

MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION

Product identifier : **TOPGUARD (FLUTRIAFOL 125 g/l SC)**

Product Code(s) : None reported.

Product Use : Fungicide

Chemical Family : Mixture

Supplier's name and address:
Cheminova Inc.
 PO Box 110566
 One Park Drive
 Research Triangle Park, NC, USA
 27709

Manufacturer's name and address:
 Refer to Supplier

Information Telephone # : 919-474-6600 (8:00 AM - 5:00 PM, EST, Monday-Friday)

24 Hr. Emergency Tel # : Chemtrec 1-800-424-9300 (Within Continental U.S.); Chemtrec 703-527-3887 (Outside U.S.).
 For Medical Emergencies: (800) 303-6950

SECTION 2 - HAZARDS IDENTIFICATION

Classification : OSHA: This material is classified as hazardous under OSHA regulations (29CFR 1910.1200). Hazardous classification: Acute Health Hazard; Chronic Health Hazard

WHMIS information: This product is a Pest Control Product and is not regulated as a Controlled Product under the Hazardous Products Act (HPA). For informational purposes, this product would have the following WHMIS classification: Class D2B (Materials Causing Other Toxic Effects, Toxic Material)

Emergency Overview : Off-white to brown liquid (suspension in water). Characteristic fish or glue-like odor. Warning! Harmful if swallowed. May be harmful if inhaled. May cause respiratory irritation. Causes eye irritation. Liver injury may occur. May be dangerous for the environment. This product is harmful to fish, aquatic invertebrates, aquatic plants and bees.

POTENTIAL HEALTH EFFECTS:

Signs and symptoms of short-term (acute) exposure

- Inhalation* : May cause irritation to the nose, throat and upper respiratory tract.
- Skin* : Direct skin contact may cause slight or mild, transient irritation. Prolonged contact, may be more irritating.
- Eyes* : May cause moderate to severe irritation.
- Ingestion* : Harmful if swallowed. At high dosage could cause salivation, depression of activity, muscle spasms, ataxia and increased body temperature, based on animal data.

Effects of long-term (chronic) exposure

- : Prolonged or repeated skin contact may cause irritation, defatting or dermatitis (rash). Prolonged or repeated overexposure may cause liver damage, even at low levels.

Carcinogenic status : See TOXICOLOGICAL INFORMATION, Section 11.

Additional health hazards : See TOXICOLOGICAL INFORMATION, Section 11.

Potential environmental effects : This material is harmful to aquatic organisms. See ECOLOGICAL INFORMATION, Section 12.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredients</u>	<u>CAS #</u>	<u>Wt.%</u>
Flutriafol	76674-21-0	10.00 - 15.00
C13 - C15 Ethoxylated alcohols	68131-39-5	5.00 - 10.00
Propylene glycol	57-55-6	5.00 - 10.00

SECTION 4 - FIRST AID MEASURES

- Inhalation** : Immediately remove person to fresh air. If breathing has stopped, give artificial respiration. Obtain medical attention if symptoms develop and persist.
- Skin contact** : Immediately remove contaminated clothing and shoes. Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention if symptoms develop and persist. Wash contaminated clothing before reuse.
- Eye contact** : Immediately flush eyes with running water for at least 20 minutes. Get medical attention.
- Ingestion** : If material is swallowed, get immediate medical attention. Do not induce vomiting, unless directed to do so by qualified medical personnel. Never give anything by mouth to an unconscious person.
- Notes For Physician** : Treat symptomatically.

