

**SAFETY DATA SHEET**  
Rayora Fungicide

SDS #: FO002249-3-A  
Revision date: 2019-10-23  
Format: NA  
Version 1.01



**1. PRODUCT AND COMPANY IDENTIFICATION**

**Product Identifier**

**Product Name** Rayora Fungicide

**Other means of identification**

**Product Code(s)** FO002249-3-A

**Legacy Product Code** 1310-05, F6123-1

**Synonyms** FLUTRIAFOL:  $\alpha$ -(2-fluorophenyl)- $\alpha$ -(4-fluorophenyl)-1H-1,2,4-triazole-1-ethanol (CAS name); (RS)-2,4'-difluoro- $\alpha$ -(1H-1,2,4-triazol-1-ylmethyl)benzhydryl alcohol (IUPAC name)

**Active Ingredient(s)** Flutriafol

**Chemical Family** Triazole

**PCP #** 31679

**Recommended use of the chemical and restrictions on use**

**Recommended Use:** Fungicide

**Restrictions on Use:** Use as recommended by the label.

**Supplier Address**

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

**Emergency telephone number**

Medical Emergencies :  
1 800 / 331-3148 (U.S.A. & Canada)  
1 651 / 632-6793 (All Other Countries - Collect)

For leak, fire, spill or accident emergencies, call:  
1 800 / 424-9300 (CHEMTREC - U.S.A.)  
1 703 / 741-5970 (CHEMTREC - International)  
1 703 / 527-3887 (CHEMTREC - Alternate)

**2. HAZARDS IDENTIFICATION**

**Classification**

**OSHA Regulatory Status**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin sensitization

Category 1B

**GHS Label elements, including precautionary statements**

**EMERGENCY OVERVIEW****Warning****Hazard Statements**

H317 - May cause an allergic skin reaction

H411 - Toxic to aquatic life with long lasting effects

**Precautionary Statements - Prevention**

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P272 - Contaminated work clothing should not be allowed out of the workplace

P280 - Wear protective gloves

P273 - Avoid release to the environment

**Precautionary Statements - Response**

P302 + P352 - IF ON SKIN: Wash with plenty of water and soap

P332 + P313 - If skin irritation occurs: Get medical advice/attention

P363 - Wash contaminated clothing before reuse

P391 - Collect spillage

**Precautionary Statements - Storage**

P405 - Store locked up

**Precautionary Statements - Disposal**

P501 - Dispose of contents/container according to label directions

**Hazards not otherwise classified (HNOC)**

No hazards not otherwise classified were identified.

**Other Information**

May be harmful in contact with skin.

**3. COMPOSITION/INFORMATION ON INGREDIENTS****Chemical Family** Triazole.

Chemical name	CAS-No	Weight %
Flutriafol	76674-21-0	11.6
Propylene glycol	57-55-6	5-10
Alcohols, C13-15 Branched and Linear, Ethoxylated	157627-86-6	5-10
1,2 benzisothiazolin-3-one	2634-33-5	0.02 (max)

Synonyms are provided in Section 1.

**4. FIRST AID MEASURES****Eye Contact**

Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Get medical attention if irritation develops and persists.

**Skin Contact**

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.

<b>Inhalation</b>	Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
<b>Ingestion</b>	Immediate medical attention is required. 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.
<b>Most important symptoms and effects, both acute and delayed</b>	When fed to animals at high dosage, similar products caused salivation, depression of activity, muscle spasms, ataxia and increased body temperature.
<b>Indication of immediate medical attention and special treatment needed, if necessary</b>	Treatment is symptomatic and supportive.

