



Material Safety Data Sheet

Esbiol® Concentrate 90%

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products is regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling. All necessary and appropriate precautionary, use, and storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Esbiol® Concentrate 90%
MSDS IDENTIFICATION NO.: ENV-0094
CHEMICAL NAME: Mixture; active ingredient: S-bioallethrin
EPA REGISTRATION NUMBER: 73049-395
PRODUCT DESCRIPTION: This product is intended for formulation use only. Insecticide

Esbiol® is a registered trademark of Valent BioSciences Corporation.

MANUFACTURER
Valent BioSciences Corporation
870 Technology Way
Libertyville, IL 60048

EMERGENCY TELEPHONE NUMBERS
HEALTH EMERGENCY OR SPILL (24 hr):
Within the United States: (877) 315-9819
Outside the United States: (651) 632-6184

PRODUCT INFORMATION
ENVIRONMENTAL SCIENCE PRODUCTS:
(866) 822-3731
www.valentbiosciences.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Weight/Percent	ACGIH Exposure Limits	OSHA Exposure Limits	Manufacturer's Exposure Limits
S-Bioallethrin * ([1R-[1a(S*),3β]]-2-methyl-4-oxo-3-(2-propenyl)-2-cyclopenten-1-yl 2,2-dimethyl-3-(2-methyl-1-propenyl)cyclopropanecarboxylate) (28434-00-6)	90	None	None	See regulated exposure limits
Inert Ingredients Containing: ** (No CAS#)	10	None	None	See regulated exposure limits.
Petroleum Distillates (64742-47-8)	< 10	None	None	See regulated exposure limits

* Active Ingredient - Synthetic Pyrethroid

Emergency Telephone: 800-682-5368
REVISION NUMBER: 1

MSDS NO.: ENV-0094
REVISION DATE: 11/06/2007

** Other ingredients, which are maintained as trade secrets, are any substances other than an active ingredient contained in this product. Some of these may be hazardous, but their identity is withheld because they are considered trade secrets. The hazards associated with the other ingredients are addressed in this document. Specific information on other ingredients for the management of exposures, spills, or safety assessments can be obtained by a treating physician or nurse by calling (877) 315-9819 (within the United States) or (651) 632-6184 (outside the United States) at any time.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

AN ORANGE-YELLOW VISCOUS LIQUID

CAUTION

- May be fatal if swallowed.
- Harmful if inhaled or absorbed through skin.
- Do not get in eyes, on skin or on clothing.
- Causes moderate eye irritation.
- Extremely toxic to fish and aquatic organisms.
- Keep out of reach of children.

POTENTIAL HEALTH EFFECTS

Acute Toxicity (Primary Routes of Exposure): Inhalation, eye and skin contact

Signs and Symptoms of Systemic Effects: May cause eye and skin irritation, nausea, vomiting, abdominal cramps, tenderness, burning/prickling skin sensations. May cause gastrointestinal effects such as nausea, vomiting and diarrhea. Inhalation of high vapor or mist concentrations can cause respiratory tract and eye irritation as well as central nervous system effects (drowsiness, dizziness, nausea, headaches, and loss of consciousness) including death.

Acute Eye Contact: This product is a moderate eye irritant. Adverse health effects resulting from an exposure may include redness, swelling and pain which could last for an extended period of time.

Acute Skin Contact: This product is harmful if absorbed through the skin. The expected adverse health effects resulting from an exposure may include redness and possibly some minor swelling. This product may cause allergic skin reactions. In sensitized individuals even small exposures can trigger allergic reactions. The expected adverse health effects may include itching, redness, swelling and blistering of the skin. This product contains a pyrethroid. Skin contact with pyrethroids can result in a temporary burning, tingling or itching sensation.

Acute Ingestion: May be fatal if swallowed.

Acute Inhalation: Harmful if inhaled. Exposure to high concentrations in the air may result in respiratory irritation. Signs and symptoms may include, but not be limited to, nasal discharge, sore throat, coughing and difficulty in breathing.

Chronic Toxicity (including cancer): This product is not listed as a carcinogen by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), the Occupational Safety and Health Administration (OSHA) or ACGIH.

Potentially Aggravated Medical Conditions: Individuals with allergy history or pre-existing dermatitis should use extra precautions in handling this product.

For complete discussion of the toxicology data from which this evaluation was made, refer to Section 11. For Regulatory Information, refer to Section 15.

