SAFETY DATA SHEET

SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

Product identifier: **TopGuard EQ Fungicide**

Product use: Fungicide

Supplier's name and address:

FMC Corporation
2929 Walnut Street
Philadelphia, PA 19104
(215) 299-6000 (General Information)
msdsinfo@fmc.com (E-mail General Information)

Manufacturer's name and address:

Refer to supplier.

Emergency Telephone #: 1-800-331-3148 (Medical Emergencies-PROSAR)
1-800-424-9300 (24 Hr. Chemtrec Number)

SDS Prepared by: FMC Corporation
SDS Preparation Date: September 24, 2015
Revision Date: September 24, 2015
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SECTION 2 — HAZARDS IDENTIFICATION

GHS Signal Word:

Warning

Classification:

Health	Environmental	Physical
Acute toxicity – Inhalation – Category 4	Aquatic Toxicity – Acute 1 Aquatic Toxicity – Chronic 1	Flammable liquid – Category 4

GHS Pictogram:

Hazard Statements:

Harmful if inhaled.
Combustible liquid.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

Prevention:

Avoid breathing mist, vapors or spray.
Use only outdoors or in a well-ventilated area.
Keep away from flames and hot surfaces – No smoking.
Wear protective gloves, eye and face protection.
Avoid release to the environment.

Response:

If inhaled: Remove victim to fresh air and keep comfortable for breathing. Call poison control center or doctor if you feel unwell.
In case of fire: Use dry chemical and carbon dioxide for small fire, water spray and foam for large fires.
Collect spillage.

Storage:

Store in a well-ventilated place.
Keep cool.

Disposal:

Dispose of contents/container in accordance with label instructions.

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	CAS #	% (weight)	ACGIH TLV	OSHA PEL
Azoxystrobin ((E)-2-{2-[6-(2-cyanophenoxy)pyrimididn-4-yloxy]phenyl}-3-methoxyacrylate)	131860-33-8	25.3	NE	NE
Flutriafol (*1H*-1,2,4-Triazole-1-ethanol, α-(2-fluorophenyl)-α-(4-fluorophenyl)-)	76674-21-0	18.63	NE	NE
Inert ingredients:		56.07		

NE= None established

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

SECTION 4 — FIRST AID MEASURES

IF IN EYES: 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.
Call a poison control center or doctor for treatment advice.

IF ON SKIN OR CLOTHING: Take off contaminated clothing.
Rinse skin immediately with plenty of water for 15-20 minutes.
Call poison control center or doctor for treatment advice.

IF SWALLOWED: Call a poison control center or doctor for treatment advice.
Have person sip a glass of water if able to swallow.
Do not induce vomiting unless told to do so by a poison control center or doctor.
Do not give anything by mouth to an unconscious person.

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

Have the product container or label with you when calling a poison control center or doctor, or when going for treatment. You may also contact 1-866-303-6950 (24-hours) for emergency medical treatment information.

Note to Physician: No specific antidote. Treat symptomatically.

Most important symptoms and effects, both acute and delayed: Inhalation of this product may result in difficulty breathing. Ingestion may cause diarrhea. Contact with skin and eyes can cause irritation.

Indication of any immediate medical attention and special treatment needed: No specific antidote. Treat symptomatically.

SECTION 5 — FIRE FIGHTING MEASURES

Flash point: 185.36° F (85.2° C) Pensky-Martens cc
Flammable limits (% by volume): ND
Explosive properties: Not explosive
Suitable extinguishing media: For small fires: dry chemical or carbon dioxide . For large fires: foam or water spray. Avoid heavy hose stream.
Special fire-fighting procedures/equipment: Use water spray to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Fight fire from protected location or maximum possible distance. Dike area to prevent water runoff. Do not allow run-off from fire fighting to enter drains or water courses. Firemen should wear self-contained breathing apparatus and protective clothing.
Special hazards arising from the substance or mixture: Essential combustion products are volatile compounds, toxic, irritant and inflammable as nitrogen oxides, cyanide, hydrogen, hydrogen fluoride, sulfur dioxide, carbon monoxide, carbon dioxide and various organic compounds.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal precautions: Observe all safety precautions when cleaning up spills. Use personal protection equipment. Depending on the magnitude of the spill, this may mean wearing respirator, face mask or eye protection, chemical resistant clothing, protective gloves and boots when cleaning up spills. See Section 8, Personal Protection. Stop the source of the spill immediately if safe to do so. Keep unprotected persons away from spill area. Avoid and reduce mist formation as much as possible. It is recommended to have a predetermined plan for the handling of spills. Empty, closed containers for the collection of spills should be available.

Environmental precautions: Contain the spill to prevent any further contamination of surface, soil or water. Wash waters must be prevented from entering surface water drains. Uncontrolled discharge into water courses must be alerted to the appropriate regulatory body.