## 5. FIRE-FIGHTING MEASURES

<b>Suitable Extinguishing Media</b>	Dry chemical, Carbon dioxide (CO <sub>2</sub> ), Water spray, Foam. Avoid heavy hose streams.
<b>Specific Hazards Arising from the Chemical</b>	None known
<b>Hazardous Combustion Products</b>	The essential breakdown products are volatile, toxic, irritant and inflammable compounds such as: Hydrogen fluoride, Nitrogen oxides (NO <sub>x</sub> ), Carbon monoxide, Carbon dioxide (CO <sub>2</sub> ), various chlorinated and fluorinated organic compounds.
<b>Explosion data</b>	
<b>Sensitivity to Mechanical Impact</b>	No information available.
<b>Sensitivity to Static Discharge</b>	No information available.
<b>Protective equipment and precautions for firefighters</b>	Use water spray to cool fire exposed surfaces and protect personnel. Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Dike to prevent runoff. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. As in any fire, wear self-contained breathing apparatus and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions</b>	Isolate and post spill area. Remove all sources of ignition. Wear suitable protective clothing, gloves and eye/face protection. For personal protection see section 8.
<b>Other</b>	For further clean-up instructions, call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.
<b>Environmental Precautions</b>	Keep material out of lakes, streams, ponds, and sewer drains.
<b>Methods for Containment</b>	Wear the full Personal Protection Equipment, avoiding inhalation or contact with skin or eyes. Dike to contain spill with inert material which is absorbent and non-combustible (clay, sand or soil). Then soak up with absorbent material inward from the edges.
<b>Methods for cleaning up</b>	If appropriate, surface water drains should be covered. Minor spills on the floor or other impervious surface should be swept up or preferably vacuumed up using equipment with high efficiency final filter. Transfer to suitable containers. Clean area with strong industrial detergent and much water. Absorb wash liquid onto a suitable absorbent such as hydrated lime, universal binder, attapulgite, bentonite or other absorbent clays and transfer contaminated absorbent to suitable containers. The used containers should be properly closed and labelled.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Handle in accordance with good industrial hygiene and safety practice. Do not contaminate other pesticides, fertilizers, water, food, or feed by storage or disposal. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Remove and wash contaminated clothing before re-use. Wash thoroughly after handling.
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**Storage** To maintain quality, maximum storage temperatures should not exceed 25°C. Protect from frost, heat and sunlight. Keep container tightly closed in a dry and well-ventilated place. Keep out of reach of children and animals. Keep away from food, drink and animal feedingstuffs. Keep/store only in original container. Keep in properly labeled containers.

**Incompatible products** Oxidizing agents, Copper, Copper alloys

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

Chemical name	British Columbia	Quebec	Ontario TWAEV	Alberta
Propylene glycol (57-55-6)	-	-	TWA: 10 mg/m <sup>3</sup> aerosol only  TWA: 50 ppm aerosol and vapor  TWA: 155 mg/m <sup>3</sup> aerosol and vapor	-

### Appropriate engineering controls

**Engineering measures** Apply technical measures to comply with the occupational exposure limits (if listed above). When working in confined spaces (tanks, containers, etc.), make sure there is an adequate source of air for breathing and wear the recommended equipment. Ventilate all transport vehicles prior to discharge.

### Individual protection measures, such as personal protective equipment

**Eye/Face Protection** If splashes are likely to occur, wear: Safety glasses with side-shields. Maintain eye wash fountain and quick-drench facilities in work area.

**Skin and Body Protection** Wear suitable protective clothing. Protective shoes or boots. Minimize skin contamination by following good industrial hygiene practices.

**Hand Protection** Use protective gloves made of chemical materials such as nitrile or neoprene. Wash the outside of gloves with soap and water before reuse. Check regularly for leaks.

**Respiratory Protection** The product does not automatically present an airborne exposure concern during normal handling. In the event of an accidental discharge of the material which produces a heavy vapour or mist, workers should put on officially approved respiratory protection equipment with a universal filter type including particle filter.

**Hygiene measures** Must have clean water available for washing in case of eye or skin contamination. Wash skin before eating, drinking, chewing gum, or using snuff. Shower after work. Remove contaminated clothing and wash before reuse. Wash all work clothing separately; do not mix with household laundry.

**General information** If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

<b>Appearance</b>	Suspension
<b>Physical State</b>	Liquid
<b>Color</b>	Off-white / brown
<b>Odor</b>	Fish, Glue-like

Odor threshold	Not applicable
pH	6.5 @ 25°C (1% solution in water)
Melting point/freezing point	< 0 °C
Boiling Point/Range	99 °C
Flash point	> 99 °C (PMCC)
Evaporation Rate	No information available
Flammability (solid, gas)	Not applicable (Product is a liquid)
Flammability Limit in Air	
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	No information available
Vapor density	No information available
Relative density	1.06 g/mL
Specific gravity	No information available
Water solubility	Dispersible in water
Solubility in other solvents	No information available
Partition coefficient	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Viscosity, kinematic	No information available
Viscosity, dynamic	83-560 mPa.s @20°C; 68-455 mPa.s @ 40°C
Explosive properties	Not explosive
Oxidizing properties	Non-oxidizing
Molecular weight	No information available
Bulk density	No information available
K <sub>st</sub>	>0 bar m/s

## 10. STABILITY AND REACTIVITY

Reactivity	None under normal use conditions
Chemical Stability	Stable under normal conditions.
Possibility of Hazardous Reactions	None under normal processing.
Hazardous polymerization	None under normal processing.
Conditions to avoid	Heating can release hazardous gases
Incompatible materials	Oxidizing agents, Copper, Copper alloys.
Hazardous Decomposition Products	See Section 5 for more information.

