

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: 1057b
MSDS Number: 1057b
SRM Name: Dibutyltin Bis(2-ethylhexanoate)

Date of Issue: 17 May 2012

Telephone: 301-975-2200
FAX: 301-948-3730
E-mail: SRMMSDS@nist.gov

Emergency Telephone ChemTrec:
1-800-424-9300 (North America)
+1-703-527-3887 (International)

Description: This Standard Reference Material (SRM) is intended for use in the determination of the tin concentrations in lubricating oils. A unit of SRM 1057b consists 5 g of powder in a small bottle.

Substance: Dibutyltin Bis(2-ethylhexanoate)

Other Designations: Dibutyltin di(2-ethylhexanoate); dibutylbis((2-ethyl-1-oxohexyl)oxy)stannane; tin, dibutyl-, di(2-ethylhexanoly)oxy-

2. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 3 Fire = 1 Reactivity = 0

Major Health Hazards: Potentially fatal if inhaled; harmful if swallowed; respiratory tract irritation; skin irritation; eye irritation, and liver damage.

Physical Hazards: There are no physical hazards associated with this material.

Potential Health Effects (Acute and Chronic)

Inhalation: Irritation of upper respiratory tract, sore throat, coughing, retching, headache, nausea, vomiting, visual disturbances, vertigo, tinnitus, deafness, weakness, seizures, unconsciousness, and respiratory depression have been reported for organotin compounds. These effects may have a latent period of 1 to 3 d after exposure. Extended irritation of the airways and pulmonary tissues may result in pulmonary edema. Chronic exposure may result in extrapyramidal hyperkinesia, memory loss, inappropriately aggressive behavior, confusion, loss of libido and motivation, fatigue, sleep disturbances, episodes of violent pain, anorexia, anosmia, and nosebleeds.

Skin Contact: Acute local burns with pain and itching, subacute diffuse erythematoid dermatitis with pruritus, and some pustular eruption in the hair-covered areas has been associated with organotin compounds. Reactions may be delayed for several hours. Absorption through the skin may result in systematic effects. Repeated or prolonged contact may cause dermatitis.

Eye Contact: Direct contact with the eyes may cause conjunctivitis, lacrimation, and intense suffusion of the conjunctiva that may persist for several days with no permanent injury. Application of some organotin compounds to rabbit eyes has caused corneal damage leading to blindness.

Ingestion: Low body temperature, vomiting, stomach pain, irregular heartbeat, headache, dizziness, visual disturbances, convulsions, and coma may result from exposure to organotin compounds.

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>

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component	CAS Number	EC Number (EINECS)	Nominal Concentration (%)
Dibutyltin Bis(2-ethylhexanoate)	2781-10-4	220-481-2	100

EC Classification: T, Xn, Xi, N

EC Risk Phrases (R No): 21, 25, 36/38, 48/23/25, 50/53

EC Safety Phrases (S No): 36/37/39, 45, 60, 61

EC Risk/Safety Phrases: See Section 15, "Regulatory Information".

NOTE: Dibutyltin bis(2-ethylhexanoate) is not classified. The classification for tributyltin compounds, with the exception of those specified elsewhere in this Annex is included for the users' reference.

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration by qualified personnel. Seek immediate medical attention.

Skin Contact: Rinse affected area with soap and water for at least 15 minutes. Seek medical assistance if necessary. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

Ingestion: If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention. Do not give anything by mouth to unconscious or convulsive person.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Slight, or negligible fire hazard.

Extinguishing Media: Regular dry chemical, carbon dioxide, fine water spray, and regular foam.

Fire Fighting: Avoid inhalation of combustion by-products.

Flash Point (°C): Not available.

Method Used: Not applicable.

Autoignition Temperature (°C): Not available.

Flammability Limits in Air

UPPER (Volume %): Not available.

LOWER (Volume %): Not available.

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Absorb with sand or other non-combustible material and collect in appropriate container for proper disposal.

Disposal: Refer to Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

Storage: Store and handle in accordance with all current regulations and standards.

Safe Handling Precautions: Wash hands thoroughly after handling. See Section 8, "Exposure Controls and Personal Protection".

