Date of Issue:
28 April 2015

SAFETY DATA SHEET

1. Substance and Source Identification

Product Identifier

SRM Number: 1596
SRM Name: Dinitropyrene Isomers and 1-Nitropyrene in Methylene Chloride
Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) is intended for use in evaluating analytical methods for the determination of selected nitro-substituted PAHs. A unit of SRM 1596 consists of five ampoules, each containing approximately 1.3 mL of a methylene chloride solution of four nitrated polycyclic aromatic hydrocarbons.

Company Information

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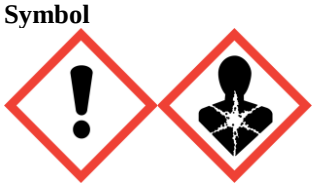
2. Hazards Identification

Classification

Physical Hazard:	Not classified.	
Health Hazard:	Corrosive/Skin Irritant	Category 2
	Eye Damage/Irritant	Category 2A
	Carcinogenic	Category 1B
	STOT Single Exposure	Category 3

Label Elements

Symbol



Signal Word
DANGER

Hazard Statement(s)

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H350	May cause cancer.
H336	May cause drowsiness or dizziness.

Precautionary Statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P261	Avoid breathing fumes, mist, vapors, or spray.
P264	Wash hands thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves, eye protection, and protective clothing.
P304+P340	If inhaled: Remove person to fresh air and keep comfortable for breathing.
P312	Call a doctor if you feel unwell.

P302+P352	If on skin: Wash with plenty of water.
P332+P313	If skin irritation occurs: Get medical attention.
P305+P351+P338	If in eyes: Rinse eyes cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P308+P313	If exposed or concerned: Get medical attention.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents and container according to local regulations.

Hazards Not Otherwise Classified: None.

Ingredients(s) with Unknown Acute Toxicity: None.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Substance: Methylene chloride

Other Designations: Dichloromethane; methylene dichloride; DCM; CH_2Cl_2

Note: This material contains trace amounts of nitro-substituted PAHs. The concentrations are below the reportable limit for hazardous components (1 % or greater) and carcinogens (0.1 % or greater), required by OSHA, 29 CFR 1910.1200 (g)(2)(i)(C)(1), for SDS information. For actual concentrations, see the NIST Certificate of Analysis.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Methylene Chloride	75-09-2	200-838-9	100

4. FIRST AID MEASURES

Description of First Aid Measures

Inhalation: If adverse effects occur, remove to well-ventilated (uncontaminated) area. Give artificial respiration if not breathing. Get immediate medical attention.

Skin Contact: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Thoroughly clean and dry before reuse. Get medical attention, if needed.

Eye Contact: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion: If a large amount is swallowed, seek medical attention.

Most Important Symptoms/Effects, Acute and Delayed: May cause eye and skin irritation, central nervous system depression, cancer; releases CO during detoxification.

Indication of any immediate medical attention and special treatment needed, if necessary: If any of the above symptoms are present, seek immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Slight fire hazard. See Section 9, "Physical and Chemical Properties" for flammability properties.

Extinguishing Media

Suitable: Regular dry chemical, carbon dioxide, water, or alcohol-resistant foam.
Unsuitable: None listed.

Specific Hazards Arising from the Chemical: Not applicable.

Special Protective Equipment and Precautions for Fire-Fighters: Move container from fire area if it can be done without personal risk. Avoid inhalation of material or combustion by-products. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

NFPA Ratings (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 2 Fire = 1 Reactivity = 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection". Keep out of waters supplies and sewers.

Methods and Materials for Containment and Clean up: Stop leak if possible without personal risk, with water spray to reduce vapors. Absorb spilled material with sand or non-combustible material and collect in appropriate container for disposal.

7. HANDLING AND STORAGE

Safe Handling Precautions: Handle glass ampoules with care. See Section 8, "Exposure Controls and Personal Protection".

