

# **MIRAVIS DUO**

Version Revision Date: SDS Number: This version replaces all previous versions. 1.0 10/28/2019 S00056703774

#### **SECTION 1. IDENTIFICATION**

Product name : MIRAVIS DUO

Design code. : A20259G

Product Registration number : 100-1602

## Manufacturer or supplier's details

Company name of supplier : Syngenta Crop Protection, LLC

Address : Post Office Box 18300

Greensboro NC 27419

United States of America (USA)

Telephone : 1 800 334 9481

Telefax : 1 336 632 2192

Emergency telephone : 1 800 888 8372

## Recommended use of the chemical and restrictions on use

Recommended use : Fungicide

Restrictions on use : General Use Pesticide

## **SECTION 2. HAZARDS IDENTIFICATION**

## GHS classification in accordance with 29 CFR 1910.1200

Not a hazardous substance or mixture.

## **GHS** label elements

Not a hazardous substance or mixture.

#### Other hazards

None known.

## **SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

## Components

Chemical name	CAS-No.	Concentration (% w/w)		
difenoconazole	119446-68-3	11.4679		
pydiflumetofen	1228284-64-7	6.8807		
propane-1,2-diol	57-55-6	>= 5 - < 10		

Actual concentration is withheld as a trade secret

## **SECTION 4. FIRST AID MEASURES**



**MIRAVIS DUO** 

Version Revision Date: 1.0 10/28/2019

SDS Number: S00056703774

This version replaces all previous versions.

General advice : Have the product container, label or Safety Data Sheet with

you when calling the emergency number, a poison control

center or physician, or going for treatment.

If inhaled : Take the victim into fresh air.

If breathing is irregular or stopped, administer artificial

respiration.

Keep patient warm and at rest.

Call a physician or poison control center immediately.

In case of skin contact : Take off all contaminated clothing immediately.

Wash off immediately with plenty of water. If skin irritation persists, call a physician. Wash contaminated clothing before re-use.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids,

for at least 15 minutes. Remove contact lenses.

Immediate medical attention is required.

If swallowed : If swallowed, seek medical advice immediately and show this

container or label.

Do NOT induce vomiting.

Most important symptoms and effects, both acute and

delayed

Nonspecific

No symptoms known or expected.

Notes to physician : There is no specific antidote available.

Treat symptomatically.

### **SECTION 5. FIRE-FIGHTING MEASURES**

Suitable extinguishing media : Extinguishing media - small fires

Use water spray, alcohol-resistant foam, dry chemical or

carbon dioxide.

Extinguishing media - large fires

Alcohol-resistant foam

or

Water spray

Unsuitable extinguishing

media

Do not use a solid water stream as it may scatter and spread

fire.

Specific hazards during fire

fighting

As the product contains combustible organic ingredients, fire

will produce dense black smoke containing hazardous

products of combustion (see section 10).

Exposure to decomposition products may be a hazard to

health.

Further information : Do not allow run-off from fire fighting to enter drains or water

courses.

Cool closed containers exposed to fire with water spray.

Special protective equipment

for fire-fighters

Wear full protective clothing and self-contained breathing

apparatus.



**MIRAVIS DUO** 

Version 1.0 Revision Date: 10/28/2019

SDS Number: S00056703774

This version replaces all previous versions.

## **SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emer-

gency procedures

Personal precautions, protec- : Refer to protective measures listed in sections 7 and 8.

Environmental precautions : Prevent further leakage or spillage if safe to do so.

Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform

respective authorities.

Methods and materials for containment and cleaning up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to

local / national regulations (see section 13). Clean contaminated surface thoroughly. Clean with detergents. Avoid solvents.

Retain and dispose of contaminated wash water.

#### **SECTION 7. HANDLING AND STORAGE**

Advice on safe handling : No special protective measures against fire required.

Avoid contact with skin and eyes. When using do not eat, drink or smoke. For personal protection see section 8.

Conditions for safe storage : No special storage conditions required.

Keep containers tightly closed in a dry, cool and well-

ventilated place.

Keep out of the reach of children.

Keep away from food, drink and animal feedingstuffs.

# **SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

# Ingredients with workplace control parameters

Components	CAS-No.	Value type	Control parame-	Basis
		(Form of	ters / Permissible	
		exposure)	concentration	
difenoconazole	119446-68-3	TWA	5 mg/m3	Syngenta
pydiflumetofen	1228284-64- 7	TWA	5 mg/m3	Syngenta
propane-1,2-diol	57-55-6	TWA	10 mg/m3	US WEEL

Engineering measures : THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE

CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THE PRODUCT. FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS

CONSULT THE PRODUCT LABEL.



