

SAFETY DATA SHEET



Revision date: 12-Mar-2014

Version: 2.0

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1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY/UNDERTAKING

Product Identifier

Material Name: Escherichia Coli Bacterin

Trade Name: LitterGuard®; LitterGuard®LT
Chemical Family: Mixture

Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Intended Use: Veterinary Vaccine

Details of the Supplier of the Safety Data Sheet

Zoetis Inc.
100 Campus Drive, P.O. Box 651
Florham Park, New Jersey 07932 (USA)
Rocky Mountain Poison Control Center Phone: 1-866-531-8896
Product Support/Technical Services Phone: 1-800-366-5288

Zoetis Belgium S.A.
Mercuriusstraat 20
1930 Zaventem
Belgium

Emergency telephone number:
CHEMTREC (24 hours): 1-800-424-9300
Contact E-Mail: VMIPSrecords@zoetis.com

Emergency telephone number:
International CHEMTREC (24 hours): +1-703-527-3887

2. HAZARDS IDENTIFICATION

Appearance: Liquid solution
Classification of the Substance or Mixture
GHS - Classification Not classified as hazardous

EU Classification:
EU Indication of danger: Not classified

Label Elements
Signal Word: Not Classified

Other Hazards
Short Term: May cause eye and skin irritation. May cause allergic skin reaction . In the event of accidental injection, an allergic reaction may occur. If an allergic reaction occurs, the worker should be removed to the nearest emergency room and the appropriate therapy instituted.
Australian Hazard Classification (NOHSC): Non-Hazardous Substance. Non-Dangerous Goods.

Note: This document has been prepared in accordance with standards for workplace safety, which require the inclusion of all known hazards of the product or its ingredients regardless of the potential risk. The precautionary statements and warnings included may not apply in all cases. Your needs may vary depending upon the potential for exposure in your workplace.

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous

| Ingredient | CAS Number | EU EINECS/ELINCS List | EU Classification | GHS Classification | % |
|--------------------------|------------|-----------------------|--|---|------|
| Formaldehyde | 50-00-0 | 200-001-8 | T; R23/24/25 C; R34 Carc.Cat.3; R40 R43 | Acute Tox. 3 (H301) Skin Corr. 1B (H314) Skin Sens. 1 (H317) Carc. 2 (H351) Acute Tox. 3 (H331) | <0.1 |
| Merthiolate (as mercury) | 54-64-8 | 200-210-4 | T+; R26/27/28 R33 N; R50/53 | Acute Tox. 2 (H330) Acute Tox. 2 (H310) Acute Tox. 1 (H300) STOT RE 2 (H373) Aq. Acute 1 (H400) Aq. Chronic 1 (H410) | ## |

| Ingredient | CAS Number | EU EINECS/ELINCS List | EU Classification | GHS Classification | % |
|--------------------|--------------|-----------------------|-------------------|--------------------|----|
| Escherichia coli | NOT ASSIGNED | Not Listed | Not Listed | Not Listed | * |
| Aluminum hydroxide | 21645-51-2 | 244-492-7 | Not Listed | Not Listed | * |
| Water, purified | 7732-18-5 | 231-791-2 | Not Listed | Not Listed | 90 |

Additional Information:

* Proprietary
Trace.

Ingredient(s) indicated as hazardous have been assessed under standards for workplace safety.

4. FIRST AID MEASURES

Description of First Aid Measures

- Eye Contact:** Immediately flush eyes with water for at least 15 minutes. If irritation occurs or persists, get medical attention.
- Skin Contact:** Wash skin with soap and water. If irritation occurs or persists, get medical attention.
- Ingestion:** Get medical attention. Do not induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.
- Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. Get medical attention immediately.

Most Important Symptoms and Effects, Both Acute and Delayed

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Symptoms and Effects of Exposure: No data available
Medical Conditions Aggravated by Exposure: None known

Indication of the Immediate Medical Attention and Special Treatment Needed
Notes to Physician: None

5. FIRE-FIGHTING MEASURES

Extinguishing Media: Extinguish fires with CO2, extinguishing powder, foam, or water.

Special Hazards Arising from the Substance or Mixture

Hazardous Combustion Products: Formation of toxic gases is possible during heating or fire.

Fire / Explosion Hazards: Fine particles (such as dust and mists) may fuel fires/explosions.

Advice for Fire-Fighters

During all fire fighting activities, wear appropriate protective equipment, including self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Personnel involved in clean-up should wear appropriate personal protective equipment (see Section 8). Minimize exposure.

Environmental Precautions

Place waste in an appropriately labeled, sealed container for disposal. Care should be taken to avoid environmental release.

Methods and Material for Containment and Cleaning Up

Measures for Cleaning / Collecting: Contain the source of spill if it is safe to do so. Collect spill with absorbent material. Clean spill area thoroughly.

