MIRAVIS STAR

Version	Revision Date:	SDS Number:	This version replaces all previous versions.
1.0	05/16/2023	S00029857799	

SECTION 1. IDENTIFICATION

Product name : MIRAVIS STAR
Design code : A20808C

Product Registration number : 34841

Other means of identification : No data available

Manufacturer or supplier's details

Company name of supplier : Syngenta Canada Inc.
Address : 140 Research Lane, Research Park
Guelph ON N1G 4Z3
Canada

Telephone : 1-87-SYNGENTA (1-877-964-3682)
Telefax : 1-519-823-0504

E-mail address :
Emergency telephone number : 1-800-327-8633 (FAST MED)

Recommended use of the chemical and restrictions on use

Recommended use : Fungicide

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the Hazardous Products Regulations

Not a hazardous substance or mixture.

GHS label elements

No hazard pictogram, no signal word, no hazard statement(s), no precautionary statement(s) required

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	Common Name/Synonym	CAS-No.	Concentration (% w/w)
fludioxonil (ISO)	fludioxonil (ISO)	131341-86-1	13.4892
pydiflumetofen	pydiflumetofen	1228284-64-7	8.9928
propane-1,2-diol	propane-1,2-diol	57-55-6	>= 5 - < 10 *

* Actual concentration or concentration range is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

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	:	Move the victim to fresh air. If breathing is irregular or stopped, administer artificial respiration. Keep patient warm and at rest. Call a physician or poison control centre 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. FIREFIGHTING 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 firefighting	:	As the product contains combustible organic components, 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 firefighters	:	Wear full protective clothing and self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	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

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
fludioxonil (ISO)	131341-86-1	TWA	5 mg/m3	Syngenta
		TWA (Inhalable particulate matter)	1 mg/m3	ACGIH
pydiflumetofen	1228284-64-7	TWA	5 mg/m3	Syngenta
propane-1,2-diol	57-55-6	TWA (Vapour and aerosols)	50 ppm 155 mg/m3	CA ON OEL
		TWA (aerosol)	10 mg/m3	CA ON OEL

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.

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	:	Wear protective gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. The break through time depends amongst other things on the material, the thickness and the type of glove and therefore has to be measured for each case. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Eye protection	:	No special protective equipment required.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Remove and wash contaminated clothing before re-use. Wear as appropriate: Impervious clothing
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
Colour	:	beige to cream
Odour	:	No data available
Odour Threshold	:	No data available
pH	:	> 5.00 - 9.00
Melting point/range	:	No data available
Boiling point/boiling range	:	No data available
Flash point	:	Method: Pensky-Martens 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
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Density	:	1.1081 g/cm3 (25 °C)
Solubility(ies)		
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	> 650 °C
Decomposition temperature	:	No data available
Viscosity		
Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle size	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	None reasonably foreseeable.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	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.

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): > 5,000 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 3.89 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity Remarks: Highest attainable concentration
Acute dermal toxicity	:	LD50 (Rat, male and female): > 5,000 mg/kg

Components:

fludioxonil (ISO):

Acute oral toxicity	:	LD50 (Rat, male and female): > 5,000 mg/kg
Acute inhalation toxicity	:	LC50 (Rat, male and female): > 2.6 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	:	LD50 (Rat, male and female): > 2,000 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

Skin corrosion/irritation

Product:

Species	:	Rabbit
Result	:	No skin irritation

Components:

fludioxonil (ISO):

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:

fludioxonil (ISO):

Species	:	Rabbit
Result	:	No eye irritation

pydiflumetofen:

Species	:	Rabbit
Result	:	No eye irritation

Respiratory or skin sensitisation

Product:

Test Type	:	mouse lymphoma cells
Species	:	Mouse
Result	:	Did not cause sensitisation on laboratory animals.

Components:

fludioxonil (ISO):

Species	:	Guinea pig
Result	:	Did not cause sensitisation on laboratory animals.

pydiflumetofen:

Test Type	:	mouse lymphoma cells
Species	:	Mouse
Result	:	Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity

Components:

fludioxonil (ISO):

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:

fludioxonil (ISO):

Carcinogenicity - Assessment	:	No evidence of carcinogenicity in animal studies.

pydiflumetofen:

Carcinogenicity - Assessment	:	Weight of evidence does not support classification as a carcinogen

Reproductive toxicity

Components:

fludioxonil (ISO):

Reproductive toxicity - Assessment	:	No toxicity to reproduction

pydiflumetofen:

Reproductive toxicity - Assessment	:	No toxicity to reproduction

STOT - single exposure

Components:

pydiflumetofen:

Assessment	:	The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

Components:

fludioxonil (ISO):

Assessment	:	The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

pydiflumetofen:

Assessment	:	The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): 3.5 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1.7 mg/l Exposure time: 48 h

Toxicity to algae/aquatic plants	:	ErC50 (Raphidocelis subcapitata (freshwater green alga)): 3.5 mg/l Exposure time: 72 h NOEC (Raphidocelis subcapitata (freshwater green alga)): 0.84 mg/l End point: Growth rate Exposure time: 72 h EC10 (Raphidocelis subcapitata (freshwater green alga)): 1.4 mg/l End point: Growth rate Exposure time: 72 h

Components:

fludioxonil (ISO):