**MIRAVIS DUO** 

Version 1.0

Revision Date: 10/28/2019

SDS Number: S00056703774 This version replaces all previous versions.

Containment and/or segregation is the most reliable technical protection measure if exposure cannot be eliminated.

The extent of these protection measures depends on the actual risks in use.

Maintain air concentrations below occupational exposure

standards.

Where necessary, seek additional occupational hygiene

advice.

Personal protective equipment

Respiratory protection No personal respiratory protective equipment normally

required.

When workers are facing concentrations above the exposure

limit they must use appropriate certified respirators.

Hand protection

Remarks No special protective equipment required.

Eye protection No special protective equipment required.

Skin and body protection No special protective equipment required.

Select skin and body protection based on the physical job

requirements.

Protective measures The use of technical measures should always have priority

over the use of personal protective equipment.

When selecting personal protective equipment, seek

appropriate professional advice.

## **SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance** liquid

Color white

Odor No data available

Odor Threshold No data available

pΗ 6 - 8

Concentration: 1 % w/v

5 - 10

Concentration: 100 % w/v

Melting point/range No data available

Boiling point/boiling range No data available



**MIRAVIS DUO** 

Version Revision Date: 1.0 10/28/2019

SDS Number: S00056703774

This version replaces all previous versions.

Flash point : Method: Seta closed cup

does not flash

Evaporation rate : No data available

Flammability (solid, gas) : No data available

Upper explosion limit / Upper

flammability limit

No data available

Lower explosion limit / Lower

flammability limit

No data available

Vapor pressure : No data available

Relative vapor density : No data available

Density : 1.09 g/cm3 (68 °F / 20 °C)

Solubility(ies)

Solubility in other solvents : No data available

Partition coefficient: n-

octanol/water

No data available

Autoignition temperature : > 1202 °F / > 650 °C

Decomposition temperature : No data available

Viscosity

Viscosity, dynamic : No data available

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

#### **SECTION 10. STABILITY AND REACTIVITY**

Reactivity : None reasonably foreseeable.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reac-

tions

No dangerous reaction known under conditions of normal use.

Conditions to avoid : No decomposition if used as directed.

Incompatible materials : None known.

Hazardous decomposition

products

No hazardous decomposition products are known.



# MIRAVIS DUO

Version 1.0 Revision Date: 10/28/2019

SDS Number: S00056703774

This version replaces all previous versions.

## **SECTION 11. TOXICOLOGICAL INFORMATION**

#### Information on likely routes of exposure

Ingestion Inhalation Skin contact Eye contact

## **Acute toxicity**

**Product:** 

Acute oral toxicity : LD50 (Rat, female): 1,098 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): > 4.96 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Assessment: The substance or mixture has no acute inhala-

tion toxicity

Remarks: Highest attainable concentration

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal

toxicity

#### Components:

difenoconazole:

Acute oral toxicity : LD50 (Rat, male and female): 1,453 mg/kg

Assessment: The component/mixture is moderately toxic after

single ingestion.

Acute inhalation toxicity : LC50 (Rat, male and female): > 3,300 mg/m3

Exposure time: 4 h

Test atmosphere: dust/mist

Assessment: The substance or mixture has no acute inhala-

tion toxicity

Acute dermal toxicity : LD50 (Rabbit, male and female): > 2,010 mg/kg

Assessment: The substance or mixture has no acute dermal

toxicity

pydiflumetofen:

Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.11 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Assessment: The component/mixture is minimally toxic after

short term inhalation.

Acute dermal toxicity : LD50 (Rat, male and female): > 5,000 mg/kg



**MIRAVIS DUO** 

Version Revision Date: SDS Number: This version replaces all previous versions. 1.0 10/28/2019 S00056703774

Skin corrosion/irritation

**Product:** 

Species : Rabbit

Result : No skin irritation

**Components:** 

difenoconazole:

Species : Rabbit

Result : No skin irritation

pydiflumetofen:

Species : Rabbit

Result : No skin irritation

Serious eye damage/eye irritation

**Product:** 

Species : Rabbit

Result : No eye irritation

**Components:** 

difenoconazole:

Species : Rabbit

Result : Irritation to eyes, reversing within 7 days

pydiflumetofen:

Species : Rabbit

Result : No eye irritation

Respiratory or skin sensitization

**Product:** 

Test Type : mouse lymphoma cells

Species : Mouse

Result : Did not cause sensitization on laboratory animals.