## 11. TOXICOLOGICAL INFORMATION

Harmful by inhalation, in contact with skin and if swallowed. Direct eye contact may cause moderate to severe irritation.

### Product Information

LD50 Oral	: > 3000 mg/kg (rat)
LD50 Dermal	: > 4000 mg/kg (rat)
LC50 Inhalation	: >2.10 mg/L 4 hr (rat)
Serious eye damage/eye irritation	Mildly irritating.
Skin corrosion/irritation	Non-irritating.
Sensitization	May cause sensitization by skin contact

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Flutriafol (76674-21-0)	= 1140 mg/kg ( Rat )		
Propylene glycol (57-55-6)	20000 mg/kg ( Rat )	20800 mg/kg ( Rabbit )	
1,2 benzisothiazolin-3-one (2634-33-5)	= 1020 mg/kg ( Rat )		

### Information on toxicological effects

**Symptoms** When fed to animals at high dosage, similar products caused salivation, depression of activity, muscle spasms, ataxia and increased body temperature.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Mutagenicity** Flutriafol: Not mutagenic

**Carcinogenicity** Flutriafol: No evidence of carcinogenicity from animal studies

**Neurological effects** Flutriafol: No information available

**Reproductive toxicity** Flutriafol: No toxicity to reproduction in animal studies.

**STOT - single exposure** None known.  
**STOT - repeated exposure** Causes damage to organs through prolonged or repeated exposure. See listed target organs below.

**Target organ effects** Liver

**Neurological effects** Flutriafol: No information available

**Aspiration hazard** This product presents an aspiration pneumonia hazard.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

The product is toxic to fish, aquatic invertebrates and algae and harmful to bees. It is not considered harmful to birds and soil micro- and macroorganisms.

Chemical name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
bentonite 1302-78-9		96 h LC50: 8.0 - 19.0 g/L (Salmo gairdneri) 96 h LC50: = 19000 mg/L (Oncorhynchus mykiss) static	
Propylene glycol 57-55-6	96 h EC50: = 19000 mg/L (Pseudokirchneriella subcapitata)	96 h LC50: 41 - 47 mL/L (Oncorhynchus mykiss) static 96 h LC50: = 51400 mg/L (Pimephales promelas) static 96 h LC50: = 51600 mg/L (Oncorhynchus mykiss) static 96 h LC50: = 710 mg/L (Pimephales promelas)	48 h EC50: > 1000 mg/L (Daphnia magna) Static 24 h EC50: > 10000 mg/L (Daphnia magna)
Sodium sulfate 7757-82-6		96 h LC50: 13500 - 14500 mg/L (Pimephales promelas) 96 h LC50: 3040 - 4380 mg/L (Lepomis macrochirus) static 96 h LC50: = 13500 mg/L (Lepomis macrochirus) 96 h LC50: > 6800 mg/L (Pimephales promelas) static	48 h EC50: = 2564 mg/L (Daphnia magna) 96 h EC50: = 630 mg/L (Daphnia magna)
Naphthalene* 91-20-3	72 h EC50: = 0.4 mg/L (Skeletonema costatum)	96 h LC50: 0.91 - 2.82 mg/L (Oncorhynchus mykiss) static 96 h LC50: 5.74 - 6.44 mg/L (Pimephales promelas) flow-through 96 h LC50: = 1.6 mg/L (Oncorhynchus mykiss) flow-through 96 h LC50: = 1.99 mg/L (Pimephales promelas) static 96 h LC50: = 31.0265 mg/L (Lepomis macrochirus) static	48 h EC50: 1.09 - 3.4 mg/L (Daphnia magna) Static 48 h EC50: = 1.96 mg/L (Daphnia magna) Flow through 48 h LC50: = 2.16 mg/L (Daphnia magna)

**Persistence and degradability** Flutriafol: Not readily biodegradable. Persistent in soil.

**Bioaccumulation** Flutriafol: Not expected to bioaccumulate.

**Mobility** Flutriafol: Moderately mobile.

### 13. DISPOSAL CONSIDERATIONS

**Waste disposal methods** Improper disposal of excess pesticide, spray mixture, or rinsate is prohibited. If these wastes cannot be disposed of by use according to label instructions, contact appropriate disposal authorities for guidance. Proper personal protective equipment, as described in Sections 7 and 8, must be worn while handling materials for waste disposal.

