Eli Lilly and Company
Material Safety Data Sheet

Eli Lilly and Company
Lilly Corporate Center
Indianapolis, IN 46285

Manufacturer's Emergency Phone: 1-317-276-2000
CHEMTREC: 1-800-424-9300 (North America)
1-703-527-3887 (International)

Common Name: Thimerosal

CAS Number(s): 54-64-8
EC Number: 2002-10-4
EC Index Number: 080-004-00-7
Chemical Name: Mercurate(1-), ethyl[2-(mercapto-kappaS)benzoato(2-)-kappaO]-, sodium
Chemical Family: Organomercurial salt
Chemical Formula: C9 H9 Hg O S2 . Na
Molecular Weight: 404.800000
Synonym(s): Benzoic acid, 2-mercapto-, mercury complex
Trademarks(s): Merthiolate Plus; Merthiolate Plus Y; Mertilly; Merthiolate
Lilly Serial Number(s): 006739
Lilly Item Code(s): ID3025; PO0020; QA041U

See attached glossary for abbreviations.

Section 2 - Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS</th>
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<tr>
<td>Thimerosal</td>
<td>54-64-8</td>
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Thimerosal contains 49.6% w/w organically-bound mercury.

Exposure Guidelines: Thimerosal - No known occupational exposure limits established.

Mercury - (Alkyl compounds, as Hg) PEL 0.01 mg/m3 TWA, 0.4 mg/m3 ceiling. (Aryl compounds, as Hg) TLV 0.1 mg/m3 TWA (skin). BEI 35 micrograms total inorganic mercury per gram of creatinine sampled in urine before the shift. BEI 15 micrograms of total inorganic mercury per liter of blood sampled at the end of shift at the end of workweek.
UK- (Alkyl compounds, as Hg) Exposure Standard 0.01 mg/m3 TWA, 0.03 mg/m3 STEL (skin).
Ireland - (Alkyl compounds, as Hg) Occupational Exposure Limit 0.01 mg/m3 TWA, 0.03 mg/m3 15-minute STEL (skin).
France - (Alkyl compounds as Hg) Occupational Exposure Limits 0.01 mg/m³ (VME) TWA (skin).
Germany - (Organic mercury compounds, as Hg) TRGS 900 Limit Value 0.01 mg/m³ TWA, 15-minute limit not to exceed 4 times MAK (skin).

**Section 3 - Hazards Identification**

**Appearance:** Light cream-colored crystalline powder  
**Physical State:** Solid  
**Odor:** Faint metallic odor/taste

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**Emergency Overview**

**Emergency Overview Effective Date:** 08-Dec-1999

**Lilly Laboratory Labeling Codes:**  
Health 2  
Fire 1  
Reactivity 0  
Special R, A


**Caution Statement:** Thimerosal may enter the body through the skin, is toxic, alters genetic material, may be irritating to the eyes, and causes allergic reactions. Effects of exposure may include numbness of extremities, fetal changes, decreased offspring survival, and lung tissue changes.

**Routes of Entry:** Inhalation and skin absorption.

**Effects of Overexposure:** Topical allergic dermatitis has been reported. Thimerosal contains mercury. Mercury poisoning may occur and topical hypersensitivity reactions may be seen. Early signs of mercury poisoning in adults are nervous system effects, including narrowing of the visual field and numbness in the extremities. Exposure to mercury in utero and in children may cause mild to severe mental retardation and mild to severe motor coordination impairment. Based on animal data, may be irritating to the eyes.

**Medical Conditions Aggravated by Exposure:** Hypersensitivity to mercury.

**Carcinogenicity:** No carcinogenicity data found. Not listed by IARC, NTP, ACGIH, or OSHA.

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**Section 4 - First Aid Measures**

**Eyes:** Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes. See an
ophthalmologist (eye doctor) or other physician immediately.

**Skin:** This product is intended for topical application to the skin. However, in case of unintentional exposure, especially to large areas of skin, wash with soap and water. If symptoms develop consult a physician.