**Components:** 

difenoconazole:

Species : Guinea pig

Result : Did not cause sensitization on laboratory animals.

pydiflumetofen:

Test Type : mouse lymphoma cells

Species : Mouse

Result : Did not cause sensitization on laboratory animals.



Version 1.0

Revision Date: 10/28/2019

SDS Number: S00056703774

This version replaces all previous versions.

Germ cell mutagenicity

**Components:** 

difenoconazole:

Germ cell mutagenicity -

Assessment

Animal testing did not show any mutagenic effects.

pydiflumetofen:

Germ cell mutagenicity -

Assessment

Animal testing did not show any mutagenic effects.

Carcinogenicity

Components:

difenoconazole:

Carcinogenicity - Assess-

ment

Weight of evidence does not support classification as a carcinogen, In a two-year feeding study of mice, an oncogenic effect was seen in the livers of males and females., The observed tumors do not appear to be relevant for men.

pydiflumetofen:

Carcinogenicity - Assess-

ment

Liver tumors noted in mice that are not relevant to humans.

Reproductive toxicity

**Components:** 

difenoconazole:

Reproductive toxicity - As-

sessment

No toxicity to reproduction

pydiflumetofen:

Reproductive toxicity - As-

sessment

No evidence of adverse effects on sexual function and fertility,

or on development, based on animal experiments.

Repeated dose toxicity

Components:

difenoconazole:

Remarks : No adverse effect has been observed in chronic toxicity tests.



Version 1.0

Revision Date: 10/28/2019

SDS Number: S00056703774

This version replaces all previous versions.

## **SECTION 12. ECOLOGICAL INFORMATION**

#### **Ecotoxicity**

#### Components:

difenoconazole:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 1.1 mg/l

Exposure time: 96 h

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Americamysis): 0.15 mg/l

Exposure time: 96 h

Toxicity to algae/aquatic

plants

EC50 (Navicula pelliculosa (Freshwater diatom)): 0.091 mg/l

Exposure time: 72 h

NOEC (Navicula pelliculosa (Freshwater diatom)): 0.053 mg/l

Exposure time: 72 h

NOEC (Desmodesmus subspicatus (green algae)): 0.0086

mg/l

Exposure time: 72 h

M-Factor (Acute aquatic tox-

icity)

10

Toxicity to fish (Chronic tox-

icity)

NOEC (Pimephales promelas (fathead minnow)): 0.0076 mg/l

Exposure time: 34 d

Toxicity to daphnia and other : aquatic invertebrates (Chron-

ic toxicity)

NOEC (Daphnia magna (Water flea)): 0.0056 mg/l

Exposure time: 21 d

NOEC (Americamysis): 0.0046 mg/l

Exposure time: 28 d

M-Factor (Chronic aquatic

toxicity)

10

Toxicity to microorganisms : EC50 (activated sludge): > 100 mg/l

Exposure time: 3 h

pydiflumetofen:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.18 mg/l

Exposure time: 96 h

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 0.42 mg/l

Exposure time: 48 h

LC50 (Americamysis): 0.16 mg/l

Exposure time: 96 h

Toxicity to algae/aquatic

plants

ErC50 (Pseudokirchneriella subcapitata (green algae)): > 5.9

mg/l



MIRAVIS DUO

Version 1.0

Revision Date: 10/28/2019

SDS Number: S00056703774

This version replaces all previous versions.

Exposure time: 96 h

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.093

mg/l

End point: Growth rate Exposure time: 96 h

M-Factor (Acute aquatic tox-

icity)

1

Toxicity to fish (Chronic tox-

icity)

NOEC (Pimephales promelas (fathead minnow)): 0.025 mg/l

Exposure time: 32 d

Toxicity to daphnia and other : aquatic invertebrates (Chron-

ic toxicity)

NOEC (Daphnia magna (Water flea)): 0.042 mg/l

Exposure time: 21 d

NOEC (Americamysis): 0.076 mg/l

Exposure time: 28 d

M-Factor (Chronic aquatic

toxicity)

1

## Persistence and degradability

## Components:

difenoconazole:

Biodegradability : Result: Not readily biodegradable.

Stability in water : Degradation half life: 1 d

Remarks: Product is not persistent.

pydiflumetofen:

Biodegradability : Result: Not readily biodegradable.

Stability in water : Remarks: The substance is stable in water.