SECTION 5 - FIRE FIGHTING MEASURES

- Fire hazards/conditions of flammability** : Not flammable under normal conditions of handling. If water evaporates, residual material can burn when exposed to extreme heat, flame and other ignition sources. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure.
- Flammability classification (OSHA 29 CFR 1910.1200)** : Non-flammable.
- Oxidizing properties** : None known.
- Explosion data: Sensitivity to mechanical impact / static discharge** : Not expected to be sensitive to mechanical impact or static discharge.
- Suitable extinguishing media** : Carbon dioxide or dry chemical for small fires. For large fires, use water spray or foam.
- Special fire-fighting procedures/equipment** : Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Move containers from fire area if safe to do so. Water spray may be useful in cooling equipment exposed to heat and flame. Avoid spreading burning solid with water spray used for cooling purposes.
- Hazardous combustion products** : Carbon oxides; nitrogen oxides (NOx); sulfur oxides; Hydrogen fluoride; irritating fumes and smoke.
- NFPA Rating**

	0 - Minimal	1 - Slight	2 - Moderate	3 - Serious	4 - Severe
	<i>Health:</i> 2	<i>Flammability:</i> 1	<i>Instability:</i> 0	<i>Special Hazards:</i>	None

SECTION 6 - ACCIDENTAL RELEASE MEASURES

- Personal precautions** : Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.
- Environmental precautions** : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. If necessary, dike well ahead of the spill to prevent runoff into drains, sewers, or any natural waterway or drinking supply.
- Spill response/cleanup** : Remove all sources of ignition. Ventilate area of release. Stop the spill at source if it is safe to do so. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Place used absorbent in containers for disposal. For a water spill, confine the spill immediately with booms. Large spills that soak into the ground should be dug up, placed into suitable containers and disposed of appropriately (see Section 13). Notify the appropriate authorities as required.
- Prohibited materials** : None known.
- Special spill response procedures** : In case of a transportation accident, in the United States contact CHEMTREC at 1-800-424-9300 or International at 1-703-527-3887. If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8002). US CERCLA Reportable quantity (RQ): None.

SECTION 7 - HANDLING AND STORAGE

- Safe Handling procedures** : This material is a harmful liquid. Wear chemically resistant protective equipment during handling. Use only in well-ventilated areas. Avoid contact with eyes, skin and clothing. Avoid breathing vapors or mists. Do not ingest. Keep away from children and all unprotected persons. Do not use near sources of heat, flame or direct sunlight. Keep away from incompatibles. Use caution when opening cap. Keep containers tightly closed when not in use. Wash thoroughly after handling.
- Storage requirements** : Store in a cool, dry, well ventilated area. Keep in properly labelled containers. Keep away from excessive heat, open flames, sparks and other possible sources of ignition. Keep away from incompatibles. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking in the area.
- Incompatible materials** : Oxidizing agents; Copper; Copper alloys.
- Special packaging materials** : Always keep in containers made of the same materials as the supply container.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits

<u>Ingredients</u>	<u>ACGIH TLV</u>		<u>OSHA PEL</u>	
	<u>TWA</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
Flutriafol	N/Av	N/Av	N/Av	N/Av
C13 - C15 Ethoxylated alcohols	N/Av	N/Av	N/Av	N/Av
Propylene glycol	*10 mg/m ³	N/Av	N/Av	N/Av

*Note: The ACGIH TLV listed above for Propylene glycol is an AIHA WEEL.

Ventilation and engineering measures

- Ventilation and engineering measures** : Provide sufficient ventilation to keep vapour concentration below the given TLV and/or PEL.
- Respiratory protection** : Respiratory protection is required if the concentrations exceed the TLV. Wear a pesticide respirator jointly approved by the MSHA and NIOSH. Advice should be sought from respiratory protection specialists.
- Skin protection** : Impervious gloves must be worn when using this product. Small tears in gloves and cross-contamination can easily occur. Change gloves frequently and limit manual work. Advice should be sought from glove suppliers.
- Eye / face protection** : Chemical splash goggles must be worn when handling this material.
- Other protective equipment** : Wear impervious chemical apron and protective clothing (water-proof pants, coat, hat and boots) to prevent skin contact. An eyewash station and safety shower should be made available in the immediate working area.
- General hygiene considerations** : Avoid breathing vapors or mists. Avoid contact with skin, eyes and clothing. Do not eat, drink, smoke or use cosmetics while working with this product. Before removing gloves clean them with soap and water. Always wash hands, face and arms with soap and water before smoking, eating or drinking. After work, take off all protective equipment, work clothes and shoes, and wash with soap and water. Respirator should be cleaned and filter replaced according to manufacturer's instructions. Wear only clean, uncontaminated clothes when leaving place of work.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

