency Overview** .....

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

Liquid: Clear, colorless with a strong, pungent odor, lachrymator.

Flammable and toxic liquid and vapor. May cause flash fire. Keep away from ignition sources. Use adequate ventilation. Protect from static discharge.

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

Toxic if swallowed, inhaled, or absorbed through the skin. Lachrymator. Irritating to eyes, respiratory system, skin, and digestive tract. *Delayed symptoms and effects possible.*

**Readily absorbed through skin.**

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

*Standard chemical handling precautions:* Avoid ingestion or breathing vapors or mists.

Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

*Target organs:* central nervous system, liver, kidneys, blood, lungs, reproductive organs

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

*Other Hazard Information*

Primary Route(s) of Entry: Mist inhalation, Skin contact-- **Readily absorbed through skin.**

*Overexposure can be caused by inhalation, absorption through skin, or digestion. **Effects of overexposure are often delayed**, due to the slow formation of cyanide anions in the body. These cyanide anions prevent the body from using oxygen and can lead to internal asphyxiation.*

- a. *Isolated exposures to small concentrations may produce symptoms that can include nose and throat irritation, flushing of the face and chest tightness, but any cyanide formed in the body may be handled by normal body processes without producing other symptoms of cyanide poisoning.*

**However, the patient should be watched for several hours following exposure to determine if other symptoms of cyanide poisoning occur (as noted below). IF SYMPTOMS OF CYANIDE POISONING OCCUR, TREAT IMMEDIATELY WITH CYANIDE ANTIDOTE.**



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b. *Exposures to higher concentrations or repeated exposure over time can produce acute or cumulative cyanide poisoning. Early symptoms may include those noted under short exposure above, followed in time or immediately, by headache, nausea, vomiting, respiratory depressions, weakness, blood changes, thyroid changes, irregular heart beat, abdominal pain, convulsions, shock, unconsciousness, and death, depending on the concentration and time of exposure.*

*This highly toxic material has insufficient warning properties to prevent personnel from working in contaminated atmospheres.*

*In most cases, cyanide poisoning causes a deceptively healthy pink to red skin color. However, if a physical injury or lack of oxygen is involved, the skin color may be bluish. Reddening of the eyes and pupil dilation are symptoms of cyanide poisoning. Cyanosis (blue discoloration of the skin) tends to be associated with severe cyanide poisonings.*

Eye: Can cause irritation. Lachrymator.

Skin: Can cause irritation and be readily absorbed through skin with the effects of overexposure as noted above.

Inhalation: Can cause irritation with the effects of overexposure as noted above.

Ingestion: Can cause gastric irritation with the effects of overexposure as noted above.

Acute: Irritating to eyes, skin, and respiratory system. Harmful by inhalation, ingestion, or skin absorption. Delayed effects are possible which include central nervous system depression and cyanide poisoning. See overexposure note above.

Chronic: See above effects of overexposure.

Symptoms: *Target Organs:* Central nervous system, liver, kidneys, blood, lungs. Overexposure may cause eye, skin, and/or respiratory irritation, flushing of face, chest tightness, headache, nausea, vomiting, diarrhea, dizziness, rashes, and cyanosis. In addition, other symptoms may include; central nervous system disorders such as mental excitement, depression, drowsiness, impaired perception, incoordination, stupor, coma; and death. *Pre-existing conditions that may be aggravated:* central nervous system, heart or lung diseases, liver, kidney, or thyroid 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: Exposure should be treated as a cyanide poisoning. Effects may be delayed. (See below.)

Antidote: Always have a cyanide antidote kit on hand when working with cyanide compounds. Get medical advice to use. (See below.)





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**SECTION 6 ACCIDENTAL RELEASE MEASURES** .....

Eliminate all ignition sources.  
 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 and acidic vapor to prevent inhalation irritation.  
 Use chemically compatible spill pillows, or similar adsorbent material.  
 Sweep up, seal in appropriate hazardous waste container, and hold for proper waste disposal.  
 Avoid inhalation of vapors and raising contaminated dust.  
 Wash spill site after material pickup is complete.  
 Standard chemical precautions: Keep out of water supplies and sewers.

