

MSDS Code: PTI002  
Date Prepared: 06/12/08

## 1. Chemical Product and Company Information

**Product Name:** Acetonitrile  
**CAS Number:** 75-05-8  
**Manufacturer/Supplier:** Purification Technologies, Inc. (PTI)  
67 Winthrop Rd., Chester, CT 06412  
**General Assistance:** 860-526-7801 (Mon-Fri, 8:30 am to 5:00 pm)  
**Emergency Number:** 860-526-7801 (Calls during hours other than "General Assistance" are forwarded to key personnel)

## 2. Composition/Information on Ingredients

| Ingredient   | CAS Number | % Weight |
|--------------|------------|----------|
| Acetonitrile | 75-05-8    | 99.9%    |

## 3. Hazards Identification

**Physical State:** Liquid with faint pungent odor.

**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:** Skin contact, eye contact, inhalation, ingestion.

**Potential Health Effects**

**Eye Contact:** Contact causes severe irritation with reversible corneal changes. Vapors may cause irritation.

**Skin Contact:** Contact is not expected to result in irritation. May be absorbed through the skin to cause effects similar to indigestion. Effects may be delayed. May cause damage to the following organs: respiratory system, central nervous system.

**Inhalation:** Effects may be delayed. May cause damage to respiratory system, nervous system, kidney and 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 respiratory system, nervous system, kidney and 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.

**Overexposure signs/ symptoms:** Nasal and eye irritation, flushing of the face, headache, nausea, vomiting, weakness, heart palpitations, breathing difficulty and convulsions. Effect may be delayed.

See toxicological information, section 11.

MSDS Code: PTI002  
Date Prepared: 06/12/08

#### 4. First Aid Measures

- Eye contact:** Immediately flush eyes with large amounts of tepid running water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention immediately.
- Skin:** Immediately wash area of contact thoroughly 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 person from source of exposure to fresh air. If breathing is difficult, administer oxygen if available. 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 1 inch from the patient's mouth and nostrils for 30 seconds every minute. Use a new capsule every 3 minutes. Get immediate medical attention.
- Ingestion:** Get immediate medical attention. Do not wait for symptoms to develop. Do NOT induce vomiting unless directed to by medical personnel. Never give anything by mouth to an unconscious person. If spontaneous vomiting occurs, monitor for breathing difficulty. If victim is symptomatic, treat as described under inhalation.
- Notes to Physician:** The onset of symptoms is typically delayed for up to several hours after oral 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.

Administer 100% oxygen and monitor blood gases. If symptomatic, administer amyl nitrite until intravenous access is established, then inject sodium nitrite (10 ml 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 12.5 gm (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 useful 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 pO<sub>2</sub> remains below 50 mm 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.

MSDS Code: PTI002  
Date Prepared: 06/12/08

## 5. Firefighting Measures

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| <b>Flammability:</b>                       | Flammable  |
| <b>Flashpoint:</b>                         | 5.60°C (42 °F)   |
| <b>Auto-ignition temperature:</b>          | 524.00°C (975.00°F)  |
| <b>Explosion limits:</b>                   | Lower: 4.4% Upper: 16.00%  |
| <b>Products of Combustion:</b>             | Irritating or toxic substances may be emitted upon thermal decomposition, which may include oxides of carbon and nitrogen (CO – carbon monoxide, CO <sub>2</sub> – carbon dioxide, NO – nitrous oxide, NO <sub>2</sub> – nitrogen dioxide).  |
| <b>Unusual Fire and Explosion Hazards:</b> | Extremely flammable liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas, spread to distant ignition sources and flash back. Runoff to sewer may cause fire or explosion hazard. 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. Water is 100% miscible with acetonitrile and should be used to drop concentration below mixture concentration ratio which can ignite.  |
| <b>Fire-fighting media and procedures:</b> | <p>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. Use water jet to cool fire-exposed structures and containing vessels in order to prevent pressure build-up, autoignition or explosion, and to protect personnel.</p> <p>If leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak. Use water to dilute spills and to flush them away from sources of ignition. Do not flush down public sewers or other drainage systems.</p> |
| <b>Protective Clothing (Fire):</b>         | Exposed firefighters must wear NIOSH approved positive pressure self-contained breathing apparatus (SCBA) with full-face mask and full protective clothing.  |

## 6. Accidental Releases Measures

|  |   |
|--|---|
| <b>Personal precautions:</b>                           | Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Stop spill if you can do so without risk. 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.   |
| <b>Environmental precautions and clean-up methods:</b> | If emergency personnel are unavailable, contain spilled material. For small spills add absorbent (granulated charcoal if available – sand or soil could also 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. |
| <b>Personal protection in case of a large spill:</b>   | 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.   |

MSDS Code: PTI002  
Date Prepared: 06/12/08

## 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 vapors 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 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 | OSHA PEL (US 1993)                         |      | ACGIH TLV (US 2003) Skin |      |
|-----------------|--|------|--------------------------|------|
|                 | TWA  | STEL | TWA                      | STEL |
| Acetonitrile    | 40 ppm 8 hrs<br>70 mg/m <sup>3</sup> 8 hrs | None | 20 ppm 8 hours           | None |

- Control Measures:** Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits during use of this product. Use explosion-proof ventilation equipment.
- Hygiene Measures:** Wash hands after handling compounds and before eating, smoking, using lavatory and at the end of day.

**Personal Protection Equipment (PPE)**

- Eyes:** Do not get in eyes. Wear chemical safety goggles and face shield. Have eye wash facilities readily available where eye contact can occur.
- Skin and body:** Do not get on skin or body. When working with this substance, wear appropriate protective clothing to prevent skin contact. Provide safety showers at any location where skin contact can occur.
- 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 (butyl rubber gloves). The correct choice of protective gloves depends upon 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 be chosen in consultation with the supplier and manufacturer 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.