Additional Consideration for Large Spills: Non-essential personnel should be evacuated from affected area. Report emergency situations immediately. Clean up operations should only be undertaken by trained personnel.

7. HANDLING AND STORAGE

Precautions for Safe Handling

When handling, use proper personal protective equipment as specified in Section 8. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Avoid accidental injection. Releases to the environment should be avoided.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions: Store under refrigeration in closed container.

Storage Temperature: 2-7°C

Incompatible Materials: This material can be denatured or inactivated by a variety of organic solvents, salts or heavy metals.

Specific end use(s): No data available

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Refer to available public information for specific member state Occupational Exposure Limits.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Formaldehyde

| | |
|---|---|
| ACGIH Ceiling Threshold Limit: | 0.3 ppm |
| ACGIH - Sensitizer Designation | Sensitizer |
| Australia STEL | 2 ppm |
| | 2.5 mg/m ³ |
| Australia TWA | 1 ppm |
| | 1.2 mg/m ³ |
| Austria OEL - MAKs | 0.5 ppm |
| | 0.6 mg/m ³ |
| Bulgaria OEL - TWA | 1.0 mg/m ³ |
| Czech Republic OEL - TWA | 0.5 mg/m ³ |
| Estonia OEL - TWA | 0.5 ppm |
| | 0.6 mg/m ³ |
| Finland OEL - TWA | 0.3 ppm |
| | 0.37 mg/m ³ |
| France OEL - TWA | 0.5 ppm |
| Germany (DFG) - MAK | 0.3 ppm |
| | 0.37 mg/m ³ no irritation should occur during mixed exposure |
| Greece OEL - TWA | 2 ppm |
| | 2.5 mg/m ³ |
| Hungary OEL - TWA | 0.6 mg/m ³ |
| Ireland OEL - TWAs | 2 ppm |
| | 2.5 mg/m ³ |
| Japan - OELs - Ceilings | 0.2 ppm |
| | 0.24 mg/m ³ |
| Latvia OEL - TWA | 0.5 mg/m ³ |
| Lithuania OEL - TWA | 0.5 ppm |
| | 0.6 mg/m ³ |
| Netherlands OEL - TWA | 0.15 mg/m ³ |
| Vietnam OEL - TWAs | 0.5 mg/m ³ |
| OSHA - Final PELs - TWAs: | 0.75 ppm |
| OSHA - Specifically Regulated Chemicals | 2 ppm |
| | 0.5 ppm |
| | 0.75 ppm |
| Poland OEL - TWA | 0.5 mg/m ³ |
| Romania OEL - TWA | 1 ppm |
| | 1.20 mg/m ³ |
| Slovakia OEL - TWA | 0.3 ppm |
| | 0.37 mg/m ³ |
| Slovenia OEL - TWA | 0.5 ppm |
| | 0.62 mg/m ³ |
| Sweden OEL - TWAs | 0.3 ppm |
| | 0.37 mg/m ³ |
| Switzerland OEL - TWAs | 0.3 ppm |
| | 0.37 mg/m ³ |

Aluminum hydroxide

| | |
|-----------------------------------|-----------------------|
| ACGIH Threshold Limit Value (TWA) | 1 mg/m ³ |
| Austria OEL - MAKs | 5 mg/m ³ |
| Germany (DFG) - MAK | 4 mg/m ³ |
| | 1.5 mg/m ³ |
| Latvia OEL - TWA | 6 mg/m ³ |

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| | |
|-----------------------|-----------------------|
| Lithuania OEL - TWA | 6 mg/m ³ |
| Poland OEL - TWA | 2.5 mg/m ³ |
| | 1.2 mg/m ³ |
| Slovakia OEL - TWA | 1.5 mg/m ³ |
| Switzerland OEL -TWAs | 3 mg/m ³ |

Exposure Controls

Engineering Controls: Engineering controls should be used as the primary means to control exposures.
Personal Protective Equipment: Refer to applicable national standards and regulations in the selection and use of personal protective equipment (PPE).