4. FIRST AID MEASURES

**EMERGENCY NUMBER: within the United States (877) 315-9819;
outside the United States (651) 632-6184**

EYE CONTACT:

Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

SKIN CONTACT:

Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

INGESTION:

Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

INHALATION:

Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

NOTES TO PHYSICIAN:

Contains petroleum distillates - vomiting may cause aspiration pneumonia.

This product is a synthetic pyrethroid pesticide. If ingested and vomiting has not occurred, emesis should be induced with supervision. Keep patient's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

Do not administer milk, cream or other substance containing vegetable or animal fats, which enhance the absorption of lipophilic substances.

If localized paresthesia develops, the site should be thoroughly washed with soap and water. Cold cream can be applied to help diminish the effect.

5. FIRE FIGHTING MEASURES

FLASH POINT: 268° F (131° C)

FLASH POINT METHOD: TCC

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical, foam or water. Soft stream water fog only if necessary. Contain all runoff.

FLAMMABLE LIMITS IN AIR - LOWER (%): No data available

FLAMMABLE LIMITS IN AIR - UPPER (%): No data available

NFPA RATING:

Health:	2
Flammability:	1
Reactivity:	0
Special:	None

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using professional judgement. Values were not available in the guidelines or published evaluations prepared by the National Fire Protection Association, NFPA.

FIRE & EXPLOSION HAZARDS: Do not use or store near heat or open flame.

FIRE FIGHTING INSTRUCTIONS: Products of combustion from fires involving this material may be toxic. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) and full protective gear. Keep upwind. Isolate hazard area. Avoid inhalation of smoke and fumes. Use water or foam to reduce fumes. Do not touch spilled material. If possible, move containers from area. Extinguish only if flow can be stopped. Use flooding amounts of water as a fog. Cool containers with flooding amounts of water from as far a distance as possible. Avoid breathing vapors.

HAZARDOUS COMBUSTION PRODUCTS: May form toxic materials: Carbon dioxide, carbon monoxide, various hydrocarbons, etc.

6. ACCIDENTAL RELEASE MEASURES

VALENT BIOSCIENCES EMERGENCY PHONE NUMBER:

WITHIN THE UNITED STATES: (877) 315-9819

OUTSIDE OF THE UNITED STATES: (651) 632-6184

OBSERVE PRECAUTIONS IN SECTION 8: PERSONAL PROTECTION

Stop the source of the spill if safe to do so. Contain the spill to prevent further contamination of the soil, surface water, or ground water. For additional spill response information refer to the North American Emergency Response Guidebook.

FOR SPILLS OR LEAKS:

CONTAINMENT:

Small spills: Absorb with an inert absorbent material such as sand, granular clay, sawdust, Fuller's earth, etc. Place in an approved chemical waste container for disposal. Where possible, drum should be oriented to prevent further leakage. Do not allow spilled material to enter any body of water.

Large Spills: Eliminate all ignition sources. Ventilate area. Stop leak if you can do so without coming into contact with spilled material. Dike far ahead of the spill for later disposal. All equipment used to clean up spill should be grounded. Prevent entry into waterways, sewers, basements, or confined areas. Inform appropriate authorities immediately if contamination occurs. Evacuate non-essential personnel from the area to prevent human exposure. Spill may produce slippery conditions.

CLEANUP:

Rinse spill area with small amount of soapy water. Contain and absorb the rinsate with inert absorbents and place into the same disposal container. Area can be washed with water to remove the last trace of residue. Do not allow water to contaminate water supplies or sewers.

Recommended neutralizing agent: dilute alkaline (base) solution.

7. HANDLING AND STORAGE

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

HANDLING PRECAUTIONS: Causes substantial but temporary eye injury. Causes skin irritation. Avoid contact with skin, eyes or clothing. Wear goggles, face shield or safety glasses. Harmful if swallowed, inhaled, or absorbed through skin. Avoid breathing vapors or spray mist.

Combustible. Do not use or store near heat or open flame. Do not apply this diluted product in conduits, motor housings, junction and switch boxes or other electrical equipment because of possible shock hazard. Do not use on surfaces that can be harmed or stained by water.

STORAGE: Do not contaminate water, food or feed by storage or disposal. Keep container tightly closed. Keep only in original container. Do not store near food or feed. Do not store near heat or open flame.

WORK/HYGIENIC PRACTICES: Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Remove contaminated clothing and wash clothing before reuse.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

EYES: Do not get this material in your eyes. Eye contact can be avoided by wearing safety glasses or goggles.

RESPIRATORY PROTECTION: Use this material only in well ventilated areas. Unless ventilation is adequate to keep airborne concentrations below recommended exposure standards, approved respiratory protection should be worn.

SKIN PROTECTION: Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including chemical-resistant gloves.

