

# MATERIAL SAFETY DATA SHEET

**SRM Supplier:** National Institute of Standards and Technology  
Standard Reference Materials Program  
100 Bureau Drive  
Gaithersburg, Maryland 20899-2320

**SRM Number:** 1647d  
**MSDS Number:** 1647d  
**SRM Name:** Priority Pollutant  
Polycyclic Aromatic Hydrocarbons  
**Date of Issue:** 03 December 2003

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## SECTION I. MATERIAL IDENTIFICATION

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**Material Name:** Priority Pollutant Polycyclic Aromatic Hydrocarbons in Acetonitrile

**Description:** SRM 1647d consists of five 2 mL ampoules, each containing approximately 1.2 mL of an acetonitrile solution of 16 polycyclic aromatic hydrocarbons (PAHs).<sup>(1)</sup>

**Other Designations:** Polycyclic aromatic hydrocarbons (PAHs) in acetonitrile (acetonitrile; cyanomethane; ethanenitrile; methanecarbonitrile; methyl cyanide)

Name	Chemical Formula	CAS Registry Number
Acetonitrile	CH <sub>3</sub> CN	75-05-8

**DOT Classification:** Acetonitrile, UN1648

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## SECTION II. HAZARDOUS INGREDIENTS

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Hazardous Component	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Acetonitrile	> 99	OSHA TWA: 70 mg/m <sup>3</sup>
		NIOSH TWA: 34 mg/m <sup>3</sup> /10 h
		Skin, ACGIH TWA: 34 mg/m <sup>3</sup>
		Oral-woman, TD <sub>LO</sub> : 500 mg/kg
		Oral-man, TD <sub>LO</sub> : 571 mg/kg

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<sup>1</sup> The total concentration level of the combined PAHs in this material is less than 0.1 %, which is below the reportable limit (0.1 % for carcinogens, 1 % for all other hazards) required by OSHA according to 29 CFR 1910.1200(g)(2)(1)(C)(I). For the actual certified concentrations of the polycyclic aromatic hydrocarbons, refer to the corresponding Certificate of Analysis.

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**SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS**

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<b>Acetonitrile</b>
<b>Appearance and Odor:</b> clear colorless, volatile liquid with a sweet-like odor
<b>Molecular Weight:</b> 41.05
<b>Specific Gravity (water = 1):</b> 0.786
<b>Boiling Point:</b> 82 °C
<b>Freezing Point:</b> -46 °C
<b>Vapor Density (Air = 1):</b> 1.42
<b>Vapor Pressure (at 20 °C):</b> 73 mm Hg
<b>Evaporation Rate (butyl acetate = 1):</b> 5.79
<b>Solubility in Water:</b> miscible
<b>Solubility in Other Compounds:</b> soluble in alcohol, ether, acetone, benzene, methyl acetate, ethyl acetate, chloroform, carbon tetrachloride, ethylene chloride, acetamide solutions, unsaturated hydrocarbons

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**SECTION IV. FIRE AND EXPLOSION HAZARD DATA**

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**Flash Point:** 6 °C

**Method Used:** Not Applicable

**Autoignition Temperature:** 524 °C

**Flammability Limits in Air (Volume %):** UPPER: 16  
LOWER: 3

**Extinguishing Media:** Use dry chemical powder, carbon dioxide, or alcohol resistant foam. Use water spray to cool fire-exposed containers, to disperse vapors, and to flush and dilute free liquid to a less flammable mixture.

**Special Fire Procedures:** Fire fighters should wear self-contained breathing apparatus (SCBA). Fight the fire from a safe distance.

**Unusual Fire and Explosion Hazards:** This material is a dangerous fire and explosive hazard when exposed to heat or flame. When heated to decomposition, acetonitrile emits highly toxic fumes of cyanides. It will react with water, steam, or acids to produce toxic and flammable vapors. Vapors can flow along surfaces to distant ignition sources and flash back.