- Physical state** : Liquid. **Appearance** : Off-white to brown liquid (suspension in water).
- Odour** : Characteristic fish or glue-like odor. **Odour threshold** : N/Av
- pH** : 7 - 9 (1% dispersion in water)
- Boiling point** : >212°F / >100°C **Specific gravity** : 1.06
- Melting/Freezing point** : >32°F / >0°C **Coefficient of water/oil distribution** : Flutriafol: log Kow = 2.29
- Vapour pressure (mmHg @ 20° C / 68° F)** : Flutriafol: 5.3 x 10⁻¹¹ mmHg @ 20°C **Solubility in water** : Flutriafol: 130 mg/L @ 20°C

Vapour density (Air = 1)	: N/Av	Evaporation rate (n-Butyl acetate = 1)	: N/Av
Volatile organic Compounds (VOC's)	: N/Av	Volatiles (% by weight)	: N/Av
Flash point	: N/Av	Auto-ignition temperature	: N/Av
Flash point Method	: N/Av	Upper flammable limit (% by vol.)	: N/Av
Lower flammable limit (% by vol.)	: N/Av	Flashback observed	: N/Av
Flame Projection Length	: N/Av		

Section 10: Stability And Reactivity

Stability and reactivity	: Stable under the recommended storage and handling conditions prescribed.
Hazardous polymerization	: Will not occur.
Conditions to avoid	: Keep this product away from heat, sparks, flame, and other sources of ignition (e.g. pilot lights, electric motors, static electricity). Keep away from direct sunlight.
Materials To Avoid And Incompatibility	: Avoid contact with incompatible materials. See Section 7 (Handling and Storage) for further details.
Hazardous decomposition products	: None known, refer to hazardous combustion products in Section 5.

SECTION 11 - TOXICOLOGICAL INFORMATION

Target organs	: Eyes, skin, respiratory system, digestive system, central nervous system.
Routes of exposure	: <i>Inhalation</i> : YES <i>Skin Absorption</i> : NO <i>Skin & Eyes</i> : YES <i>Ingestion</i> : YES
Toxicological data	: LD50 Oral (rat): >2000 mg/kg (estimated) LD50 Dermal (rat): >2000 mg/kg (estimated) LC50 Inhalation (rat): N/Av
Carcinogenic status	: No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.
Reproductive effects	: Not expected to have other reproductive effects.
Teratogenicity	: Not expected to be a teratogen.
Mutagenicity	: Not expected to be mutagenic in humans.
Epidemiology	: Not available.
Sensitization to material	: Not expected to be a skin or respiratory sensitizer. However, this product contains trace amounts of 1,2-Benzisothiazol-3-(2H)-one, a skin sensitizer.
Synergistic materials	: Not available.
Irritancy	: Irritating to eyes, respiratory system and skin.
other important hazards	: See Section 2 for additional information.
Conditions aggravated by overexposure	: Pre-existing skin, eye and respiratory disorders.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity	: This product is a fungicide. The active ingredient is: Flutriafol The toxicity of the active ingredient to wildlife species is measured to be: Fish - 96-Hr LC50, Rainbow trout (<i>Salmo gairdneri</i>) = 7.9 mg/L Invertebrates - 48-Hr EC50, Daphnids (<i>Daphnia magna</i>) = 7.5 mg/L Algae - EC50, Green algae (<i>Selenastrum capricornutum</i>) = 4.6 - 8.6 mg/L
Mobility	: The active ingredient has moderate mobility in soil. Absorption depends on soil pH and organic matter content.
Persistence	: The active ingredient is not readily biodegradable. Degradation half-lives vary with circumstances, but are usually over 1 year in soil and water.
Bioaccumulation potential	: The active ingredient is not expected to bioaccumulate. The bioconcentration factor (BCF) was measured to be: 7 (Rainbow trout, whole fish)
Other Adverse Environmental effects	: This product is a fungicide. This product is harmful to fish, aquatic invertebrates, aquatic plants and bees. This product is not considered as harmful to birds or soil microorganisms. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.