ENGINEERING CONTROLS: Control airborne concentrations below appropriate exposure guidelines. Use local exhaust ventilation.

OTHER/GENERAL PROTECTION: Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Remove contaminated clothing and wash clothing before reuse. Eye wash facility and safety shower should be available.

EXPOSURE LIMITS - See Section 2.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Viscous liquid
COLOR:	Orange-yellow
ODOR:	Mild odor
SPECIFIC GRAVITY:	8.28 lb/gal at 25° C
SOLUBILITY:	Soluble in most organic solvents.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:	Stable at normal ambient temperatures.
INCOMPATIBILITY:	Strong acids and oxidizing agents
OXIDATION/REDUCTION PROPERTIES:	Product does not have the potential to act as a strong oxidizing or reducing agent.
EXPLODABILITY:	Not expected to be explosive.
HAZARDOUS POLYMERIZATION :	Will not occur.
HAZARDOUS DECOMPOSITION PRODUCTS:	May form toxic materials such as: Carbon dioxide, carbon monoxide, various hydrocarbons, etc.
CONDITIONS TO AVOID:	Excessive heat and sources of ignition.

11. TOXICOLOGICAL INFORMATION

ACUTE (Product Specific Information):

Oral Toxicity LD ₅₀ (rats)	412.9 mg/kg (female)	EPA Tox Category	II
Dermal Toxicity LD ₅₀ (rabbits)	> 2,000 mg/kg	EPA Tox Category	III
Inhalation Toxicity LC ₅₀ (rats)	1.26 mg/L	EPA Tox Category	III
Eye Irritation (rabbits)	Slightly irritating	EPA Tox Category	III
Skin Irritation (rabbits)	Slightly irritating	EPA Tox Category	III
Skin Sensitization (guinea pigs)	Weakly sensitizing	EPA Tox Category	Not applicable

TOXICITY OF ACTIVE INGREDIENTS: S-BIOALLETHRIN**CHRONIC/CARCINOGENICITY:** No known chronic effects based on available data on S-bioallethrin.**CARCINOGENICITY:** NTP: Not listed; IARC: Not listed; OSHA: Not listed; ACGIG: Not listed**12. ECOLOGICAL INFORMATION****ECOTOXICOLOGICAL INFORMATION:****ACUTE AND LONG-TERM TOXICITY TO FISH AND INVERTEBRATES:**

This product is highly toxic to fish.

OTHER ENVIRONMENTAL INFORMATION:

This product is extremely toxic to fish and aquatic invertebrates. Do not contaminate water when disposing of equipment washwaters. For terrestrial uses, do not apply directly to any body of water, or to any areas where surface water is present or to intertidal areas below mean high water mark. Care should be used when spraying to avoid fish or reptile pets by removing or covering fish tanks before spraying.

13. DISPOSAL CONSIDERATIONS**END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.****PRODUCT DISPOSAL:**

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL:**CONTAINERS ONE GALLON AND UNDER:**

If empty: Do not reuse this container. Place in trash or offer for recycling if available.

If partly filled: Call your local solid waste agency for disposal instructions. Never place unused product down any indoor or outdoor drain.

CONTAINERS OVER ONE GALLON:

Plastic: Triple rinse (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Metal: Triple rinse (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

DISPOSAL METHODS:

Do not contaminate water, food or feed by disposal. Do not reuse empty container.

14. TRANSPORT INFORMATION

UN/NA NUMBER:	3082
DOT (ground) SHIPPING NAME:	Environmentally hazardous substance, liquid, n.o.s.
TECHNICAL NAME (hazardous material):	(S-bioallethrin)
HAZARD CLASS:	9
PACKING GROUP:	III
DOT REPORTABLE QUANTITY (RQ):	None
REMARKS:	Keep away from food.
EXEMPTION REQUIREMENT:	For transport purposes (49 CFR part 173.132), the calculated 1-hr LC50 (rat) is 5.04 mg/L.

15. REGULATORY INFORMATION

PESTICIDE REGULATIONS: All pesticides are governed under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). Therefore, the regulations presented below are pertinent only when handled outside of the normal use and applications of pesticides. This includes waste streams resulting from manufacturing/formulation facilities, spills or misuse of products, and storage of large quantities of products containing hazardous or extremely hazardous substances.

