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MATERIAL SAFETY DATA SHEET

SRM Supplier: National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Mail Stop 2321
Gaithersburg, Maryland 20899

SRM Number: 2517a
MSDS Number: 2517a
SRM Name: High Resolution Wavelength Calibration for 1510 nm– 1540 nm $^{12}C_2H_2$

Reference

Date of Issue: 05 November 2003

MSDS Coordinator: Carmen S. Davis
Phone: (301) 975-6776
ChemTrec: 1-800-424-9300

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E-mail: SRMMSDS@nist.gov

SECTION I. MATERIAL IDENTIFICATION

Material Name: High Resolution Wavelength Calibration Reference for 1510 nm – 1540 nm Acetylene $^{12}C_2H_2$

Description: SRM 2517a is a single-mode optical-fiber-coupled absorption cell containing acetylene ($^{12}C_2H_2$) gas at a pressure of 6.7 kPa (50 Torr). Each unit of SRM 2517a contains approximately 2 mg of acetylene gas.

Other Designations: Acetylene (acetylen; ethine; narcylen)

Name	Chemical Formula	CAS Registry Number
Acetylene	C_2H_2*	74-86-2*

DOT Classification: Not regulated by DOT (due to the small quantity of acetylene gas)

Manufacturer/Supplier: It is available from a number of suppliers.

*CAS number is for C_2H_2 **NOT** the istope $^{12}C_2H_2$; CAS numbers **DO NOT** recognize isotopes.

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Component	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Acetylene	100 *	OSHA PEL-Ceiling: 2500 µmol/mol (2662 mg/m^3)
		ACGIH: simple asphixiant
		NIOSH PEL-Ceiling: 2500 µmol/mol (2662 mg/m^3)
		Human, Inhalation: TC_{LO}: 200 000 µmol/mol
		Human, Inhalation: LC_{LO}: 500 000 µmol/mol/5 min

*Each SRM unit contains approximately 2 mg of acetylene gas.

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SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Acetylene
Appearance and Odor: colorless gas with a sweet, garlic odor
Relative Molecular Mass: 26.04
Density (@ 0ºC): 1.1747 g/L
Vapor Pressure (-84 °C): 760 mm Hg
Water Solubility: 0.94 %
Solvent Solubility: soluble in acetone, benzene, chloroform, and ether

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable **Method Used:** Not Applicable **Autoignition Temperature:** 305 °C

Flammability Limits in Air (Volume %): **UPPER:** 100
LOWER: 2.5

Unusual Fire and Explosion Hazards: This material is a severe fire hazard when exposed to heat or flames. Vapor and air mixtures are explosive. This material may decompose violently when heated. Acetylene may explode on caontac with the following materials: bromine, chlorine, iodine, and oxygen.

Hazardous Combustion Products: Thermal oxidative decomposition of acetylene may produce oxides of carbon.

SECTION V. REACTIVITY DATA

Stability: **X** **Stable** _____ **Unstable**

Conditions to Avoid: Avoid heat, sparks, flames, and other sources of ignition; avoid contact with incompatible materials.

Incompatibility (Materials to Avoid): Acetylene is incompatible with metals, halogens, oxidizing agents, metal carbides, reducing agents, and halocarbons.

See Section IV: "Fire & Explosion Hazard Data".

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SECTION VI. HEALTH HAZARD DATA

Hazardous Polymerization _____ **Will Occur** X **Will Not Occur**

Health Hazards (Acute and Chronic): Inhalation of pure acetylene may cause *dyspnea* (difficult or labored breathing), headache, and staggering at a level of 20 % in air. Complete anesthesia, increased blood pressure, *narcosis* (a state of stupor, unconsciousness, or affested activity produced by the influence of narcotics or other chemicals), and stimulated respiration may occur at concentrations greater than 80 %. Other reported effects may include mild gastric symptoms, dizziness, mental confusion, emotional instability, *hypercapnia* (an increased concentration of carbon dioxide in the blood), and myocardial sensitization. Asphyxiation may occur by reducing the oxygen concentration in respirable air to low levels.

Skin contact with acetelyene my cause a rash.

Medical Conditions Generally Aggravated by Exposure: Not Available

Listed as a Carcinogen/Potential Carcinogen:

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

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Watch for chemical irritations and treat them accordingly. 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 immediately.

Inhalation: If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration. Obtain medical assistance immediately.

Ingestion: Not Applicable (gas)

TARGET ORGAN(S) OF ATTACK: upper respiratory tract (URT) and central nervous system (CNS)

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released: Personnel should be protected against gas inhalation and eye contact. Remove leaking cell to an exhaust hood or safe outdoors area.

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

Handling and Storage: Provide general and local explosion-proof ventilation systems to maintain airborne concentrations below the TLV. Provide approved respiratory apparatus for non-routine or emergency use. Use an approved filter and vapor respirator when the vapor or mist concentrations are high. An eye wash station and washing facilities should be readily available near handling and use areas.

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

This SRM is intended to be used in a laboratory environment near ambient room temperature. The protective caps provided for the FC/PC fiber connectors should be replaced when the SRM is not in use. Refer to the corresponding Certificate of Analysis ("Storage and Handling" section) for additional handling and use instructions.

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SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: MDL Information Systems, Inc., MSDS *Acetylene*, 19 March 2003.
Cambridge Isotope Laboratories, MSDS *Acetylene*, 12 January 1996.

Disclaimer: Physical and chemical data contained in this MSDS are provided only 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 on the MSDS. The certified values for this material are given on the NIST Certificate of Analysis.

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