Hands: Wear impervious gloves if skin contact is possible.
Eyes: Safety glasses or goggles
Skin: Use protective clothing (uniforms, lab coats, disposable coveralls, etc.) in both production and laboratory areas.
Respiratory protection: If the applicable Occupational Exposure Limit (OEL) is exceeded, wear an appropriate respirator with a protection factor sufficient to control exposures to below the OEL.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------------|--------------------|--------------------------|--------------------|
| Physical State: | Liquid solution | Color: | No data available. |
| Odor: | No data available. | Odor Threshold: | No data available. |
| Molecular Formula: | Mixture | Molecular Weight: | Mixture |

| | |
|---|--------------------------------------|
| Solvent Solubility: | No data available |
| Water Solubility: | No data available |
| Solubility: | Soluble: Water (based on components) |
| pH: | 7.0 +/- 1.5 |
| Melting/Freezing Point (°C): | No data available |
| Boiling Point (°C): | >100 |
| Partition Coefficient: (Method, pH, Endpoint, Value) | No data available |
| Decomposition Temperature (°C): | No data available. |

| | |
|-----------------------------------|---------------------------|
| Evaporation Rate (Gram/s): | No data available |
| Vapor Pressure (kPa): | Expected to be negligible |
| Vapor Density (g/ml): | No data available |
| Relative Density: | No data available |
| Specific Gravity: | 1.0 +/-0.2 |
| Viscosity: | No data available |

Flammability:

| | |
|---|-------------------|
| Autoignition Temperature (Solid) (°C): | No data available |
| Flammability (Solids): | No data available |
| Flash Point (Liquid) (°C): | Non-flammable |
| Upper Explosive Limits (Liquid) (% by Vol.): | No data available |
| Lower Explosive Limits (Liquid) (% by Vol.): | No data available |

Polymerization: Will not occur

10. STABILITY AND REACTIVITY

Reactivity: No data available

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10. STABILITY AND REACTIVITY

| | |
|---|--|
| Chemical Stability: | Stable |
| Possibility of Hazardous Reactions | |
| Oxidizing Properties: | No data available |
| Conditions to Avoid: | Store at 2-7°C. Prolonged exposure to higher temperatures may adversely affect potency. Do not freeze. |
| Incompatible Materials: | This material can be denatured or inactivated by a variety of organic solvents, salts or heavy metals. |
| Hazardous Decomposition Products: | None expected under normal conditions. |

11. TOXICOLOGICAL INFORMATION

Information on Toxicological Effects

General Information: The antigens included in this product are non-infectious. All have been prepared from killed or inactivated preparations of microorganisms. The information included in this section describes the potential hazards of the individual ingredients.

Acute Toxicity: (Species, Route, End Point, Dose)

Merthiolate (as mercury)

Rat Oral LD50 75 mg/kg
Rat Subcutaneous LD50 98mg/kg

Formaldehyde

Rat Oral LD50 800 mg/kg

Irritation / Sensitization: (Study Type, Species, Severity)

Merthiolate (as mercury)

Eye Irritation Rabbit Mild

Formaldehyde

Eye Irritation Rabbit Severe
Skin Irritation Rabbit Moderate Severe

Repeated Dose Toxicity: (Duration, Species, Route, Dose, End Point, Target Organ)

Formaldehyde

90 Day(s) Dog Inhalation Not Specified Lungs
90 Day(s) Rat Inhalation Not Specified Lungs
90 Day(s) Monkey Inhalation Not Specified Lungs
9 Day(s) Rat Inhalation 15 ppm LOAEL Respiratory system

Reproduction & Developmental Toxicity: (Study Type, Species, Route, Dose, End Point, Effect(s))

Formaldehyde

Embryo / Fetal Development Mouse Oral 185 mg/kg/day Not teratogenic, Maternal toxicity
Embryo / Fetal Development Rat Inhalation 40 ppm Not Teratogenic, Maternal Toxicity

Genetic Toxicity: (Study Type, Cell Type/Organism, Result)

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11. TOXICOLOGICAL INFORMATION

Formaldehyde

In Vitro Bacterial Mutagenicity (Ames) Bacteria Positive
In Vitro Chromosome Aberration Rodent Positive
In Vitro Sister Chromatid Exchange Rodent Positive
In Vivo Chromosome Aberration Not specified Positive

Carcinogenicity: (Duration, Species, Route, Dose, End Point, Effect(s))

Formaldehyde

2 Year(s) Rat Inhalation 6 ppm LOEL Tumors
2 Year(s) Mouse Inhalation 15 ppm LOEL Tumors

Carcinogen Status:

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Formaldehyde

IARC: Group 1 (Carcinogenic to Humans)
NTP: Known Human Carcinogen
OSHA: Listed

12. ECOLOGICAL INFORMATION

Environmental Overview:

Environmental properties of the formulation have not been investigated. This product contains trace quantities of mercury, releases to the environment should be avoided.

Toxicity:

No data available

Persistence and Degradability:

No data available

Bio-accumulative Potential:

No data available

Mobility in Soil:

No data available

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

This product contains trace quantities of mercury and may qualify as a RCRA Hazardous Waste. Status should be confirmed using the EPA Toxicity Characteristic Leaching Procedure (TCLP). Dispose of waste in accordance with all applicable laws and regulations. Member State specific and Community specific provisions must be considered. Considering the relevant known environmental and human health hazards of the material, review and implement appropriate technical and procedural waste water and waste disposal measures to prevent occupational exposure and environmental release. It is recommended that waste minimization be practiced. The best available technology should be utilized to prevent environmental releases. This may include destructive techniques for waste and wastewater.