**Inhalation:** Move individual to fresh air. Get medical attention if breathing difficulty occurs. If not breathing, provide artificial respiration assistance (mouth-to-mouth) and call a physician immediately.

**Ingestion:** Call a physician or poison control center. Drink one or two glasses of water and give 1-2 tablespoons syrup of ipecac to induce vomiting. Do not induce vomiting or give anything by mouth to an unconscious person. Use of chelating agents such as BAL may be needed to treat ingestion of mercury. Immediately transport to a medical care facility and see a physician.

### Section 5 - Fire Fighting Measures

**Flash Point:** No applicable information found  
**UEL:** No applicable information found  
**LEL:** No applicable information found

**Extinguishing Media:** Use water, carbon dioxide, dry chemical, foam, or Halon.

**Unusual Fire and Explosion Hazards:** As a finely divided material, may form dust mixtures in air which could explode if subjected to an ignition source.

**Hazardous Combustion Products:** May emit toxic mercury fumes when heated to decomposition.

### Section 6 - Accidental Release Measures

**Spills:** Wear protective equipment, including eye protection, to avoid exposure (see Section 8 for specific handling precautions). This material is a mercury compound which are CERCLA Hazardous Substances and SARA 313 Toxic Chemicals. Vacuum material with appropriate dust collection filter in place. Be aware of potential for dust explosion when using electrical equipment. If vacuum is not available, lightly mist material and remove by sweeping or wet wiping.

### Section 7 - Handling and Storage

**Storage Conditions:** Warehouse: 10 to 40 C (45 to 104 F).

### Section 8 - Exposure Controls / Personal Protection

See Section 2 for Exposure Guideline information.

Under normal use and handling conditions, no protective equipment is required. The following is recommended for a production setting:

**Respiratory Protection:** Use an approved HEPA-filtered or supplied-air respirator.

**Eye Protection:** Chemical goggles and/or face shield.
**Ventilation:** Laboratory fume hood or local exhaust ventilation.

**Other Protective Equipment:** Chemical-resistant gloves and body covering to minimize skin contact. If handled in a ventilated enclosure, as in a laboratory setting, respirator and goggles or face shield may not be required. Safety glasses are always required.

**Additional Exposure Precautions:** In production settings, airline-supplied, hood-type respirators are preferred. Shower and change clothing if skin contact occurs.

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**Section 9 - Physical and Chemical Properties**

**Appearance:** Light cream-colored crystalline powder  
**Odor:** Faint metallic odor/taste  
**Boiling Point:** No applicable information found  
**Melting Point:** Starts to decompose at about 230 °C (446 °F) 
**Specific Gravity:** No applicable information found  
**pH:** 6.7 (1% aqueous)  
**Evaporation Rate:** No applicable information found  
**Water Solubility:** Soluble  
**Vapor Density:** No applicable information found  
**Vapor Pressure:** No applicable information found

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**Section 10 - Stability and Reactivity**

**Stability:** Stable at normal temperatures and pressures.  
**Incompatibility:** May react with strong oxidizing agents (e.g., peroxides, permanganates, nitric acid, etc.).  
**Hazardous Decomposition:** May emit toxic mercury fumes when heated to decomposition.  
**Hazardous Polymerization:** Will not occur.

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**Section 11 - Toxicological Information**

**Acute Exposure**

**Oral:** Rat, median lethal dose 73 mg/kg, reduced activity, drooping eyelids, weakness.

**Skin:** No applicable information found.

**Inhalation:** No applicable information found.

**Intravenous:** Rat, median lethal dose estimated greater than 45 mg/kg, mortality.

**Skin Contact:** Rabbit, nonirritant

**Eye Contact:** Rabbit, irritant
Chronic Exposure

Thimerosal is a mercuric compound. Toxicity data for thimerosal and mercury are presented.

Target Organ Effects: Thimerosal - Kidney effects (tubule necrosis), lung effects (tissue changes). Mercury - Nervous system effects (insomnia, tremor, anorexia, weakness, headache), liver effects (jaundice, digestive effects (hypermotility, diarrhea).

Other Effects: Thimerosal - Decreased weight gain.