*Special Note*

Spills can be reacted in alkaline hypochlorite solution to produce cyanate and then neutralized.

**SECTION 7 HANDLING AND STORAGE** .....

*General Handling Measures*

Ground and bond containers when transferring material.  
 Empty containers retain product residue, (liquid/vapor), and can be dangerous. Do Not attempt to clean empty containers as residue is difficult to remove.  
 See Section 8 Below.

*General Storage Measures*

Store in 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 Storage Instructions*

None.

*Special Handling Instructions*

Immediately remove contaminated clothing and wash thoroughly as material is readily adsorbed through skin.  
 Avoid: Strong oxidizers, ignition sources

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

*Airborne Exposure Limits*

Acetonitrile 75-05-8	TWA (8H)		STEL		Ceiling		skin
	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	
OSHA - PEL	40	NE	60	NE	NE	NE	NE
ACGIH - TLV	40	NE	60	NE	NE	NE	NE
NIOSH - air	20/10H	NE	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



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Wear NIOSH/MSHA approved respirator for organic vapor.

Protective Clothing (e.g., lab coat)

*Other Standard Safety Equipment and Engineering Preventive Measures*

Safety shower and eye wash

Mechanical exhaust required. Hood recommended. Use adequate general and/or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

*General Precautions and Handling Measures*

Avoid ingestion and inhalation. Avoid contact with eyes, skin, and clothing

Avoid prolonged or repeated exposure. Wash thoroughly after handling

**SECTION 9 ..... PHYSICAL AND CHEMICAL PROPERTIES .....**

*Chemical Family:* organic nitrile

*Use:* Analytical solvent

*Appearance, Odor, and Other Properties*

*Appearance:* clear, colorless liquid

*Odor:* sweetish, aromatic or ether odor

*Freeze/MP:* -50°C

*Solubility in Water:* completely soluble

*bp (1atm):* 180-181°F (81-82°C)

*Water Reactive:* Yes

*FW:* 41.05

*Specific Gravity (H<sub>2</sub>O = 1.0):* 0.786

*VP (mmHg):* 72.8mm (20°C)

*Vapor Density (air=1):* 1.41

*% Volatiles:* 100% (21°C)

*Evap. Rate (BuAc = 1.0):* 5.79

*Solubility in Organic Solvents:* NE

*Refractive Index (n<sub>D</sub><sup>20</sup>):* 1.3440

**SECTION 10 ..... STABILITY AND REACTIVITY .....**

*Stability*

Stable. However it should be protected from moisture as it is hygroscopic.

*Incompatibilities*

Acids.

Bases.

Reducing agents.

Strong oxidizers. Fire explosion hazard.

Alkali metals.

*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 #** AL7700000 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 500 mg

*Toxicity Data*

ihl rat LC50 7551 ppm/8H; inh hmn TCLo 160 ppm/4H

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orl rat LD50 2460 mg/kg; skn rbt LD50 1250 uL/kg; orl man TDLo 64 mg/kg

<i>Carcinogenicity</i>	OSHA	IARC	NTP	ACGIH	NIOSH	Notes
Acetonitrile	NL	NL	NL	NL	NL	ACGIH A4 - Not Classifiable as a Human Carcinogen

NL = Not Listed as a carcinogen;

*Tumorigenicity*

Equivocal tumorigenic agent by RTECS criteria.

*Teratogenicity*

Embryo or fetus: stunted fetus; inh ham TCLo 8000ppm/1H.

Specific Developmental Abnormalities: musculoskeletal; orl ham TCLo 300mg/kg.

*Reproductive Effects*

Fertility: post-implantation mortality; orl ham TCLo 300mg/kg and inh ham TCLo = 5000 ppm/1H.

*Mutagenicity*

Sex chromosome Loss/Non-disjunction: *S. cerevisiae* 47600ppm.

*Acute Effects*

Acetonitrile is metabolized in the liver to water, formic acid, and hydrogen cyanide. The cyanide is further metabolized to thiocyanate. The onset of symptoms is generally delayed pending conversion to cyanide. Adverse effects may include flushing of face, chest tightness, nausea, vomiting, diarrhea, headache, dizziness, rashes, and cyanosis. Other symptoms may include mental excitement or depression, drowsiness, impaired perception, incoordination, stupor, coma, and death.

