

MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

**National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2300
Gaithersburg, Maryland 20899-2300**

**SRM Number: 1059c
MSDS Number: 1059c
SRM Name: Lead Cyclohexanebutyrate**

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Description: This Standard Reference Material (SRM) is intended primarily for use in preparing solutions of known lead content in lubricating oils. Each unit consists of 5 g of material.

Substance: Lead Cyclohexanebutyrate.

Other Designations: Lead (II) cyclohexanebutyrate.

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component: Lead Cyclohexanebutyrate

CAS Number: 62637-99-4

EC Number (EINECS): 263-663-7

Nominal Mass Fraction (%): 100

EC Classification: T (Toxic), N (Dangerous for the Environment); not classified in Annex I of Directive 67/548/EEC

EC Risk: R23/24/25 (toxic by inhalation, in contact with skin, and if swallowed)
R33 (danger of cumulative effects)
R36/37/38 (irritating to eyes, respiratory system and skin)
R45 (may cause cancer)
R61 (may harm unborn child)
R62 (possible risk of impaired fertility)

EC Safety: S23 (do not breathe fumes)
S45 (in case of accident or illness, see doctor; show label)
R61 (avoid release to the environment)

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0-4): Health = 2 Fire = 0 Reactivity = 0

Major Health Hazards: Irritation of the skin, eyes, lungs, and GI tract; possible damage to the kidneys, central nervous system, testes, and other organs; increased risk of lung and stomach cancers.

Physical Hazards: Dust-air mixtures may explode.

Potential Health Effects

- Inhalation:** This material can irritate the respiratory tract. Prolonged exposure to lead compounds may increase the risk of lung cancer. Damage to the kidneys, liver, central nervous system, and other organs may occur. The toxicity of this material has not been fully investigated, but many organolead compounds are rapidly absorbed by the respiratory system. Cyclohexanebutyric acid is also an irritant.
- Skin Contact:** Prolonged contact with this material may cause skin irritation and dermatitis. Many organolead compounds are rapidly absorbed through the skin, with effects similar to those described for ingestion.
- Eye Contact:** This material can cause severe eye irritation.
- Ingestion:** Many organolead compounds are rapidly absorbed through the GI system. Chronic or high-level exposure to lead can damage the blood-forming organs, kidneys, liver, and central nervous system. Symptoms may include muscle pain and weakness, a metallic taste in the mouth, headache, anemia, mental changes, and a lead line in the gums. Ingestion of this material can also irritate the GI tract, causing nausea, vomiting, and diarrhea.

Medical Conditions Aggravated by Exposure: Disorders affecting the skin, eyes, blood, kidneys, gastrointestinal tract, respiratory tract, nervous system, or other target organs.

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</u>	_____
By the Occupational Safety and Health Administration (OSHA)	<u>X</u>	_____

Note: Data are not available for this compound. Lead compounds as a group are known human carcinogens.

4. FIRST AID MEASURES

Inhalation: Move the person to fresh air immediately. If not breathing, qualified medical personnel may start CPR or give oxygen if necessary. Get medical aid at once, and bring the container or label.

Skin Contact: Remove contaminated clothing and shoes. Flush affected skin with water for at least 15 minutes, then wash thoroughly with soap and water. If skin irritation persists, get medical aid and bring the container or label. Wash contaminated clothing before reusing.

Eye Contact: Remove contact lenses (if any). Do not allow victim to rub eyes or keep eyes closed. Flush eyes with large amounts of running water for at least 30 minutes, keeping eyelids open and raising lids to remove all chemical. Get medical aid at once, and bring the container or label.

Ingestion: Contact a poison control center immediately for instructions. Wash out mouth with water, but do not induce vomiting. Get medical aid at once, and bring the container or label.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: This material is not believed to be a significant fire hazard under normal conditions. Dust-air mixtures may explode if an ignition source is present. Products of combustion may be toxic.

Extinguishing Media: Use extinguishing media appropriate to the surrounding fire, such as water spray, carbon dioxide, dry chemical, or foam. Cool containers from maximum distance using water spray.

Fire Fighting: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Flash Point (°C): N/A

Autoignition (°C): N/A

Lower Explosive Limit (LEL): N/A

Upper Explosive Limit (UEL): N/A

Flammability Class (OSHA): N/A

Products of Combustion: Thermal decomposition of this material may produce carbon monoxide, carbon dioxide, and lead oxides.

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Isolate the spill area and remove any sources of ignition. Cleanup personnel must wear personal protective equipment (Section 8). Sweep up material and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Provide ventilation.

Disposal: Refer to “Section 13”, Disposal Considerations.

7. HANDLING AND STORAGE

Storage: Store this material in the original container at room temperature. Protect from moisture, heat, and physical damage, and isolate from incompatible materials.