**Contaminated containers and packages** Containers must be disposed of in accordance with local, state and federal regulations. Refer to the product label for container disposal instructions.

### 14. TRANSPORT INFORMATION

**DOT** NOT REGULATED

**TDG**

<b>UN/ID no</b>	UN3082
<b>Proper Shipping Name</b>	Environmentally hazardous substance, liquid, n.o.s.
<b>Hazard class</b>	9
<b>Packing Group</b>	III
<b>Marine Pollutant</b>	Flutriafol.
<b>Description</b>	UN3082, Environmentally hazardous substance, liquid, n.o.s. (flutriafol), 9, III, Marine Pollutant

**ICAO/IATA**

<b>UN/ID no</b>	UN3082
<b>Proper Shipping Name</b>	Environmentally hazardous substance, liquid, n.o.s.
<b>Hazard class</b>	9
<b>Packing Group</b>	III
<b>Description</b>	UN3082, Environmentally hazardous substance, liquid, n.o.s. (flutriafol), 9, III, Marine Pollutant

**IMDG/IMO**

<b>UN/ID no</b>	UN3082
<b>Proper Shipping Name</b>	Environmentally hazardous substance, liquid, n.o.s.
<b>Hazard class</b>	9
<b>Packing Group</b>	III
<b>EmS No.</b>	F-A, S-F
<b>Marine Pollutant</b>	Flutriafol
<b>Description</b>	UN3082, Environmentally hazardous substance, liquid, n.o.s. (flutriafol), 9, III, Marine Pollutant

### 15. REGULATORY INFORMATION

#### U.S. Federal Regulations

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

**SARA 311/312 Hazard Categories**

<b>Acute health hazard</b>	Yes
<b>Chronic health hazard</b>	Yes
<b>Fire hazard</b>	No
<b>Sudden release of pressure hazard</b>	No
<b>Reactive Hazard</b>	No

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### Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Formaldehyde 50-00-0	100 lb			X
Naphthalene* 91-20-3	100 lb	X	X	X

### CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
Formaldehyde 50-00-0	100 lb 45.4 kg	100 lb
Naphthalene* 91-20-3	100 lb 45.4 kg	

### FIFRA Information

*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 of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:*

#### WARNING

*May be harmful if inhaled. May cause respiratory tract irritation.*

*Causes eye irritation. Contains material which can cause liver damage.*

*May be dangerous for the environment. This product is toxic to fish, aquatic invertebrates, and algae and harmful to bees.*

## US State Regulations

### California Proposition 65

This product does not contain any Proposition 65 chemicals.

### U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Propylene glycol 57-55-6	X		X

### International Inventories

Chemical name	TSCA (United States)	DSL (Canada)	EINECS/ELINCS (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)
Propylene glycol 57-55-6	X	X	X	X	X	X	X	X
Alcohols, C13-15 Branched and Linear, Ethoxylated 157627-86-6	X	X	X		X			
1,2 benzisothiazolin-3-one 2634-33-5	X	X	X	X	X	X	X	X



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**Mexico - Grade** Moderate risk, Grade 2

Chemical name	Mexico - Pollutant Release and Transfer Register - Reporting Emissions for Fabrication, Process or Use -Threshold Quantities	Pollutant Release and Transfer Register - Reporting Emissions - Threshold Quantities
Formaldehyde	100 2500 kg/yr	100 kg/yr

**WHMIS Statement**

This product has been classified in accordance with the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

**WHMIS Hazard Class** D2B - Toxic materials



**16. OTHER INFORMATION**

<b>NFPA</b>	<b>Health Hazards</b> 2	<b>Flammability</b> 1	<b>Instability</b> 0	<b>Special Hazards</b> -
<b>HMIS</b>	<b>Health Hazards</b> 2*	<b>Flammability</b> 1	<b>Physical hazard</b> 0	<b>Personal Protection</b> X

*\*Indicates a chronic health hazard.*

**NFPA/HMIS Ratings Legend** Severe = 4; Serious = 3; Moderate = 2; Slight = 1; Minimal = 0

**Revision date:** 2019-10-23  
**Reason for revision:** Initial Release

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**End of Safety Data Sheet**