

MATERIAL SAFETY DATA SHEET

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2320
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SRM Number: 982
MSDS Number: 982
SRM Name: Equal-Atom Lead
Isotopic Standard

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SECTION I. MATERIAL IDENTIFICATION

Material Name: Equal-Atom Lead Isotopic Standard

Description: SRM 982 consists of 1 g of wire that was prepared by mixing commercial and radiogenic leads to obtain essentially equal-atom amounts of Lead-206 and Lead-208. It is chemically pure to at least 99.9 + % purity.

The Isotopic Compositions:

Atomic Abundance Ratio, Lead-204/Lead-206	0.027 219 ± 0.000 027
Atomic Abundance Ratio, Lead-207/Lead-206	0.467 07 ± 0.000 20
Atomic Abundance Ratio, Lead-208/Lead-206	1.000 16 ± 0.000 36
Lead-204 (atom %)	1.091 2 ± 0.001 2
Lead-206 (atom %)	40.089 0 ± 0.007 2
Lead-207 (atom %)	18.724 4 ± 0.002 3
Lead-208 (atom %)	40.095 4 ± 0.007 7

Other Designations: Lead (plumbum)

Name	Chemical Formula	CAS Registry Number
Lead	Pb	7439-92-1

SRM 982 IS A RADIOACTIVE MATERIAL CONTAINING 4.2×10^3 BQ/G LEAD-210 OF NATURAL ORIGIN. THE HAZARD INFORMATION SUPPLIED IN THIS MSDS IS FOR THE CHEMICAL HAZARD ONLY. FOR THE "REPORT OF TEST" CONCERNING THE RADIOACTIVE MATERIAL, REFER TO THE SRM CERTIFICATE. ALL USERS AND PURCHASERS MUST COMPLY WITH ALL STATE AND FEDERAL REGULATIONS REGARDING THE HANDLING, USE, AND DISPOSAL OF THIS MATERIAL.

DOT Classification: Limited Quantity Radioactive Material, UN2910.

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Component	Purity (%)	Exposure Limits and Toxicity Data
Lead	≈100	ACGIH TWA: 0.05 mg/m ^{3(a)}
		OSHA TWA: 50 µg/m ³ (8 h) ^(a)
		OSHA Action Level (AL): 30 µg/m ³ (8 h) ^(a)
		NIOSH recommended TWA: 0.1 mg/m ³ (10 h) ^(a)
		Human, Inhalation TC _{Lo} : 10 µg/m ³
		Rat, Intraperitoneal LD _{Lo} : 1 g/kg
		Woman, Oral TD _{Lo} : 450 mg/kg/6 years

^(a)For lead, inorganic fumes, and dust.

fume fever (an influenza-like illness), due to inhalation of freshly formed metal oxide particles below 1.5 µm, may occur. Symptoms may include an initial onset of thirst with a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation, fever, chills, muscular pain, headache, nausea, profuse sweating, excessive urination, and diarrhea. Metal fume fever symptoms usually subside within 24 hours to 36 hours.

Medical Conditions Generally Aggravated by Exposure: Blood system disorders. Gastrointestinal disorders. Nervous system disorders. Respiratory disorders.

Listed as a Carcinogen/Potential Carcinogen:

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

^(a)The IARC classifies lead and inorganic lead compounds as Group 2B, *Possibly Carcinogenic to Humans*.

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. 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 medical assistance if necessary.

Ingestion: If a large amount is ingested, obtain medical assistance immediately.

Target Organ(s) of Attack: Nervous system. Kidneys.

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in Case Material is Released or Spilled: Place the material into an appropriate labeled container suitable for eventual disposal. Keep out of water supplies and sewers. California Proposition 65, Safe Drinking Water and Toxic Enforcement Act of 1986, states that the product contains a chemical known to the state of California to cause cancer and reproductive toxicity. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 103, has notification requirements for releases or spills to the environment greater than or equal to the Reportable Quantity (RQ) of 4.54 kg (10 pounds) lead for solid metal particles < 100 micrometer diameter (0.004 inches) (also listed under 40 CFR 302.4, Appendix A).

Waste Disposal: Follow all federal, state, and local laws governing disposal. Dispose of in accordance with EPA 40 CFR 262 Hazardous Waste Number D008 if the waste produces an extract containing a maximum concentration for the toxicity characteristic of 5 mg/L of lead contaminant.

Handling and Storage: Store and handle in accordance with all current regulations and standards. Keep separated from incompatible materials. Provide approved respiratory apparatus for non-routine or emergency use. Wear gloves and chemical safety glasses where contact may occur. 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.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: MDL Information Systems, Inc., MSDS *Lead*, 18 March 2004.
The Merck Index, 11th Ed., 1989.
The Sigma Aldrich Library of Chemical Safety Data, Ed. II, 1988.

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.