

Nitriles

1. Chemical product and company identification

Product name	High Purity Acetonitrile
MSDS #	000000964
Code	0000000964 (NAP)
Product use	Industrial use
Supplier	INEOS USA LLC 2600 South Shore Blvd. League City, Texas 77573
EMERGENCY SPILL INFORMATION:	1 (800) 424-9300 Outside the US: +1 703-527-3887 (CHEMTREC)
OTHER PRODUCT INFORMATION	1 (866) 363-2454 http://techservice.innovene.com

2. Composition/information on ingredients

Ingredient name	CAS #	% by weight
Acetonitrile	75-05-8	99.9

3. Hazards identification

Physical state	Liquid.
Color	Clear. Colorless.
Emergency overview	WARNING! FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. HARMFUL IF SWALLOWED. CAUSES SEVERE EYE IRRITATION. Do not ingest. Do not get in eyes, on skin or clothing. Do not breathe vapor or mist. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Effects may be delayed.
Routes of entry	Dermal contact. Eye contact. Inhalation. Ingestion.
Potential health effects	
Eyes	Causes severe eye irritation.
Skin	Contact is not expected to result in irritation. May be absorbed through skin to cause effects similar to ingestion. Effects may be delayed. May cause damage to the following organs: Respiratory system, central nervous system (CNS).
Inhalation	Effects may be delayed. May cause damage to the following organs: Respiratory system, central nervous system (CNS), kidneys, liver.
Ingestion	Harmful if swallowed. Effects may be delayed. May cause headache, weakness, dizziness, shortness of breath, cyanosis, rapid heart beat, unconsciousness, and possible death. May cause damage to the following organs: Respiratory system, central nervous system (CNS), kidneys, liver.
Medical conditions aggravated by over-exposure	Individuals with preexisting disease of the nervous system, respiratory system, kidney or liver may be at increased risk from exposure to this chemical.
Over-exposure signs/symptoms	Nasal and eye irritation, flushing of the face, headache, nausea, vomiting, weakness, heart palpitations, breathing difficulty and convulsions. Effects may be delayed.
See toxicological information (section 11)	

Product name	High Purity Acetonitrile	MSDS #	0000000964 (NAP)	Page: 1/6
Version 3	Date of issue 06/28/2006.	Format US-COMP	Language ENGLISH.	(ENGLISH)
Build 4.2.7				

4. First aid measures

Eye contact	Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention immediately.
Skin contact	Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Contaminated leather, particularly footwear, must be discarded. Note that contaminated clothing may be a fire hazard. If symptomatic, treat as described under inhalation. Get medical attention immediately.
Inhalation	If inhaled, remove to fresh air. If breathing is difficult, administer oxygen. Do not use mouth to mouth resuscitation. If not breathing, give artificial respiration. Resuscitate using a mouth-to-mask with one-way valve or with Ambu Bag. Keep person warm and at rest. Authorized personnel, acting under standing instructions, may break a capsule of amyl nitrite in a handkerchief and hold it about one inch from the patient's mouth and nostrils for 30 seconds every minute. Get immediate medical attention.
Ingestion	Get immediate medical attention. Do not wait for symptoms to develop. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If symptomatic, treat as described under inhalation.
Notes to physician	<p>Notes to Physician: The onset of symptoms is typically delayed for up to several hours after oral ingestion, inhalation or dermal contact. The prolonged duration of symptoms, regardless of route of exposure, may require repeat doses of cyanide antidotes. Treat as in cyanide poisoning. Toxicity may be delayed due to metabolic release of cyanide. Support respiratory and cardiovascular function.</p> <p>Administer 100% oxygen and monitor blood gases. If symptomatic administer amyl nitrite until intravenous access is established, then inject sodium nitrite (10ml of a 3% solution over 5 minutes) . Monitor blood pressure closely as sodium nitrite is a potent vasodilator. Follow the sodium nitrite directly with intravenous sodium thiosulfate (25% solution), 1.65ml(412mg)/kg of body weight for those under 25kg and 12.5gm (50ml) for those over 25kg. Give at a rate of 2.5-5.0ml/minute. If signs of poisoning persist or reappear, repeat nitrite and thiosulfate injections 30 minutes to an hour later at half the original dose. Monitor blood methemoglobin levels. They should not be allowed to exceed 30-40%. Even when the patient seems perfectly well, the medication may be given for prophylactic purposes 2 hours after the first injections. Whenever the cyanide antidote kit is used the patient should be admitted to an intensive care unit. Monitor arterial gases. Treat lactic acidosis and metabolic acidosis with sodium bicarbonate. Treat seizures with diazepam, phenytoin, or phenobarbital. Hyperbaric oxygen and hemodialysis may be helpful in severe cases not responsive to supportive and antidotal therapy. Hypotension secondary to nitrites should be treated with intravenous fluids and the Trendelenburg position. If pulmonary edema develops, maintain ventilation and oxygenation with close arterial gas monitoring. PEEP or CPAP may be necessary if pO2 remains below 50mm Hg. Avoid net positive fluid balance. Blood cyanide and serum thiosulfate levels will be helpful for documentation although they might not be available for several days. Do not induce emesis in cases of ingestion. Gastric lavage may be performed with a large bore tube after endotracheal intubation. Administer activated charcoal slurry to prevent absorption. Administer one dose of a saline cathartic or sorbitol mixed with charcoal or given separately. Patients should be observed a minimum of 24-48 hours.</p>