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

*Symptoms:* See Section 3 **Hazards Identification** above.

*Chronic Effects*

Chronic inhalation and ingestion may cause effects similar to those of acute exposure. May be metabolized to cyanide which in turn acts by inhibiting cytochrome oxidase impairing cellular respiration. Animal studies have reported that fetal effects/abnormalities may occur when material toxicity is present.

See Section 3 **Hazards Identification** above.

*Target organs:* central nervous system, liver, kidneys, blood, lungs, reproductive effector

**SECTION 12 ..... ECOLOGICAL INFORMATION.....**

*Ecotoxicity:*

This material is not expected to be toxic to aquatic life as the LC50/96-hour values for fish are >100mg/L. Fathead minnow (hard water) TLm=1150 ppm/24H.

*Environmental Fate:*

**Soil:** When released into soil, this material may biodegrade to a moderate extent, may evaporate to a moderate extent and is expected to leach into groundwater.

**Water:** When released into water, this material may biodegrade to a moderate extent, may evaporate to a moderate extent. This material has an estimated bioconcentration factor (BCF) of less than 100. This material is not expected to bioaccumulate.

**Air:** When released into air, this material is not expected to react with photochemically produced hydroxy radicals, may be removed from the atmosphere to a moderate extent by wet deposition, and is expected to have a have-life of greater than 30 days.

*Standard Chemical Precautions*

Keep out of water, air, and soil.

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**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): U003, D001 RCRA Hazard Class (40CFR 261): Ignitable (I), Toxic (T)

*Special Note*

Spills can be reacted in alkaline hypochlorite solution to produce cyanate and then neutralized.

**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: Acetonitrile  
 ID Number: UN1648  
 Hazard Class or Division: 3 - Flammable liquid  
 Packing Group: PG II

**SECTION 15 ..... REGULATORY INFORMATION .....**

*Reviews, Standards, and Regulations*

..... Acetonitrile  
 ..... 75-05-8  
 TSCA:..... NL  
 This compound is sold strictly for research and development use.  
 EINECS:..... Y  
 Number ..... 200-835-2  
 CERCLA [Section 103 (40 CFR 302.4)]: ..... Y  
 RQ (lbs)..... 5,000  
 RCRA Waste Code ..... D003, D001  
 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..... NL on CA, NJ, FI, PA, 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

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**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	U	3	0	None	

**Risk Phrases:**

**Caution: The properties of this material have not been fully investigated.**

R11 Highly Flammable

R23/24/25 Toxic by inhalation, in contact with skin, and if swallowed.

**Safety Phrases:**

S16/33 Keep away from sources of ignition. Take precautionary measures against static discharges.

S23/24/25 Do not breathe vapors. Avoid contact with skin and eyes.

S27 Take off immediately all contaminated clothing.

S34 In case of accident if you feel unwell, seek medical advice immediately (show the label where possible).

S36/37/39 Wear suitable protective clothing, gloves, and eye/face protection.

**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.

**Section Changes**

- 2 Re-arranged synonyms, CAS # and MF order
- 2 Updated ingredients format
- 2, 8 Moved exposure limits from Section 2 to 8
- 3 Added hygroscopic to precautionary statements
- 3 Added Lachrymator to Emergency Overview and eye effects
- 3, 11 Eliminated some of the duplication in Section 3 and 11
- 3, 11 Moved carcinogenicity data to from Section 3 to Section 11
- 15 Added the state lists checked
- 15 Updated Risk and Safety Phrases

**Disclaimer**

The above information is believed to be correct, but does not purport to be all-inclusive and shall be used only as a guide. Regis Technologies, Inc., does not guarantee said information is accurate or complete, *nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for a particular purpose.* Adjustment may be required to conform to the actual conditions of usage. Regis Technologies, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product, nor for the results obtained, or for incidental or consequential damage arising from the use of these data. No freedom from infringement of any patent, copyright or trademark is to be inferred.

Approved of by: MBF

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

**This is the last page of this MSDS.**

07/21/2008