Storage and Incompatible Materials: Store in a well-ventilated area. Keep separated from incompatible substances (see Section 10, "Stability and Reactivity").

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits

OSHA (PEL):	25 ppm TWA 125 ppm STEL 15 min 12.5 ppm Action Level see 29 CFR 1910.1052
NIOSH (REL):	2300 ppm IDLH
ACGIH (TLV):	50 ppm TWA

Engineering Controls: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal Protection Measures: In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory Protection: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye Protection: Splash resistant safety goggles and emergency eyewash are recommended.

Skin and Body Protection: Chemical resistant clothing and gloves are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Descriptive Properties

Molar Mass (g/mol)	84.93
Molecular Formula	CH_2Cl_2
Appearance (physical state, color, etc.)	clear, colorless liquid
Odor	chloroform-like odor
Odor threshold	25 ppm to 50 ppm
pH	not available
Evaporation rate (butyl acetate = 1)	27.5
Melting point/freezing point	–95 °C (–139 °F)
Relative Density (water = 1)	1.3266
Density	not available
Vapor Pressure	400 mmHg at 24 °C
Vapor Density (air = 1)	2.9
Viscosity	0.441 cP at 20 °C
Solubilities	water: 1.32 % at 20 °C; miscible with alcohols, ether, dimethylformamide, phenols, aldehydes, ketones, acetic acid, triethyl phosphate, acetoacetic acid, cyclohexylamine, chlorinated solvents
Partition coefficient (n-octanol/water)	not available

Thermal Stability Properties

Autoignition Temperature	556 °C (1033 °F)
Thermal Decomposition	not available
Initial boiling point and boiling range	40 °C (104 °F)
Explosive Limits, LEL (Volume %)	13
Explosive Limits, UEL (Volume %)	23
Flash Point	not flammable
Flammability (solid, gas)	not available

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperatures and pressure.

Stability: X Stable _____ Unstable

Possible Hazardous Reactions: Not applicable.

Conditions to Avoid: Avoid heat, flames, sparks, and other sources of ignition. Minimize contact with material. Avoid inhalation of material or combustion by-products. Keep out of water supplies and sewers.

Incompatible Materials: Oxidizing materials, combustible materials, metals, and bases.

Hazardous Decomposition: Oxides halogenated compounds, oxides of carbon, phosgene.

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: X Inhalation X Skin X Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Skin irritation, eye irritation, central nervous system depression, and cancer.

Potential Health Effects (Acute, Chronic, and Delayed)

Inhalation: Short-term exposure may result in irritation, changes in body temperature, nausea, vomiting, chest pain, irregular heartbeat, headache, drowsiness, dizziness, disorientation, tingling sensation, loss of coordination, lung congestion, and blood disorders. Long-term exposure may also include hallucinations, changes in blood pressure, liver damage, reproductive effects, effects on the brain, and cancer.

Skin Contact: Irritation (possibly severe), absorption may occur which may result in effects listed for short-term inhalation exposure. Long-term exposure may result in skin disorders.

Eye Contact: Irritation.

Ingestion: Same effects listed for inhalation and including diarrhea, stomach pain, difficulty breathing, pain in extremities, internal bleeding, kidney disorders, convulsions, and unconsciousness.

Numerical Measures of Toxicity

Acute Toxicity: Not classified.
Rat, oral, LD50: 3000 mg/kg
Rat, inhalation, LC50: 76 000 mg/m^3 (4 h)

Skin Corrosion/Irritation: Category 2
Rabbit, skin 100 mg (24 h) – moderate
Rabbit, skin 810 mg (24 h) – severe

Serious Eye Damage/Eye Irritation: Category 2A
Rabbit, eye 500 mg (24 h) – mild
Rabbit, eye 162 mg – moderate
Rabbit, eye 10 mg – produced keratitis, iritis, increased corneal thickness, and inflammation of the conjunctiva with effects lasting up to 2 weeks.