Spill response/Cleanup: If appropriate, surface water drains should be covered. Minor spills on the floor or other impervious surface should be absorbed onto an absorptive material such as universal binder, hydrated lime, Fuller's earth or other absorbent clays. Collect the contaminated absorbent in suitable containers for disposal. The used containers should be properly closed and labelled. Clean area with strong industrial detergent and much water. Absorb wash liquid onto inert absorbent clay and collect in suitable containers for disposal. The used containers should be properly closed and labelled.

Large spills which soak into the ground should be dug up and transferred into suitable containers for disposal.

Spills in water should be contained as much as possible by isolation of the contaminated water. The contaminated water must be collected and removed for treatment or disposal. Refer to Section 13 for disposal.

SECTION 7 — HANDLING AND STORAGE

Safe handling procedures: Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Do not discharge to the environment. Collect all waste material and remains from cleaning equipment, etc., and dispose of as hazardous waste. See Section 13 for disposal.

Storage recommendations: Do not contaminate water, food, or feed by storage or disposal. Store unused product in original container in a cool, dry, secure area.

SECTION 8 — EXPOSURE CONTROLS AND PERSONAL PROTECTION

Ventilation and engineering controls: If handled indoors, provide mechanical exhaust ventilation to minimize airborne concentrations.

Protective gloves: Wear chemical-resistant gloves (such as natural rubber, Selection Category A).

Eye protection: Wear protective eyewear.

Respiratory protection: The product is not likely to present an airborne exposure concern during normal handling, but in the event of a discharge of the material which produces a heavy vapor or mist, works should put on officially approved face mask or respiratory protection equipment (refer to label).

Other protective equipment: Wear long-sleeved shirt and long pants, shoes and socks. Wear appropriate chemical resistant clothing to prevent skin contact depending on the extent of exposure.

Permissible exposure levels: See Section 3.

General hygiene considerations: Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Opaque light brownish liquid

Odor: Weak aromatic

Odor threshold: ND

pH: 6.4

Melting point/Freezing point:	**Azoxystrobin:**	116° C
	Flutriafol:	125-127° C

Initial boiling point and boiling range: **Azoxystrobin:** 360° C
Flutriafol: Decomposes

Flash point: 185.36° F (85.2° C) Pensky-Martens cc
Evaporation rate: NA
Flammability: NA
Upper/lower flammability or explosive limits: ND
Vapor pressure: **Azoxystrobin:** 1.10×10^{-10} Pa @ 20° C
Flutriafol: 7.1×10^{-9} Pa @ 20° C
Vapor density: ND
Relative density: 9.839 lb/gal
Solubility(ies): Solubility of **Azoxystrobin** at 20° C in:

Acetone	86000	mg/l
Hexane	57	mg/l
Methanol	20000	mg/l
Toluene	55000	mg/l
Water	6.7	mg/l

Solubility of **Flutriafol** at 21° C in:

acetone	114 – 133	g/L
ethyl acetate	29 – 33	g/L
n-heptane	< 10	g/L
xylene	< 10	g/L
dichloroethane	20 – 25	g/L
methanol	114 – 133	g/L
water	0.13	g/L

Partition coefficient (n-octanol/water): **Azoxystrobin:** Log K_{ow}: 2.5 @ 20° C
Flutriafol: Log K_{ow}: 2.29

Auto-ignition temperature: ND
Decomposition temperature: ND
Viscosity: 1972 cP @ 20° C
1624 cP @ 40° C
Explosive properties: Not explosive

ND: Not determined
NA: Not applicable

SECTION 10 — REACTIVITY AND STABILITY DATA

Stability and reactivity: This product is stable under the recommended storage and handling conditions described in Section 7.
Hazardous polymerization: Not known to occur.
Conditions to avoid: None known.
Materials to avoid (incompatibles): None known.
Hazardous decomposition products in a fire: Essential combustion products are volatile compounds, toxic, irritant and inflammable as nitrogen oxides, cyanide, hydrogen, hydrogen fluoride, sulfur dioxide, carbon monoxide, carbon dioxide and various organic compounds.

SECTION 11 — TOXICOLOGICAL INFORMATION

Routes of exposure: Eyes, skin, ingestion.
Acute toxicity: Causes moderate eye irritation. Harmful if absorbed through skin or swallowed. The acute toxicity is estimated as:
Toxicological data (product):
LC_{50}, inhalation (mg/L/4 hrs) = 3.93
LD_{50}, oral, (mg/kg) = >5000
LD_{50}, dermal, (mg/kg) = >5000
Eye irritation = Mildly irritating to eyes
Skin irritation = Mildly irritating to skin
Skin sensitizer = Not a skin sensitizer

Carcinogenicity: No known carcinogenic effects.
Teratogenicity, mutagenicity, other reproductive effects: No known teratogenic, mutagenic or reproductive effects.

