

Baxter Healthcare Corporation
Burdick & Jackson Division
1953 South Harvey Street
Muskegon, MI 49442 USA

information/emergency telephone no. 616.726.3171
chemtrec telephone no. 800.424.9300
canadian emergency telephone no. 613.996.6666

MATERIAL SAFETY DATA SHEET

ACETONITRILE

I. Identification

chemical name Acetonitrile molecular weight 41.05
chemical family Nitrile formula C₂H₃N
synonyms Methyl Cyanide, Cyanomethane
DOT proper shipping name Acetonitrile
DOT hazard class Flammable Liquid
DOT identification no. NA1648 CAS no. 75-05-8

II. Physical and Chemical Data

boiling point, 760mm Hg. 81.6°C freezing point -43.8°C evaporation rate (BuAc=1) ca 5
vapor pressure at 20°C 72.8 mm Hg vapor density (air=1) 1.4 solubility in water @ 20°C complete
% volatiles by volume ca 100 specific gravity (H₂O=1) @ 20°C 0.78 stability Stable
hazardous polymerization Not expected to occur.
appearance and odor Clear, colorless liquid with a sweet, ether-like odor.
conditions to avoid Heat, sparks, open flame, open containers, and poor ventilation.

materials to avoid Strong oxidizing agents and strong acids and bases.

hazardous decomposition products Incomplete combustion can generate hydrogen cyanide and other toxic vapors. Thermal decomposition may occur at temperatures exceeding 120°C.

III. Fire and Explosion Hazard Data

flash point, (test method) 5.6°C (closed cup) auto ignition temperature 524°C
flammable limits in air % by volume: lower limit 4.4 upper limit 16.0
unusual fire and explosion hazards Very volatile and extremely flammable.

extinguishing media Carbon dioxide, dry chemical, alcohol foam, water mist or fog.

special fire fighting procedures Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and rupture closed storage containers. Water spray may be ineffective directly on fire, but should be used to cool fire-exposed containers.

IV. Hazardous Components

Acetonitrile % ca 100 TLV 40 ppm (skin) CAS no. 75-05-8

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V. Health Hazards

<u>Occupational Exposure Limits</u>			<u>Concentration Immediately Dangerous to Health</u>	
OSHA	TWO	- 40 ppm	OSHA/NIOSH	4,000 ppm
	STEL	- 60 ppm		
	Ceiling	- not listed		
<u>Odor Threshold</u>				
ACGIH	TLV-TWA	- 40 ppm (skin)	NSC	not listed
	TLV-STEL	- 60 ppm (skin)		
NIOSH	10 hour TWA	- 20 ppm	NIOSH	40 ppm

Carcinogenic and Teratogenic Data

Acetonitrile is not listed as a carcinogen by IARC, NTP, OSHA or ACGIH. Animal tests have indicated teratogenic effects. RTEC reports teratogenic effects in animals.

Primary Routes of Entry

Acetonitrile may exert its effects through inhalation, skin absorption, and ingestion.

Industrial Exposure: Route of Exposure/Signs and Symptoms

Inhalation: Exposure can cause headache, weakness, nausea, reduced pulse rate and blood pressure, pale or ashen skin, subnormal temperature, shallow respiration, convulsion, collapse, and death at high concentrations.

Eye Contact: Liquid and high vapor concentration can cause irritation.

Skin Contact: Can cause irritation and the same systemic symptoms as inhalation.

Ingestion: Swallowing more than 2 ounces of acetonitrile can have an adverse effect on the central nervous system.

Effects of Overexposure

Acetonitrile is an irritant and a chemical asphyxiant. Acute exposure through inhalation, ingestion, or skin absorption causes dizziness, headache, vomiting, drowsiness, chest pain, unconsciousness, shock, and death. Several hours may elapse between exposure and initiation of symptoms, due to slow release of cyanide. Chronic exposures can produce damage to the liver and kidneys.

Medical Condition Aggravated by Exposure

Preclude from exposure those individuals with diseases of liver, kidneys, skin, and central nervous system.

Emergency First Aid

- Inhalation:** Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately. Use amyl nitrite ampules for 30 seconds in cases of severe exposure and possible cyanide poisoning.
- Eye Contact:** Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.
- Skin Contact:** Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard shoes. Get emergency medical assistance.
- Ingestion:** Call local Poison Control Center for assistance. Contact physician immediately. Never induce vomiting or give anything by mouth to a victim unconscious or having convulsions.

Note to Physician

Maximum acute effects may be delayed several hours. Any exposed person should be kept under surveillance. For severe exposure, treat as cyanide poisoning.

VI. Safety Measures and Equipment

- Ventilation:** Adequate ventilation is required to protect personnel from exposure to chemical vapors exceeding the PEL and to minimize fire hazards. The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.
- Respiratory:** Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).
- Eyes:** Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.
- Skin:** Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, neoprene or rubber offers acceptable chemical resistance. Individuals who are acutely and specifically sensitive to acetonitrile may require additional protective equipment.
- Storage:** Acetonitrile should be protected from temperature extremes and direct sunlight. Proper storage of acetonitrile must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, acetonitrile should be stored in an acceptably protected and secure flammable liquid storage room.

Other: Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

VII. Spill and Disposal Data

Spill Control: Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements. CERCLA Reportable Quantity: 5,000 lbs.

Waste Disposal: Dispose of acetonitrile as an EPA hazardous waste. Contact state environmental agency for listing of licensed hazardous waste disposal facilities and applicable regulations. Hazardous waste numbers: U003(Ignitable, Toxic); D001(Ignitable).

VIII. SARA/Title III Data

Hazard Classification

Immediate Health	Yes
Delayed Health	Yes
Fire	Yes
Sudden Release	No
Reactive	No

Chemical Listings

Extremely Hazardous Substances	No
CERCLA Hazardous Substances	Yes
Toxic Chemicals	Yes

Acetonitrile is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40CFR Part 372. This product does not contain any other toxic chemical above 1% concentration or a carcinogen above 0.1% concentration.

Revision Date: July, 1989

KEY

ca Approximately
na Not applicable
C Ceiling

STEL Short Term Exposure Level (15 minutes)
TLV Threshold Limit Value
TWA Time Weighted Average (8 hours)
BuAc Butyl Acetate

CERCLA Comprehensive Environmental Response, Compensation and Liability Act of 1980
NSC National Safety Council ("Fundamentals of Industrial Hygiene," 3rd Ed., 1988)