MSDS Code: PTI002  
Date Prepared: 06/12/08

Consult local authorities for acceptable exposure limits.

## 9. Physical and Chemical Properties

|                               |  |
|-------------------------------|--|
| <b>Physical State:</b>        | Liquid   |
| <b>Odor:</b>                  | Faint odor, pungent  |
| <b>Appearance:</b>            | Clear, colorless   |
| <b>Molecular Weight:</b>      | 41.05  |
| <b>Boiling Point:</b>         | 81.60°C(180°F)   |
| <b>Melting Point:</b>         | -45.7°C  |
| <b>Specific Gravity:</b>      | 0.7860   |
| <b>Density:</b>               | 782 kg/m <sup>3</sup> (0.782 g/cm <sup>3</sup> ) at 20°C         |
| <b>Vapor Pressure:</b>        | 9.681 kPa (72.80 mm Hg) @ 20°C                                   |
| <b>Vapor Density (Air=1):</b> | 1.43   |
| <b>Volatility:</b>            | >99% (v/v)   |
| <b>Evaporation Rate:</b>      | >1 compared to (n-butyl acetate=1)                               |
| <b>Solubility:</b>            | Easily soluble in cold water.                                    |
| <b>Viscosity:</b>             | Dynamic: 0 Pa·s (0.35 cP) at 20°C                                |
| <b>LogK<sub>ow</sub>:</b>     | The product is more soluble in water; log(octanol/water) = -0.34 |
| <b>pH:</b>                    | Not Determined   |

## 10. Stability and Reactivity

|  |  |
|--|--|
| <b>Stability and reactivity:</b>         | Stable under recommended storage and handling conditions (see Section: "Handling and storage").  |
| <b>Conditions to avoid:</b>              | Avoid all possible sources of ignition (spark or flame). Take precautionary measures against static discharges.  |
| <b>Incompatibility:</b>                  | Incompatible with acids, bases, nitrating agents, nitrogen-fluorine compounds, oxidizers, perchlorates, sulfites.  |
| <b>Hazardous decomposition products:</b> | These products are carbon oxides (CO – carbon monoxide, CO <sub>2</sub> – carbon dioxide), nitrogen oxides (NO – nitrous oxide, NO <sub>2</sub> – nitrogen dioxide), hydrogen cyanide. |
| <b>Hazardous Polymerization:</b>         | Will not occur.  |

## 11. Toxicological Data

| 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 hours) | Inhalation | Rat     |
|                 | LC50 | 3587 ppm (4 hours)  | Inhalation | Mouse   |

MSDS Code: PTI002  
Date Prepared: 06/12/08

**Chronic toxicity**

|                              |  |
|------------------------------|--|
| <b>Carcinogenic effects:</b> | 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). |
| <b>Mutagenic effects:</b>    | No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a mutagen.                                |
| <b>Reproductive effects:</b> | No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a reproductive toxin.                     |
| <b>Teratogenic effects:</b>  | There is experimental evidence that this chemical may cause adverse effects on the developing fetus at maternally toxic effects.                       |

## 12. Ecological Data


|                                      |  |
|--------------------------------------|--|
| <b>Ecotoxicity:</b>                  | 1640 mg/l [EC50], 96 hours (fish)<br>5810 mg/l [EC50], 18 hours (Daphnia)  |
| <b>Persistence/ degradability:</b>   | This product is readily biodegradable.   |
| <b>Mobility:</b>                     | 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. |
| <b>Bioaccumulative potential:</b>    | This product is not expected to bioaccumulate through food chains in the environment.  |
| <b>Other ecological information:</b> | This product is readily biodegradable. This product is not expected to bioaccumulate through food chains in the environment.   |

## 13. Disposal Considerations



|                           |   |
|---------------------------|---|
| <b>Waste information:</b> | 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. |
|---------------------------|---|

## 14. Transportation Information

**International transport regulations**

| Regulatory Information | UN number | Proper shipping name   | Class | Packing group | Label   | Additional information   |
|------------------------|-----------|--|-------|---------------|---|--|
| DOT Classification     | UN1648    | Acetonitrile<br><br><b>Bill of Lading Description:</b><br>UN 1648, Acetonitrile, 3, PGII, RQ | 3     | II            | Flammable Liquid<br><br> | <b>Reportable quantity:</b> 5000 lbs (2268 kg)<br><br><b>Limited quantity:</b> Yes |

MSDS Code: PTI002  
Date Prepared: 06/12/08

|                            |        |              |   |    |   |   |
|----------------------------|--------|--------------|---|----|---|---|
|                            |        |              |   |    |   | <b>Packaging instruction:</b><br><b>Passenger Aircraft</b><br>Quantity Limitation: 5 L<br><br><b>Cargo Aircraft:</b><br>Quantity limitation: 60 L |
| <b>TDG Classification</b>  | UN1648 | Acetonitrile | 3 | II | Flammable Liquid  |   |
| <b>IMDG Classification</b> | UN1648 | Acetonitrile | 3 | II | Flammable Liquid<br> |   |
| <b>IATA Classification</b> | UN1648 | Acetonitrile | 3 | II | Flammable Liquid<br> |   |

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**

| Form R-Reporting Requirements | Product Name | CAS number | Concentration |
|-------------------------------|--------------|------------|---------------|
|                               | Acetonitrile | 75-05-8    | 100           |
| Supplier Notification         | Acetonitrile | 75-05-8    | 100           |

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.  
ECInventory (EINECS/ELINCS): Listed on inventory.

MSDS Code: PTI002  
Date Prepared: 06/12/08

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.)



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