Formaldehyde

RCRA - U Series Wastes

Listed

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14. TRANSPORT INFORMATION

The following refers to all modes of transportation unless specified below.

Not regulated for transport under USDOT, EUADR, IATA, or IMDG regulations.

15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

Canada - WHMIS: Classifications

WHMIS hazard class:

None required

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

Formaldehyde

| | |
|--|------------------------------------|
| CERCLA/SARA 313 Emission reporting | 0.1 % |
| CERCLA/SARA Hazardous Substances and their Reportable Quantities: | 100 lb |
| CERCLA/SARA - Section 302 Extremely Hazardous TPQs | 45.4 kg |
| CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs | 500 lb |
| California Proposition 65 | 100 lb |
| OSHA - Specifically Regulated Chemicals | carcinogen initial date 1/1/88 gas |
| | 2 ppm |
| | 0.5 ppm |
| | 0.75 ppm |
| Inventory - United States TSCA - Sect. 8(b) | Present |
| Australia (AICS): | Present |
| Standard for the Uniform Scheduling for Drugs and Poisons: | Schedule 2 |
| | Schedule 6 |
| EU EINECS/ELINCS List | 200-001-8 |

Merthiolate (as mercury)

| | |
|---|------------|
| CERCLA/SARA 313 Emission reporting | Not Listed |
| California Proposition 65 | Not Listed |
| Inventory - United States TSCA - Sect. 8(b) | Present |
| Australia (AICS): | Present |
| EU EINECS/ELINCS List | 200-210-4 |

Escherichia coli

| | |
|------------------------------------|------------|
| CERCLA/SARA 313 Emission reporting | Not Listed |
| California Proposition 65 | Not Listed |

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15. REGULATORY INFORMATION

| | |
|---|------------|
| EU EINECS/ELINCS List | Not Listed |
| Aluminum hydroxide | |
| CERCLA/SARA 313 Emission reporting | Not Listed |
| California Proposition 65 | Not Listed |
| Inventory - United States TSCA - Sect. 8(b) | Present |
| Australia (AICS): | Present |
| EU EINECS/ELINCS List | 244-492-7 |
| Water, purified | |
| CERCLA/SARA 313 Emission reporting | Not Listed |
| California Proposition 65 | Not Listed |
| Inventory - United States TSCA - Sect. 8(b) | Present |
| Australia (AICS): | Present |
| REACH - Annex IV - Exemptions from the obligations of Register: | Present |
| EU EINECS/ELINCS List | 231-791-2 |

16. OTHER INFORMATION

Text of R phrases and GHS Classification abbreviations mentioned in Section 3

Acute toxicity, oral-Cat.3; H301 - Toxic if swallowed
Acute toxicity, inhalation-Cat.3; H331 - Toxic if inhaled
Skin corrosion/irritation-Cat.1B; H314 - Causes severe skin burns and eye damage
Sensitization, skin-Cat.1; H317 - May cause an allergic skin reaction
Carcinogenicity-Cat.2; H351 - Suspected of causing cancer
Acute toxicity, inhalation-Cat.2; H330 - Fatal if inhaled
Acute toxicity, dermal-Cat.2; H310 - Fatal in contact with skin
Acute toxicity, oral-Cat.1; H300 - Fatal if swallowed
Specific target organ toxicity, repeated exposure-Cat.2; H373 - May cause damage to organs through prolonged or repeated exposure
Hazardous to the aquatic environment, acute toxicity-Cat.1; H400 - Very toxic to aquatic life
Hazardous to the aquatic environment, chronic toxicity-Cat.1; H410 - Very toxic to aquatic life with long lasting effects

T - Toxic
C - Corrosive
Carcinogenic: Category 3
T+ - Very toxic
N - Dangerous for the environment

R34 - Causes burns.
R40 - Limited evidence of a carcinogenic effect
R43 - May cause sensitization by skin contact.
R33 - Danger of cumulative effects.
R23/24/25 - Toxic by inhalation, in contact with skin and if swallowed.
R26/27/28 - Very toxic by inhalation, in contact with skin and if swallowed.
R50/53 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Reasons for Revision:

Updated Section 1 - Identification of the Substance/Preparation and the Company/Undertaking.
Updated Section 2 - Hazard Identification. Updated Section 11 - Toxicology Information.
Updated Section 13 - Disposal Considerations. Updated Section 15 - Regulatory Information.

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Prepared by: Toxicology and Hazard Communication
Zoetis Global Risk Management

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End of Safety Data Sheet