Reproduction: Thimerosal - Decreased offspring survival. Mercury - Changes in sperm production, decreased offspring survival, and offspring nervous system effects including mild to severe mental retardation and motor coordination impairment.

Sensitization: No applicable information found.


Section 12 - Ecological Information

Ecotoxicity Data: Thimerosal

Brown trout 48-hour median lethal concentration: 54 mg/L
Brook trout 48-hour median lethal concentration: 74.5 mg/L
Rainbow trout 48-hour median lethal concentration: 21.2 mg/L
Lake trout 48-hour median lethal concentration: 2.13 mg/L
Channel catfish 48-hour median lethal concentration: 5.65 mg/L
Bluegill 48-hour median lethal concentration: 64.5 mg/L
Guppy 24-hour median lethal concentration: 12 mg/L

Environmental Fate: Thimerosal

No applicable information found.

Environmental Summary: Thimerosal - Moderately toxic to slightly toxic in aquatic organisms. Material is soluble in water and may to leach into groundwater.

Section 13 - Disposal Considerations

Waste Disposal: Dispose of any cleanup materials and waste residue according to all applicable laws and regulations.

Section 14 - Transport Information

Regulatory Organizations:

DOT:

Proper Shipping Name: Mercury compound, solid, n.o.s. (Thimerosal)
UN/NA: UN2025
Hazard Class: 6.1
Packing Group: III
Section 15 - Regulatory Information

Below is selected regulatory information chosen primarily for possible Eli Lilly and Company usage. This section is not a complete analysis or reference to all applicable regulatory information. Please consider all applicable laws and regulations for your country/state.

U.S. Regulations
Thimerosal
TSCA - Yes
CERCLA - Name on list is mercury compounds.
SARA 302 - Not on this list
SARA 313 - Name on list is mercury compounds. De minimis = 1%
OSHA Substance Specific - No
California Proposition 65 (Cancer/Reproductive) - Name on developmental list is mercury and mercury compounds.

EU Regulations

EC Classification
T+ (Very Toxic)
N (Dangerous for the Environment)

Risk Phrases
R 26/27/28 - Very toxic by inhalation, in contact with skin and if swallowed.
R 33 - Danger of cumulative effects.
R 50/53 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases
S 13 - Keep away from food, drink and animal feedingstuffs.
S 28 - After contact with skin, wash immediately.
S 36 - Wear suitable protective clothing.
Section 16 - Other Information

MSDS Sections Revised: Section 1.

As of the date of issuance, we are providing available information relevant to the handling of this material in the workplace. All information contained herein is offered with the good faith belief that it is accurate. THIS MATERIAL SAFETY DATA SHEET SHALL NOT BE DEEMED TO CREATE ANY WARRANTY OF ANY KIND (INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE). In the event of an adverse incident associated with this material, this safety data sheet is not intended to be a substitute for consultation with appropriately trained personnel. Nor is this safety data sheet intended to be a substitute for product literature which may accompany the finished product.

For additional information contact:
Eli Lilly and Company
Hazard Communication
317-277-6029

GLOSSARY:

ACGIH = American Conference of Governmental Industrial Hygienists
AIHA = American Industrial Hygiene Association
BEI = Biological Exposure Index
CAS Number = Chemical Abstract Service Registry Number
CERCLA = Comprehensive Environmental Response Compensation and Liability Act (of 1980)
CHAN = Chemical Hazard Alert Notice
CHEMTREC = Chemical Transportation Emergency Center
DOT = Department of Transportation
EC = European Community
EINECS = European Inventory of Existing Chemical Substances
ELINCS = European List of New Chemical Substances
EPA = Environmental Protection Agency
HEPA = High Efficiency Particulate Air (Filter)
IARC = International Agency for Research on Cancer
ICAO/IATA = International Civil Aviation Organization/International Air Transport Association
IEG = Lilly Interim Exposure Guideline
IMO = International Maritime Organization
Kow = Octanol/Water Partition Coefficient
LEG = Lilly Exposure Guideline
LEL = Lower Explosive Limit