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: The following occupational exposure limits apply to Tin (organic compounds, as Sn).

OSHA (PEL): 0.1 mg/m³ TWA
25 mg/m³ IDLH

NIOSH (REL): 0.1 mg/m³ TWA (skin)

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

Respirator: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29 CFR 1910.134 must be followed. Refer to NIOSH 24 CFR 84 for applicable certified respirators.

Eye Protection: Wear safety goggles. An eyewash station and drench shower should be readily available near the handling and use areas.

Personal Protection: Wear appropriate chemical resistant clothing and chemical resistant gloves, in accordance with OSHA 29 CFR 1910.132, subpart I.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: White, crystalline powder; odorless.
Molecular Formula: C₂₄H₄₈O₄Sn
Molar Mass: 519.3 g/mol
Density: 1.07 g/m³
Melting Point: 57 °C (135 °F)
Water Solubility: Insoluble.
Solvent Solubility: Mineral oil, acetone, xylene, lubricating oils.

10. STABILITY AND REACTIVITY

Stability: Stable Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid heat, flames, sparks, and other sources of ignition. Container may rupture or explode if exposed to heat.

Incompatible Materials: Bases, oxidizing materials.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Oxides of tin, oxides of carbon, miscellaneous decomposition products.

Hazardous Polymerization: Will Occur Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: Inhalation Skin Ingestion

Toxicity Data:

Rat, Oral LD₅₀: 200 mg/kg

Mouse, Intravenous LD₅₀: 178 mg/kg

There are no mutagenic, reproductive, or tumorigenic endpoints listed by Registry of Toxic Effects of Chemical Substances (RTECS).

Health Effects: See Section 2, "Hazards Identification" for potential health effects.

Target Organs: Skin, eyes, respiratory system, central nervous system, liver, kidneys, urinary tract, blood.

Medical Conditions Aggravated by Exposure: Skin disorders and allergies.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No ecotoxicity data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of waste in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Organotin compound, solid, n.o.s. [dibutyltin bis(2-ethylhexanoate)]; UN3146; Hazard Class 6.1; Packing Group III.

15. REGULATORY INFORMATION

U.S. Regulations

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.
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): Not regulated.
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:	No
FIRE:	No
REACTIVE:	No
PRESSURE:	No

State Regulations:

California Proposition 65: Not listed.

Canadian Regulations:

WHMIS Information: Not provided for this material.

European Regulations

EC Classification (For tributyltin compounds, with the exception of those specified elsewhere in this Annex)

T: Toxic
Xn: Harmful
Xi: Irritant
N: Dangerous for the Environment

EC Risk Phrase(s):

R21 – Harmful in contact with skin.
R25 – Toxic if swallowed.
R36/38 – Irritating to eyes and skin.
R48/23/25 – Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R50/53 – Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

EC Safety Phrase(s):

S36/37/39 – Wear suitable protective clothing, gloves, and eye/face protection.
S45 – In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60 – This material and its container must be disposed of as hazardous waste.
S61 – Avoid release to the environment. Refer to special instructions/Safety data sheets.

National Inventory Status

U.S. Inventory (TSCA): Listed.

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

16. OTHER INFORMATION

Sources: ChemADVISOR, Inc., MSDS, *Dibutyltin Dilaurate*, 10 June 2011.
ChemADVISOR, Inc., MSDS, *Dibutyltin Diacetate*, 20 December 2011
CDC NIOSH, CDC Pocket Guide; *Tin (Organic Compounds, as Sn)*, 18 November 2010; available at <http://www.cdc.gov/niosh/npg/npgd0614.html> (accessed May 2012).
EC; European Chemical Substance Information System (ESIS), *Tributyl Compounds, with the Exception of those Specified Elsewhere in this Annex, Index No. 050-008-00-3*, available at <http://esis.jrc.ec.europa.eu/home.php?PGM=cla> (accessed May 2012).
ChemIDplus Advanced, *Dibutyltin di(2-ethylhexoate)*, CAS No. 2781-10-4, available at <http://chem.sis.nlm.nih.gov/chemidplus/> (accessed May 2012).

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 in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.