U.S. FEDERAL REGULATIONS:

Chemical Name	RCRA - U Series Wastes	Clean Water Act - Hazardous Substances	Clean Water Act Section 307
S-Bioallethrin * ([1R-[1a(S*),3β]]-2-methyl-4-oxo-3-(2-propenyl)-2-cyclopenten-1-yl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropanecarboxylate) (28434-00-6)	None	Not listed	Not listed
Petroleum Distillates (64742-47-8)	None	Not listed	Not listed

CWA Section 311: No data

Chemical Name	SARA 313 Chemicals	SARA Section 302	CERCLA Reportable Quantity (RQ):
S-Bioallethrin * ([1R-[1a(S*),3β]]-2-methyl-4-oxo-3-(2-propenyl)-2-cyclopenten-1-yl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropanecarboxylate) (28434-00-6)	Not listed	Not listed	None
Petroleum Distillates (64742-47-8)	Not listed	Not listed	None

SARA (311, 312):

Immediate Health:	Yes
Chronic Health:	No
Fire:	No
Sudden Pressure:	No
Reactivity:	No

Chemical Name	IARC - Group 1 (carcinogenic to humans)	IARC - Group 2A (Probably carcinogenic)	IARC - Group 2B (Possibly carcinogenic)	NTP Carcinogen List
S-Bioallethrin * ([1R-[1a(S*),3β]]-2-methyl-4-oxo-3-(2-propenyl)-2-cyclopenten-1-yl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropanecarboxylate) (28434-00-6)	No	No	No	Not listed
Petroleum Distillates (64742-47-8)	No	No	No	Not listed

STATE REGULATIONS:

Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list of all state regulations. Therefore, the user should consult state or local authorities. The state regulations reviewed include: California Proposition 65, California Directors List of Hazardous Substances, Massachusetts Right to Know, Michigan Critical Materials List, New Jersey Right to Know, Pennsylvania Right to Know, Rhode Island Right to Know and the Minnesota Hazardous Substance list. For Washington State Right to Know, see Section 2 for Exposure Limit information. For Louisiana Right to Know refer to SARA information listed under U.S. Regulations above.

Chemical Name	California Proposition 65	California - Directors List of Hazardous Substances	NJ Environmental Hazardous Substances List
S-Bioallethrin * ([1R-[1a(S*),3β]]-2-methyl-4-oxo-3-(2-propenyl)-2-cyclopenten-1-yl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropanecarboxylate) (28434-00-6)	Not listed	Not listed	Not listed
Petroleum Distillates (64742-47-8)	Not listed	Not listed	Not listed

Chemical Name	MI - Critical Materials List	MA Right To Know	NJ Right To Know
S-Bioallethrin * ([1R-[1a(S*),3β]]-2-methyl-4-oxo-3-(2-propenyl)-2-cyclopenten-1-yl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropanecarboxylate) (28434-00-6)	Not listed		Not listed
Petroleum Distillates (64742-47-8)	Not listed	Not listed	Not listed

Chemical Name	PA Right To Know	RI Right To Know	MN Hazardous Substance
S-Bioallethrin * ([1R-[1a(S*),3β]]-2-methyl-4-oxo-3-(2-propenyl)-2-cyclopenten-1-yl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropanecarboxylate) (28434-00-6)	Not listed	Not listed	Not listed
Petroleum Distillates (64742-47-8)	Not listed	Not listed	Not listed

California Proposition 65: Not listed

CHEMICAL INVENTORY INFORMATION:

TSCA Inventory List - Registered pesticide, exempt from TSCA.

Chemical Name	Canada NDSL Inventory List	Canada DSL Inventory List -	EINECS Inventory List -
S-Bioallethrin * ([1R-[1a(S*),3β]]-2-methyl-4-oxo-3-(2-propenyl)-2-cyclopenten-1-yl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropanecarboxylate) (28434-00-6)	Not listed	Not listed	249-013-5
Petroleum Distillates (64742-47-8)	Not listed	Not listed	Not listed

CANADIAN REGULATIONS:

WHMIS Hazard Class: Not determined

For information regarding potential adverse health effects from exposure to this product, refer to Sections 3 and 11.

16. OTHER INFORMATION

REASON FOR ISSUE: Input MSDS into the new system and minor edits throughout. Correct the transportation information.

EPA REGISTRATION NUMBER: 73049-395

MSDS NO.: ENV-0094

REVISION NUMBER: 1

REVISION DATE: 11/06/2007

SUPERCEDES DATE: June 02, 2004

THE INFORMATION IN THIS MSDS IS BASED ON DATA AVAILABLE TO US AS OF THE REVISION DATE GIVEN HEREIN, AND BELIEVED TO BE CORRECT. CONTACT VALENT BIOSCIENCES TO CONFIRM IF YOU HAVE THE MOST CURRENT MSDS.

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