Bioaccumulative potential

**Components:** 

difenoconazole:

Bioaccumulation : Remarks: High bioaccumulation potential.

Partition coefficient: n-

octanol/water

log Pow: 4.4 (77 °F / 25 °C)

pydiflumetofen:

Bioaccumulation : Remarks: Does not bioaccumulate.

Partition coefficient: n-

octanol/water

log Pow: 3.8 (77 °F / 25 °C)



**MIRAVIS DUO** 

Version 1.0

Revision Date: 10/28/2019

SDS Number: S00056703774 This version replaces all previous versions.

Mobility in soil

**Components:** 

difenoconazole:

Distribution among environ-

mental compartments

Remarks: Low mobility in soil.

Dissipation time: 149 - 187 d Stability in soil

> Percentage dissipation: 50 % (DT50) Remarks: Product is not persistent.

pydiflumetofen:

Distribution among environ-

mental compartments

Remarks: Low mobility in soil.

Stability in soil Dissipation time: 674 d

Percentage dissipation: 50 % (DT50)

Remarks: Persistent in soil.

Other adverse effects

**Components:** 

difenoconazole:

Results of PBT and vPvB

assessment

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be

very persistent and very bioaccumulating (vPvB).

pydiflumetofen:

Results of PBT and vPvB

assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or

very persistent and very bioaccumulative (vPvB) at levels of

0.1% or higher.

**SECTION 13. DISPOSAL CONSIDERATIONS** 

**Disposal methods** 

Waste from residues Do not contaminate ponds, waterways or ditches with

chemical or used container.

Do not dispose of waste into sewer.

Where possible recycling is preferred to disposal or

incineration.

If recycling is not practicable, dispose of in compliance with

local regulations.

Contaminated packaging Empty remaining contents.

Triple rinse containers.

Empty containers should be taken to an approved waste

handling site for recycling or disposal. Do not re-use empty containers.



**MIRAVIS DUO** 

Version Revision Date: SDS Number: This version replaces all previous versions.

1.0 10/28/2019 S00056703774

#### **SECTION 14. TRANSPORT INFORMATION**

## **International Regulations**

**UNRTDG** 

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(DIFENOCONAZOLE AND PYDIFLUMETOFEN)

Class : 9
Packing group : III
Labels : 9

**IATA-DGR** 

UN/ID No. : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.

(DIFENOCONAZOLE AND PYDIFLUMETOFEN)

Class : 9 Packing group : III

Labels : Class 9 - Miscellaneous dangerous substances and articles

Packing instruction (cargo

aircraft)

964 964

Packing instruction (passen-

ger aircraft)

Environmentally hazardous : yes

**IMDG-Code** 

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(DIFENOCONAZOLE AND PYDIFLUMETOFEN)

Class : 9
Packing group : III
Labels : 9
EmS Code : F-A, S-F
Marine pollutant : yes

## Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

## **Domestic regulation**

#### **49 CFR**

Not regulated as a dangerous good

Remarks : Shipment by ground under DOT is non-regulated; however it

may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

## Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.



Version Revision Date: SDS Number: This version replaces all previous versions. 1.0 10/28/2019 S00056703774

## **SECTION 15. REGULATORY 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: Caution

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 re-use.

## **EPCRA - Emergency Planning and Community Right-to-Know**

## **CERCLA Reportable Quantity**

Components	CAS-No.	Component RQ	Calculated product RQ
		(lbs)	(lbs)
sodium hydroxide	1310-73-2	1000	*

<sup>\*:</sup> Calculated RQ exceeds reasonably attainable upper limit.

#### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

#### SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : No SARA Hazards

SARA 313 : This material does not contain any chemical components with

known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

## The ingredients of this product are reported in the following inventories:

TSCA : On or in compliance with the active portion of the TSCA

inventory

#### **TSCA list**

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.



Version 1.0

Revision Date: 10/28/2019

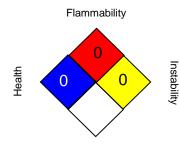
SDS Number: S00056703774

This version replaces all previous versions.

#### **SECTION 16. OTHER INFORMATION**

#### **Further information**

#### NFPA 704:



Special hazard

#### HMIS® IV:



HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

#### Full text of other abbreviations

US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)

US WEEL / TWA : 8-hr TWA

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC -International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance



**MIRAVIS DUO** 

Version Revision Date: SDS Number: This version replaces all previous versions. 1.0 10/28/2019 S00056703774

Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 10/28/2019

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8