5. Fire-fighting measures

Flammability of the product	Flammable.
Auto-ignition temperature	524 °C
Flash point	5.6 °C (Closed cup) Pensky-Martens.
Explosion limits	Lower: 4.4 % Upper: 16 %
Products of combustion	These products are carbon oxides (CO, CO ₂) (carbon monoxide, carbon dioxide), nitrogen oxides (NO, NO ₂ ...).
Unusual fire/explosion hazards	<p>Extremely flammable liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas, travel considerable distance to source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.</p> <p>Vapors may accumulate in low or confined areas, travel considerable distance to source of ignition and flash back. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Container explosion may occur under fire conditions or when heated.</p>
Fire-fighting media and instructions	In case of fire, use water fog, foam, dry chemicals, or carbon dioxide. DO NOT FIGHT FIRE WHEN IT REACHES MATERIAL. Withdraw from fire and let it burn. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. First move people out of line-of-sight of the scene and away from windows. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.
Protective clothing (fire)	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

6. Accidental release measures

Personal precautions	Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (See Section: "Exposure controls/personal protection"). Follow all fire fighting procedures (See Section: "Fire-fighting measures"). Do not touch or walk through spilled material.
Environmental precautions and clean-up methods	If emergency personnel are unavailable, contain spilled material. For small spills add absorbent (soil may be used in the absence of other suitable materials) scoop up material and place in a sealed, liquid-proof container for disposal. For large spills dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal. Avoid contact of spilled material with soil and prevent runoff entering surface waterways. See Section 13 for Waste Disposal Information.
Personal protection in case of a large spill	Splash goggles. Full suit. Vapor respirator or a self-contained breathing apparatus. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

7. Handling and storage

Handling	Do not ingest. Do not get in eyes, on skin or on clothing. Use only with adequate ventilation. Do not breathe vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling.
Storage	Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name

Acetonitrile

Occupational exposure limits

ACGIH TLV (United States, 2003). Skin

TWA: 20 ppm 8 hour(s).

OSHA PEL (United States, 1993).

TWA: 40 ppm 8 hour(s).

TWA: 70 mg/m³ 8 hour(s).

Control Measures

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.

Hygiene measures

Wash hands after handling compounds and before eating, smoking, using lavatory, and at the end of day.

Personal protection

Eyes

Do not get in eyes. Chemical splash goggles.

Skin and body

Do not get on skin or clothing. Wear suitable protective clothing.

Respiratory

Use with adequate ventilation. Do not breathe vapor or mist.

If concentration is unknown, a Self-Contained Breathing Apparatus (SCBA) should be used to avoid inhalation of the product.

Hands

Wear gloves that cannot be penetrated by chemicals or oil. (Neoprene gloves.)

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Feet

Wear clothing and footwear that cannot be penetrated by chemicals or oil.

Consult your supervisor or S.O.P. for special handling directions

Consult local authorities for acceptable exposure limits.

Product name High Purity Acetonitrile	MSDS # 000000964 (NAP)	Page: 3/6
Version 3	Date of issue 06/28/2006.	Format US-COMP
		Language ENGLISH.
	Build 4.2.7	(ENGLISH)

9. Physical and chemical properties

Physical state	Liquid.
Odor	Faint Odor. Pungent.
Color	Clear. Colorless.
Boiling point / Range	81.6 °C
Melting point / Range	-45.7 °C
Density	782 kg/m ³ (0.782 g/cm ³) at 20°C
Vapor pressure	9.681 kPa (72.8
Vapor Density (Air = 1)	1.43
Volatility	> 99% (v/v)
Evaporation rate	>1 compared to (n-BUTYL ACETATE=1)
Solubility	Easily soluble in cold water.
Dispersibility properties	See solubility in water.
LogK_{ow}	The product is more soluble in water; log(octanol/water) =-0.34
Viscosity	Dynamic: 0 Pa·s (0.35 cP) at 20°C

10. Stability and reactivity

Stability and reactivity	Stable under recommended storage and handling conditions (See Section: "Handling and storage").
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Take precautionary measures against static discharges.
Incompatibility with various substances	Incompatible with acids, bases, nitrating agents, nitrogen-fluorine compounds, oxidizers, perchlorates, sulfites.
Hazardous decomposition products	carbon oxides (CO, CO ₂) (carbon monoxide, carbon dioxide), nitrogen oxides (NO, NO ₂ ...), Hydrogen Cyanide (HCN)
Hazardous polymerization	Will not occur.