SECTION 12 — ECOLOGICAL INFORMATION

Environmental hazards: This product is toxic to fish, mammals, and aquatic invertebrates. Azoxystrobin and flutriafol can be persistent for several months or longer. For terrestrial uses: do not apply directly to water or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and run off may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment wastewater or rinsate.

Ecotoxicological information:

The ecotoxicity of **azoxystrobin** is measured as:

- Fish	Rainbow trout (*Oncorhynchus mykiss*)	96-h LC_{50}	0.47 mg/l
	.....	21-day NOEC	0.16 mg/l
- Invertebrates	Daphnids (*Daphnia magna*)	48-h EC_{50}	0.28 mg/l
		21-day NOEC	0.44 mg/l
- Algae	Green algae		
	(*Pseudokirchneriella subcapitata*)	72-h IC_{50}	0.36 mg/l
- Birds	Mallard duck (*Anas platyrhynchos*).....	Acute, LD_{50}	>1000 mg/kg
	Bobwhite quail (*Colinus virginianus*).....	Acute, LD_{50}	>1000 mg/kg
- Earthworms	*Eisenia foetida foetida*	Acute, 14 day LC_{50}	283 mg/kg soil
- Insects	Bees (*Apis mellifera*)	48-h LD_{50}, acute oral	>25 μg/bee
		48-h LD_{50}, acute contact	>200 μg/bee

The ecotoxicity of **flutriafol** is measured as:

- Fish	Rainbow trout (*Salmo gairdneri*)	96-h LC_{50}	61 mg/l
	.....	21-day NOEC	6.2 mg/l
- Invertebrates	Daphnids (*Daphnia magna*)	48-h EC_{50}	>78 mg/l
		21-day NOEC	0.31 mg/l
- Algae	Green algae (*Selenastrum capricornutum*) ..	96-h IC_{50}	12 mg/l
	Green algae (*Scenedesmus subcapicatus*)	72-h IC_{50}	1.9 mg/l
- Birds	Mallard duck (*Anas platyrhynchos*).....	Acute, LD_{50}	>5000 mg/kg
- Earthworms	*Eisenia foetida foetida*	No effect found	
- Insects	Bees (*Apis mellifera*)	48-h LD_{50}, acute oral	>2 μg/bee
	.....	48-h LD_{50}, acute contact	>50 μg/bee

Environmental fate:

Under normal conditions azoxystrobin has low to moderate mobility in soil. Flutriafol has moderate mobility in soil. Azoxystrobin and flutriafol are not readily biodegradable, but they are degraded in the environment. Azoxystrobin and flutriafol are not expected to bioaccumulate.

SECTION 13 — DISPOSAL CONSIDERATIONS

Handling for disposal: To avoid wastes, use all material by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program.

Methods of disposal: Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems. Do not discharge to the environment. Refer to product label for specific container disposal instructions.

SECTION 14 — TRANSPORTATION INFORMATION

US DOT 49 CFR information:

Non-bulk: Not regulated

Bulk: NA1993, Combustible liquid, N.O.S. (propylene glycol), PG III

INTERNATIONAL:

IMDG/IMO (vessel): UN3082, Environmentally Hazardous Substances, liquid, N.O.S. (azoxystrobin, flutriafol), PG III, Marine pollutant

IATA/ICAO (air): UN3082, Environmentally Hazardous Substances, liquid, N.O.S. (azoxystrobin, flutriafol), PG III, Marine pollutant

SECTION 15 — REGULATORY INFORMATION

FIFRA: This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels on non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Causes moderate eye irritation.
Avoid contact with skin, eyes or clothing.
Harmful if absorbed through skin.
Harmful if swallowed.
Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.
Remove and wash contaminated clothing before reuse.
Prolonged or frequent skin contact may cause allergic reactions in some individuals.

EPA/CERCLA Reportable Quantity (RQ): Not applicable

SARA TITLE III:

Sec. 302, Extremely Hazardous Substance Notification: This material is not known to contain any Extremely Hazardous Substances.

Sec. 311/312, Hazard Categories: Immediate (acute) health hazard
Chronic (delayed) health hazard
Fire hazard

Sec. 313, Toxic Chemicals Notification: Not applicable

California Proposition 65: Not applicable

SECTION 16 — OTHER INFORMATION

HMIS Rating:	2	Health;	2	Flammability;	0	Reactivity	*Chronic
NFPA Rating:	2	Health;	2	Flammability;	0	Reactivity	

0-minimal 1- slight 2-moderate 3-severe 4-extreme

Disclaimer/Statement of Liability: The information in this Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

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Prepared By:

FMC Corporation

End of Safety Data Sheet