SECTION 13 - DISPOSAL CONSIDERATIONS

Handling for Disposal	: Handle waste according to recommendations in Section 7.
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Methods of Disposal : Do not contaminate water, foodstuffs, feed or seed by storage or disposal. For disposable containers, triple rinse (or equivalent) containers and add rinse material to disposal tank. Follow any additional local, state or federal requirements for cleaning containers prior to disposal. Make the empty, rinsed container unusable for further use by puncturing. Dispose in accordance with all applicable federal, state, provincial and local regulations. Contact your local, state, provincial or federal environmental agency for specific rules.

RCRA : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

SECTION 14: TRANSPORT INFORMATION

Regulatory Information	UN Number	Shipping Name	Class	Packing Group	Label
49CFR/DOT	None	Not regulated.	Not regulated	none	
49CFR/DOT Additional information	None.				
TDG	None	Not regulated.	Not regulated	none	
TDG Additional information	None.				

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

OSHA: This material is classified as hazardous under OSHA regulations (29CFR 1910.1200).

CERCLA Reportable Quantity (RQ) (40 CFR 117.302): See Section 6

SARA TITLE III: Sec. 302, Extremely Hazardous Substances, 40 CFR 355: No Extremely Hazardous Substances are present in this material.

SARA TITLE III: Sec. 311 and 312, MSDS Requirements, 40 CFR 370 Hazard Classes: Immediate (Acute) health hazard; Chronic Health Hazard. Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SARA TITLE III: Sec. 313, Toxic Chemicals Notification, 40 CFR 372: This material is not subject to SARA notification requirements, since it does not contain any Toxic Chemical constituents above de minimus concentrations.

US State Right to Know Laws:

California Proposition 65: To the best of our knowledge, this product does not contain any chemicals known to the State of California to cause cancer or reproductive harm.

International Information:

This product is a Pest Control Product and is not regulated as a Controlled Product under the Hazardous Products Act (HPA).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and this MSDS contains all the information required by the CPR.

SECTION 16 - OTHER INFORMATION


HMIS Rating : * - Chronic hazard 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe
*Health: *2 Flammability: 1 Reactivity: 0*

Legend : ACGIH: American Conference of Governmental Industrial Hygienists
 CA: California
 CAS: Chemical Abstract Services
 CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980

- CFR: Code of Federal Regulations
- DOT: Department of Transportation
- EPA: Environmental Protection Agency
- HMIS: Hazardous Materials Identification System
- HSDB: Hazardous Substances Data Bank
- IARC: International Agency for Research on Cancer
- Inh: Inhalation
- N/Ap: Not Applicable
- N/Av: Not Available
- NFPA: National Fire Protection Association
- NIOSH: National Institute of Occupational Safety and Health
- NTP: National Toxicology Program
- OSHA: Occupational Safety and Health Administration
- PEL: Permissible exposure limit
- RCRA: Resource Conservation and Recovery Act
- RTECS: Registry of Toxic Effects of Chemical Substances
- SARA: Superfund Amendments and Reauthorization Act
- STEL: Short Term Exposure Limit
- TDG: Canadian Transportation of Dangerous Goods Act & Regulations
- TLV: Threshold Limit Values
- TPQ: Threshold Planning Quantity
- TSCA: Toxic Substance Control Act
- TWA: Time Weighted Average
- WHMIS: Workplace Hazardous Materials Identification System

References

- : 1. ACGIH, Threshold Limit Values and Biological Exposure Indices
- 2. International Agency for Research on Cancer Monographs
- 3. Canadian Centre for Occupational Health and Safety, CCHInfoWeb databases (Chempendium, HSDB, RTECs).
- 4. Material Safety Data Sheet from manufacturer.
- 5. US EPA Title III List of Lists
- 6. California Proposition 65 List

<p>Prepared for: Cheminova Inc PO Box 110566 One Park Drive, Suite 150 Research Triangle Park, NC 27709 Please direct all enquiries to Cheminova.</p>	
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