Safe Handling Precautions: Wear a dust mask or respirator. Avoid contact or wash after handling.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure limits for soluble organic lead compounds:

ACGIH TLV-TWA: 0.05 mg/m³

OSHA TLV-TWA: 0.05 mg/m³

UK OEL: 0.15 mg/m³

Exposure limits for total nuisance dust:

ACGIH TLV-TWA: Total dust, 10 mg/m³; respirable dust, 3 mg/m³

OSHA TLV-TWA: Total dust, 15 mg/m³; respirable dust, 5 mg/m³

Ventilation: Use local or general exhaust to keep employee exposures below limits. Local exhaust ventilation is preferred because it can control contaminant emissions at the source, preventing dispersion into the general work area. Refer to the ACGIH document *Industrial Ventilation, a Manual of Recommended Practices*.

Respirator: If necessary, refer to the NIOSH document *Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84* for selection and use of respirators certified by NIOSH.

Eye Protection: Use chemical safety goggles where dusting or splashing of solutions may occur. See OSHA standard (29 CFR 1910.133) or European Standard EN166. The employer should provide an emergency eye wash fountain and safety shower in the immediate work area.

Personal Protection: Wear appropriate gloves and protective clothing to prevent contact with skin.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component: Lead Cyclohexanebutyrate

Appearance and Odor: Off-white crystals

Relative Molecular Weight: 545.7

Molecular Formula: C₂₀H₃₄O₄Pb

Density (g/cm³): N/A

Solvent Solubility: Soluble in xylene and 2-ethylhexanoic acid

Water Solubility: Insoluble

Boiling Point (°C): N/A

Melting Point (°C): N/A

10. STABILITY AND REACTIVITY

Stability: Stable Unstable

Stable at normal temperature and pressure.

Conditions to Avoid: Dust generation; heat or flame; contact with incompatible materials.

Incompatible Materials: strong oxidizers, strong acids.

Fire/Explosion Information: See Section 5.

Hazardous Decomposition: Thermal decomposition of this material may produce carbon monoxide, carbon dioxide, and lead oxides.

Hazardous Polymerization: Will Occur Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: Inhalation Skin Ingestion

Toxicity Data (Lead):

Human, IDLH (inhalation):	700 mg/m ³
Human, TC _{Lo} (inhalation):	10 µg/m ³
Woman, TD _{Lo} (oral, 6 yrs):	450 mg/kg
Rat, LD _{Lo} (intraperitoneal):	1 g/kg

Target Organ(s): Nervous system, kidneys, lungs, skin, eyes, testes, blood, GI tract.

Mutagen/Teratogen: The toxicity of this lead compound has not been fully investigated, but chronic lead exposure may cause birth defects. Male workers exposed to lead compounds also show an increased frequency of sperm abnormalities.

Health Effects: See "Section 3".

12. ECOLOGICAL INFORMATION

Ecotoxicity Data (Lead):

Japanese quail (*Coturnix japonica*): LC₅₀ (5 days, in diet) > 5,000 ppm
Carp (*Cyprinus carpio*): LC₅₀ = 856.7 µg/L
Flounder (*Paralichthys olivaceus*): LC₅₀ = 9650 µg/L
Eastern narrow-mouthed toad (*Gastrophryne carolinensis*): LC₅₀ = 40 µg/L
Worm (*Lumbriculus variegatus*): LC₅₀ = 740 µg/L

Environmental Summary: Lead is toxic to fish, amphibians, and other aquatic organisms. It bioaccumulates in both terrestrial and aquatic plants and animals.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Lead is classified as RCRA waste number D008. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste under 40 CFR 261.3, and must also consult state and local hazardous waste regulations to ensure complete and accurate classification.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not Regulated.

15. REGULATORY INFORMATION

U.S. REGULATIONS

CERCLA Sections 102a/103 (40 CFR 302.4): Regulated as Lead Compounds, n.o.s (N420); no RQ.

SARA Title III Section 302: Not regulated.

SARA Title III Section 304: Not regulated.

SARA Title III Section 313: Regulated as Lead Compounds, n.o.s (N420).

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

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

ACUTE:	Yes
CHRONIC:	Yes
FIRE:	No
REACTIVE:	No
SUDDEN RELEASE:	No

STATE REGULATIONS

California Proposition 65: Regulated (Lead and Lead Compounds).

CANADIAN REGULATIONS

WHMIS Classification: Not provided for this material.

EUROPEAN REGULATIONS

EU/EC Classification: T (Toxic), N (Dangerous for the Environment); not classified in Annex I of Directive 67/548/EEC

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Listed.

TSCA 12(b), Export Notification: Not listed.

16. OTHER INFORMATION

Sources:

Amdur M.O., et al.; *Casarett and Doull's Toxicology: The Basic Science of Poisons*; 4th Ed.; McGraw-Hill: New York, 1993.

PAN Pesticides Database, Ecotoxicity data for lead.

U.S. Agency for Toxic Substances and Disease Registry, *Draft Toxicological Profile for Lead*. Updated September 2005.

U.S. National Institute for Occupational Safety and Health, *NIOSH Pocket Guide to Chemical Hazards*; September 2005 edition. DHHS (NIOSH) Publication No. 2005-151.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use as a guide 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 in the NIST Certificate of Analysis.