Respiratory Sensitization: Not classified; no data available.

Skin Sensitization: Not classified; no data available.

Germ Cell Mutagenicity: Not classified.
Rat 1275 mg/kg, 30 µmol/L; Escherichia coli 8250 µg/well

Carcinogenicity: Category 1B

Listed as a Carcinogen/Potential Carcinogen X Yes _____ No

Methylene chloride is currently listed by IARC as Group 2B, *possibly carcinogenic to humans*; by NTP as *reasonably anticipated to be a human carcinogen* and is present on OSHA's list of carcinogens.

Tumorigenic: Rat, inhalation, TCLo: 3500 ppm (6 h)

Reproductive Toxicity: Not classified; no data available.
Rat, inhalation TCLo: 1250 ppm (7 h, pregnant 6 d to 15 d)

STOT, Single Exposure: Category 3, has shown to be a central nervous system depressant.

STOT, Repeated Exposure: Not classified; no data available.

Aspiration Hazard: Not classified.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data

Fish:	Fathead minnow, *Pimephales promelas*, LC50: 140.8 to 277.8 mg/L [flow-through] (96 h)
	Fathead minnow, *Pimephales promelas*, LC50: 262 to 855 mg/L [static] (96 h)
Algae:	*Pseudokirchneriella subcapitata* EC50: >500 mg/L (96 h)
Invertebrate:	Water flea, *Daphnia magna*, EC50: 1532 to 1847 mg/L [static] (48 h)

Persistence and Degradability: No data available.

Bioaccumulative Potential: Bioconcentration factor (BCF) 6.4 to 40 (method: OECD 305C)

Mobility in Soil: No data available.

Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations. Subject to hazardous waste regulations US EPA 40 CFR 262: Hazardous waste number U080.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: UN1593, *Dichloromethane*, Hazard Class 6.1, Packing Group III.

15. REGULATORY INFORMATION

U.S. Regulations

CERCLA Sections 102a/103 (40 CFR 302.4): 1000 lbs (454 kg) final RQ.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): 0.1 % de minimis concentration.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	Yes
CHRONIC HEALTH:	Yes
FIRE:	No
REACTIVE:	No
PRESSURE:	No

State Regulations

California Proposition 65: Warning! This product contains a chemical (methylene chloride) known to the state of California to cause cancer.

U.S. TSCA Inventory: Methylene chloride is listed.

T**SCA 12(b), Export Notification:** Not listed.

Canadian Regulations: WHMIS Information is not provided for this material.

16. OTHER INFORMATION

Issue Date: 28 April 2015

Sources: ChemADVISOR, Inc., SDS, *Dichloromethane*, 20 March 2015.

Hazardous Substance Data Bank, National Library of Medicine's Toxnet system, *Methylene Chloride, CAS # 75-09-2*, available at: http://toxnet.nlm.nih.gov/ (accessed Apr 2015).

OSHA 1910.1052 App A, *Safety Data Sheet and Technical Guidelines for Methylene Chloride*, available at: https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10095 (accessed April 2015).

Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OSHA	Occupational Safety and Health Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PEL	Permissible Exposure Limit
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transportation Agency	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
LC50	Lethal Concentration	STEL	Short Term Exposure Limit
LD50	Median Lethal Dose or Lethal Dose, 50 %	STOT	Specific Target Organ Toxicity
LEL	Lower Explosive Limit	TLV	Threshold Limit Value
MSDS	Material Safety Data Sheet	TPQ	Threshold Planning Quantity
NFPA	National Fire Protection Association	TSCA	Toxic Substances Control Act
NIOSH	National Institute for Occupational Safety and Health	TWA	Time Weighted Average
NIST	National Institute of Standards and Technology	UEL	Upper Explosive Limit
n.o.s.	Not Otherwise Specified	WHMIS	Workplace Hazardous Materials Information System

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

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srmmsds@nist.gov; or via the Internet at http://www.nist.gov/srm.