11. Toxicological information

Ingredient name	Test	Result	Route	Species
Acetonitrile	LD50	3081 mg/kg	Oral	Rat
	LD50	617 mg/kg	Oral	Mouse
	LD50	>2000 mg/kg	Dermal	Rabbit
	LC50	16000 ppm (4 hour(s))	Inhalation	Rat
	LC50	3587 ppm (4 hour (s))	Inhalation	Mouse

Chronic toxicity

Carcinogenic effects

No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH or International Agency for Research on Cancer (IARC).

Mutagenic effects

No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a mutagen.

Reproductive effects

No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a reproductive toxin.

Teratogenic effects

There is experimental evidence that this chemical may cause adverse effects on the developing fetus at maternally toxic doses.

12. Ecological information

Ecotoxicity	1640 mg/l [EC50], 96 hour(s) [Fish]. 5810 mg/l [EC50], 18 hour(s) [Daphnia].
Persistence/degradability	This product is readily biodegradable.
Mobility	The product is poorly absorbed onto soils or sediments. The product will evaporate at a moderate rate from soil. The product will infiltrate soil and contaminate water. The product will dissolve rapidly in water.
Bioaccumulative potential	This product is not expected to bioaccumulate through food chains in the environment.

13. Disposal considerations

Waste information	Avoid contact of spilled material and runoff with soil and surface waterways. Consult an environmental professional to determine if state or federal regulations would classify spilled or contaminated materials as hazardous waste. Use only approved transporters, recyclers, treatment, storage or disposal facilities. Comply with all local, regional, and national laws pertaining to waste management.
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Consult your local or regional authorities.

14. Transport information

International transport regulations

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1648	Acetonitrile	3	II	----	Reportable quantity 5000 lbs. (2268 kg) Limited quantity Yes. Packaging instruction Passenger Aircraft Quantity limitation: 5 L Cargo Aircraft Quantity limitation: 60 L
TDG Classification	UN1648	Acetonitrile	3	II	----	-----
IMDG Classification	UN1648	Acetonitrile	3	II	----	-----
IATA Classification	UN1648	Acetonitrile	3	II	----	-----

15. Regulatory information

U.S. Federal regulations US INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) one-time export notification:: Acetonitrile

This product is not regulated under Section 302 of SARA and 40 CFR Part 355.

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Acetonitrile: Fire hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	Acetonitrile		100
Supplier notification	Acetonitrile		100

Product name High Purity Acetonitrile	MSDS # 0000000964 (NAP)	Page: 5/6
Version 3	Date of issue 06/28/2006.	Format US-COMP
	Language ENGLISH.	(ENGLISH)
	Build 4.2.7	

CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):: Acetonitrile: 5000 lbs. (2268 kg)

State regulations

Massachusetts RTK:Acetonitrile
New Jersey:Acetonitrile
Pennsylvania RTK:Acetonitrile (environmental hazard, generic environmental hazard)
California Prop 65: No products were found

Inventories

AUSTRALIAN INVENTORY (AICS): Listed on inventory.
CANADA INVENTORY (DSL): Listed on inventory.
CHINA INVENTORY (IECS): Listed on inventory.
EC INVENTORY (EINECS/ELINCS): Listed on inventory.
JAPAN INVENTORY (ENCS): Listed on inventory.
KOREA INVENTORY (ECL): Listed on inventory.
PHILIPPINE INVENTORY (PICCS): Listed on inventory.

16. Other information

Label requirements

WARNING!
FLAMMABLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FLASH FIRE.
HARMFUL IF SWALLOWED.
CAUSES SEVERE EYE IRRITATION.

HMIS® Rating :

Health 2 *
Flammability 3
Physical Hazard 0
Personal protection X

National Fire Protection Association (U.S.A.)



History

Date of issue 06/28/2006.
Date of previous issue 12/22/2005.
Prepared by Product Stewardship

Notice to reader

NOTICE : This Material Safety Data Sheet is based upon data considered to be accurate at the time of its preparation. Despite our efforts, it may not be up to date or applicable to the circumstances of any particular case. We are not responsible for any damage or injury resulting from abnormal use, from any failure to follow appropriate practices or from hazards inherent in the nature of the product.