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**SECTION V. REACTIVITY DATA**

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**Stability:**   X   Stable             Unstable

**Conditions to Avoid:** Avoid heat, flames, and sources of ignition.

**Incompatibility (Materials to Avoid):** This material will react violently with sulfuric acid, oleum, chlorosulfonic acid, nitrating agents, n-fluoro compounds, and perchlorates. It is incompatible with strong oxidizing agents and can be hydrolyzed with acids or bases. Avoid heat, flames, sparks and other sources of ignition.

**Hazardous Decomposition or Byproducts:** Thermal degradation can produce toxic materials such as nitrogen oxides, carbon monoxide, carbon dioxide, and cyanide fumes.

**Hazardous Polymerization:**        Will Occur        X   Will Not Occur

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## SECTION VI. HEALTH HAZARD DATA

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Route of Entry:   X   Inhalation        X   Skin        X   Ingestion

**Health Hazards (Acute and Chronic):** This material is a lachrymator, irritant, and toxicant. At 500 mg/kg in air, brief inhalation has produced irritation of the nose and throat; 160 mg/kg inhaled for 4 hours has caused flushing of the face (2 hour delay after exposure) and bronchial tightness (5 hour delay). Heavier exposures can cause systemic effects. Systemic effects can also be caused by ingestion and skin absorption. The delay of effects occurs probably because of the slow formation of cyanide ions in the body; cyanide prevents the body cells from using oxygen causing internal asphyxiation.

**Signs and Symptoms of Exposure:** Symptoms include bronchial tightness, headache, nausea, and lassitude. Higher concentrations can cause vomiting, chest and abdominal pain, respiration depression, central nervous system depression, extreme weakness, stupor, and convulsions. Skin and eye irritation can occur from contact, especially if exposure is prolonged.

**Listed as a Carcinogen/Potential Carcinogen:**

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	<u>      </u>	<u>  X  </u>
In the International Agency for Research on Cancer (IARC) Monographs	<u>      </u>	<u>  X  </u>
By the Occupational Safety and Health Administration (OSHA)	<u>      </u>	<u>  X  </u>

**EMERGENCY AND FIRST AID PROCEDURES:**

**Skin Contact:** Remove contaminated shoes and clothing. Discard contaminated shoes. Wash affected area with soap and water for at least 15 minutes. Obtain medical assistance if necessary.

**Eye Contact:** Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance.

**Inhalation:** If inhaled, move the victim to fresh air. If the victim is not breathing, give artificial respiration by qualified personnel. Obtain immediate medical assistance.

**Ingestion:** If ingestion occurs, never make a person vomit or drink fluids. If vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Obtain immediate medical assistance.

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## SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

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**Steps to be Taken in Case Material is Released or Spilled:** Notify safety personnel of spill. Wear self-contained breathing apparatus, rubber boots, chemical resistant gloves. **DO NOT** touch spilled material. Evacuate area. Shut off all sources of ignition. Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal.

**Waste Disposal:** Follow all federal, state, and local laws governing disposal.

**Handling and Storage:** Wear appropriate NIOSH/MSHA-approved respirator, chemical-resistant gloves, safety goggles, and other protective clothing. An eye wash station and washing facilities should be readily available near handling and use areas. Use only in a chemical fume hood. Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Store this material in its original sealed ampoules in the dark at temperatures between 10 °C and 30 °C. This material is hygroscopic. It must be tightly sealed or recapped when not in use to protect from moisture. Extremely flammable. Keep away from heat, sparks, and open flame. Container explosion may occur under fire conditions. Keep separated from incompatible materials.

**NOTE:** Contact lenses pose a special problem; soft lenses may absorb irritants and concentrate them. **DO NOT** wear contact lenses in the laboratory.

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## SECTION VIII. SOURCE DATA/OTHER COMMENTS

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**Sources:** MDL Information Systems, Inc., MSDS *Acetonitrile*, 19 March 2003.

**Disclaimer:** Physical and chemical data contained in this MSDS are provided for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references, however NIST does not certify the data in the MSDS. The certified values for this material are given only in the NIST Certificate of Analysis.