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: α-(2-fluorophenyl)-α-(4-fluorophenyl)-1H-1,2,4-triazole-1-ethanol (CAS name); (RS)-2,4'-difluoro-α-(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.

Inhalation	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.
Ingestion	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.
Most important symptoms and effects, both acute and delayed	When fed to animals at high dosage, similar products caused salivation, depression of activity, muscle spasms, ataxia and increased body temperature.
Indication of immediate medical attention and special treatment needed, if necessary	Treatment is symptomatic and supportive.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Dry chemical, Carbon dioxide (CO_2), Water spray, Foam. Avoid heavy hose streams.
Specific Hazards Arising from the Chemical	None known
Hazardous Combustion Products	The essential breakdown products are volatile, toxic, irritant and inflammable compounds such as: Hydrogen fluoride, Nitrogen oxides (NOx), Carbon monoxide, Carbon dioxide (CO_2), various chlorinated and fluorinated organic compounds.
Explosion data	
Sensitivity to Mechanical Impact	No information available.
Sensitivity to Static Discharge	No information available.
Protective equipment and precautions for firefighters	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

Personal Precautions	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.
Other	For further clean-up instructions, call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.
Environmental Precautions	Keep material out of lakes, streams, ponds, and sewer drains.
Methods for Containment	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.
Methods for cleaning up	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

Handling	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.

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/m³ aerosol only TWA: 50 ppm aerosol and vapor TWA: 155 mg/m³ 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

Appearance Suspension
Physical State Liquid
Color Off-white / brown
Odor 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_{st}	>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 marcroorganisms.

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

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

ICAO/IATA

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

IMDG/IMO

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

Acute health hazard	Yes
Chronic health hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

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

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

NFPA	**Health Hazards** 2	**Flammability** 1	**Instability** 0	**Special Hazards** -
HMIS	**Health Hazards** 2*	**Flammability** 1	**Physical hazard** 0	**Personal Protection** 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