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0.23 mg/l Exposure time: 96 h LC50 (Pimephales promelas (fathead minnow)): 0.7 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0.4 mg/l Exposure time: 48 h EC50 (Americamysis): 0.27 mg/l Exposure time: 96 h
Toxicity to algae/aquatic plants	:	ErC50 (Raphidocelis subcapitata (freshwater green alga)): 0.259 mg/l Exposure time: 96 h EC10 (Raphidocelis subcapitata (freshwater green alga)): 0.077 mg/l End point: Growth rate Exposure time: 96 h ErC50 (Skeletonema costatum (marine diatom)): 0.43 mg/l Exposure time: 96 h NOEC (Skeletonema costatum (marine diatom)): 0.14 mg/l End point: Growth rate Exposure time: 96 h
Toxicity to fish (Chronic toxicity)	:	NOEC (Oncorhynchus mykiss (rainbow trout)): 0.04 mg/l Exposure time: 28 d EC10 (Pimephales promelas (fathead minnow)): 0.018 mg/l Exposure time: 116 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 0.035 mg/l Exposure time: 21 d

NOEC (Americamysis): 0.018 mg/l
Exposure time: 28 d

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 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 (Hyalella azteca (Amphipod)): 0.12 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): > 5.9 mg/l
Exposure time: 72 h

EC10 (Raphidocelis subcapitata (freshwater green alga)): 2.3 mg/l
End point: Growth rate
Exposure time: 72 h

ErC50 (Navicula pelliculosa (Freshwater diatom)): 1.6 mg/l
Exposure time: 72 h

EC10 (Navicula pelliculosa (Freshwater diatom)): 0.97 mg/l
End point: Growth rate
Exposure time: 72 h

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 0.025 mg/l
Exposure time: 32 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.042 mg/l
Exposure time: 21 d

Persistence and degradability

Components:

fludioxonil (ISO):

Biodegradability : Result: Not readily biodegradable.

Stability in water : Degradation half life: 450 - 700 d
Remarks: Persistent in water.

pydiflumetofen:

Biodegradability : Result: Not readily biodegradable.

Stability in water : Degradation half life: 236 d
Remarks: Persistent in water.

Bioaccumulative potential

Components:

fludioxonil (ISO):

Bioaccumulation	:	Remarks: Does not bioaccumulate.
Partition coefficient: n-octanol/water	:	log Pow: 4.12 (25 °C)

pydiflumetofen:

Bioaccumulation	:	Remarks: Does not bioaccumulate.
Partition coefficient: n-octanol/water	:	log Pow: 3.8 (25 °C)

Mobility in soil

Components:

fludioxonil (ISO):

Distribution among environmental compartments	:	Remarks: immobile
Stability in soil	:	Dissipation time: 14 d Percentage dissipation: 50 % (DT50) Remarks: Product is not persistent.

pydiflumetofen:

Distribution among environmental 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:

fludioxonil (ISO):

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

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Refer to the product label for specific disposal/recycling information 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	:	Refer to the product label for specific disposal/recycling information 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.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (FLUDIOXONIL, 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. (FLUDIOXONIL, PYDIFLUMETOFEN)
Class	:	9
Packing group	:	III
Labels	:	Miscellaneous
Packing instruction (cargo aircraft)	:	964
Packing instruction (passenger aircraft)	:	964
Environmentally hazardous	:	yes

IMDG-Code

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (FLUDIOXONIL, 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.

National Regulations

TDG

UN number	:	UN 3082

Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (FLUDIOXONIL, PYDIFLUMETOFEN)
Class	:	9
Packing group	:	III
Labels	:	9
ERG Code	:	171
Marine pollutant	:	yes(FLUDIOXONIL, PYDIFLUMETOFEN)
Remarks	:	Class 9 Exemption from Part 3, Documentation, and Part 4, Dangerous Goods Safety Marks, if transported solely on land by road vehicle or railway vehicle. 1.45.1. SOR/2008-34

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.

SECTION 15. REGULATORY INFORMATION

Read the label, authorised under the Pest Control Products Act, prior to using or handling the pest control product
There are Canada-specific environmental requirements for handling, use, and disposal of this pest control product that are indicated on the label.
This chemical is a pest control product registered by Health Canada Pest Management Regulatory Agency and is subject to certain labelling requirements under the Pest Control Products Act. These requirements differ from the classification criteria and hazard information required for GHS-consistent safety data sheets. The following is the hazard information required on the pest control product label:
Warning, contains the allergen 1,2-benzisothiazolin-3-one and 2-bromo-2-nitropropane-1,3-diol
Contains the allergen sulfites
Warning

Canadian PBT Chemicals	:	This product contains the following components on the DSL that are classified as Persistent, Bioaccumulative and/or Toxic (PBT) under CEPA: octamethylcyclotetrasiloxane [D4]
NPRI Components	:	xylene

The components of this product are reported in the following inventories:

DSL	:	This product contains the following components that are not on the Canadian DSL nor NDSL. pydiflumetofen fludioxonil (ISO) Oxirane, 2-methyl-, polymer with oxirane

Canadian lists

No substances are subject to a Significant New Activity Notification.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
CA ON OEL	:	Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act.
Syngenta	:	Syngenta Occupational Exposure Limit
ACGIH / TWA	:	8-hour, time-weighted average
CA ON OEL / TWA	:	Time-Weighted Average Limit (TWA)
Syngenta / TWA	:	Time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; 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; 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; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; 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; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals 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; WHMIS - Workplace Hazardous Materials Information System

Revision Date	:	05/16/2023
Date format	:	mm/dd/yyyy

The information provided in this 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.

CA / EN