

# MATERIAL SAFETY DATA SHEET

**SRM Supplier:** National Institute of Standards and Technology  
Standard Reference Materials Program  
Bldg. 202 RM 211  
Gaithersburg, Maryland 20899

**SRM Number:** 1975  
**MSDS Number:** 1975  
**SRM Name:** Diesel Particulate Extract  
(Industrial Forklift)  
**Date of Issue:** 07 November 2000

**MSDS Coordinator:** Joylene W.L. Thomas  
**Phone:** (301) 975-6776  
**ChemTrec:** 1-800-424-9300

**FAX:** (301) 926-4751  
**e-mail:** SRMMSDS@nist.gov

---

## SECTION I. MATERIAL IDENTIFICATION

---

**Material Name:** Diesel Particulate Extract

**Description:** A unit of SRM 1975 consists of four ampules, each containing approximately 1.2 mL of a dichloromethane extract of diesel particulate matter collected from an industrial diesel-powered forklift.

The basic components of diesel particulate matter (DPM) from which the extract was made, are elemental carbon, heavy hydrocarbons derived from fuel and lubricating oils, and hydrated sulfuric acid derived from the fuel sulfur. DPM contains a large portion of the polynuclear aromatic hydrocarbons (PAHs) found in diesel exhaust. For a more detailed characterization of the diesel particulate extract, refer to the certificate of analysis for SRM 1975.

**NOTE:** This material is intended for the purpose of characterizing the risk of diesel exhaust exposure. **It is to be used for research purposes only.**

**Other Designations:** Soot extract in Dichloromethane (methylene chloride, methylene dichloride)

Name	Chemical Formula	CAS Registry Number
Dichloromethane	CH <sub>2</sub> Cl <sub>2</sub>	75-09-2
Diesel Particulate Matter	Not available	Not available

**DOT Classification:** Dichloromethane-Toxic Liquid, UN 1593

**Manufacturer/Supplier:** Not applicable

---

## SECTION II. HAZARDOUS INGREDIENTS

---

Hazardous Components	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Dichloromethane	98.5	OSHA TWA: 25 mg/kg
		OSHA action level: 12.5 mg/kg
		ACGIH TWA: 50 mg/kg
Residual Mass of Diesel Particulate Matter Extracted	1.5	No occupational exposure limits established.*

**NOTE:** This MSDS is written for dichloromethane and whole diesel particulates. For the actual concentrations of PAHs in diesel particulate extract, refer to the corresponding Certificate of Analysis.

\*In its 1999 Notice of Intended Changes, the ACGIH proposed a TLV of 0.05 mg/m<sup>3</sup> for diesel particulate matter (DPM). The proposed carcinogenicity classification is A2 - "Suspected Human Carcinogen."



---

**SECTION VI. HEALTH HAZARD DATA**

---

Route of Entry:          X   Inhalation                        X   Skin                        X   Ingestion

**Health Hazards (Acute and Chronic): Dichloromethane:** Dichloromethane is a carcinogen. This material may be harmful if swallowed, inhaled, or absorbed through the skin. Vapor or mist may cause irritation of the skin, eyes, mucous membranes, and upper respiratory tract. Exposure may cause nausea, dizziness, headache, and nervous system disorders. Chronic effects may include damage to the liver and kidneys. Dichloromethane is metabolized in the body producing carbon monoxide which increases and sustains carboxyhemoglobin levels in the blood, reducing the oxygen-carrying capacity of the blood.

**Diesel Particulate Matter:** Diesel particulate matter (DPM) is perceived to be one of the major harmful emissions produced by diesel engines. Although there has been a considerable amount of basic research, the human health effects are not fully understood.

Workers exposed to diesel exhaust face the risk of adverse health effects ranging from headaches to nausea to cancer to respiratory disease. Studies show exposed workers have an elevated risk of lung cancer. There is some evidence of risk of bladder cancer. Workers also may experience dizziness, drowsiness, headaches, nausea, decrement of visual acuity, and decrement in forced expiratory volume. Laboratory tests have shown diesel exhaust to be toxic, mutagenic, and carcinogenic. For mutagenicity values, please refer to the Certificate of Analysis.

**Medical Conditions Generally Aggravated by Exposure:** blood system disorders, heart or cardiovascular disorders, kidney disorders, liver disorders, skin disorders and allergies

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

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

Dichloromethane is classified as carcinogenic to humans by NTP, IARC, and OSHA.

The International Agency for Research on Cancer (IARC) reports the following evaluation of diesel engine exhaust:

There is *sufficient evidence* for the carcinogenicity in experimental animals of whole diesel engine exhaust.

There is *inadequate evidence* for the carcinogenicity in experimental animals of gas-phase diesel engine exhaust (with particles removed).

There is *sufficient evidence* for the carcinogenicity in experimental animals of extracts of diesel engine exhaust particles.

There is *limited evidence* for the carcinogenicity in humans of diesel engine exhaust.

There is *limited evidence* for the carcinogenicity in humans of engine exhausts (unspecified as from diesel or gasoline engines). Overall

Evaluation: Diesel engine exhaust is *probably carcinogenic to humans (Group 2A)*.

**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. If irritation develops and persists, obtain medical assistance.

**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, remove the victim to fresh air. If breathing is difficult, give oxygen; if victim is not breathing, give artificial respiration. Obtain medical assistance if necessary.

**Ingestion:** **DO NOT** induce vomiting. If ingested, wash out mouth with water. Obtain medical assistance.

**TARGET ORGAN(S) OF ATTACK:** blood, central nervous system

---

**SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE**

---

**Steps to be Taken in Case Material Is Released or Spilled:** Notify safety personnel of spills. Evacuate all non-essential personnel from the area. Remove all sources of heat and ignition. Absorb small spills with sand or other non-combustible materials. Use appropriate personal protective equipment during cleanup. Keep out of watersheds and waterways.

**Waste Disposal:** Follow all federal, state, and local regulations.

**Handling and Storage:** To prevent skin contact, wear chemical resistant gloves. Wear safety goggles to prevent contact with the eyes. Remove contaminated clothing and do not reuse until after it has been properly laundered. Eyewash stations and safety showers should be available in areas of use.

**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.

Store containers in a cool, dry, well ventilated area.

---

#### SECTION VIII. SOURCE DATA/OTHER COMMENTS

---

**Sources:** MDL Information Systems, *MSDS Dichloromethane*, March 21, 2000.  
Diesel Net <http://www.dieselnet.com>  
OSHA Priorities – Diesel Exhaust, <http://www.osha.gov/oshinfo/priorities/diesel.html>  
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans and their Supplements, Vol 46, Diesel and Gasoline Engine Exhausts and Some Nitroarenes, <http://193.51.164.11/htdoc/monographs/Vol46/46-01.htm>

**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.