SAFETY DATA SHEET

Diflufenican 500 g/l + Florasulam 50 g/l SC

This safety data sheet complies with the requirements of:
Regulation (EC) No. 453/2010 and Regulation (EC) No. 1272/2008

SDS # : FO004073-A
Revision date: 2019-02-14
Format: EU
Version 1

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Code(s) FO004073-A

Product Name Diflufenican 500 g/l + Florasulam 50 g/l SC

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use: Herbicide

Restrictions on Use: Use as recommended by the label.

1.3. Details of the supplier of the safety data sheet

Supplier

CHEMINOVA A/S, a subsidiary of FMC Corporation
Thyborønvej 78
DK-7673 Harboøre
Denmark
+45 9690 9690
SDS.Ronland@fmc.com

For further information, please contact:

Contact point (+45) 97 83 53 53 (24 h; for emergencies only)

1.4. Emergency telephone number

Emergency telephone Medical emergencies:

Austria: +43 1 406 43 43
Belgium: +32 70 245 245
Bulgaria: +359 2 9154 409
Cyprus: 1401
Czech Republic: +420 224 919 293, +420 224 915 402
Denmark: +45 82 12 12 12
France: +33 (0) 1 45 42 59 59
Finland: +358 9 471 977
Greece: 30 210 77 93 777
Hungary: +36 80 20 11 99
Ireland (Republic): +352 1 809 2166
Italy: +39 02 6610 1029
Lithuania: +370 523 62052, +370 687 53378
Luxembourg: +352 8002 5500
Netherlands: +31 30 274 88 88
Norway: +47 22 591300
Poland: +48 22 619 66 54, +48 22 619 08 97
Portugal: 808 250 143 (in Portugal only), +351 21 330 3284
Romania: +40 21318 3606
Slovakia: +421 2 54 77 4 166
Slovenia: +386 41 650 500

Spain: +34 91 562 04 20
Sweden: +46 08-331231112
Switzerland: 145
United Kingdom: 0870 600 6266 (in the UK only)
U.S.A. & Canada: +1 800 / 331-3148
All other countries: +1 651 / 632-6793 (Collect)

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture *Regulation (EC) No 1272/2008*

Acute aquatic toxicity	Category 1
Chronic aquatic toxicity	Category 1

2.2. Label elements

Hazard pictograms

Signal Word
WARNING

Hazard Statements
H410 - Very toxic to aquatic life with long lasting effects
EUH208: Contains 1,2-Benzisothiazolin-3-one. May produce an allergic reaction.
EUH401 - To avoid risks to human health and the environment, comply with the instructions for use

Precautionary Statements
P273 - Avoid release to the environment
P391 - Collect spillage
P501: Dispose of contents/container as hazardous waste.

2.3. Other hazards

None of the ingredients in the product meets the criteria for being PBT or vPvB.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

The product is a mixture, not a substance.

Chemical name	EC-No	CAS-No	Weight %	Classification according to Regulation (EC) No. 1272/2008 [CLP]	REACH registration number
3-Pyridinecarboxamide, N-(2,4-difluorophenyl)-2-[3-(trifluoromethyl)phenoxy]-	-	83164-33-4	42.1	Aquatic Acute 1 (M-factor = 1000) Aquatic Chronic 3 (H412)	No data available
Florasulam	-	145701-23-1	4.1	Aquatic Acute 1 (H400)(M-factor = 100) Aquatic Chronic 1 (H410)	No data available
Sodium alkylnapthalenesulphonate-formaldehyde condensate	-	577773-56-9	2	Eye Irrit. 2 (H319)	No data available

1,2 benzisothiazolin-3-one	220-120-9	2634-33-5	0.01	Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Dam. 1 (H318) Skin Sens. 1A (H317) Aquatic Acute 1 (H400)	No data available

Additional Information
For the full text of the H- and EUH- phrases mentioned in this Section, see Section 16

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

Eye Contact Immediately rinse eyes with much water or eyewash solution, occasionally opening eyelids, until no evidence of chemical remains. Remove contact lenses after a few minutes and rinse again. See a medical doctor or ophthalmologist immediately.

Skin Contact Immediately remove contaminated clothing and footwear. In case of skin contact, flush with water. Wash skin with soap and water. See physician if any symptom develops.

Inhalation If experiencing any discomfort, immediately remove from exposure. Light cases: Keep person under surveillance. Get medical attention immediately if symptoms develop. Serious cases: Get medical attention immediately or call for an ambulance.

Ingestion Rinse mouth with water and afterwards drink plenty of water or milk. Do NOT induce vomiting. If vomiting does occur, rinse mouth and drink fluids again. Get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Most important symptoms and effects, both acute and delayed Not known. Poisoning is unlikely, unless large quantities are ingested. In acute toxicity tests on diflufenican, only non-specific signs of toxicity were observed.

4.3. Indication of any immediate medical attention and special treatment needed

Indication of immediate medical attention and special treatment needed, if necessary Immediate medical attention is required in cases of ingestion. It may be helpful to show this safety data sheet to physician. Notes to physician: A specific antidote for exposure to this material is not known. Gastric lavage and/or the administration of activated charcoal can be considered. After decontamination, treatment should be directed at the control of symptoms and the clinical condition.

Section 5: FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media
Dry chemical, CO2, sand, earth, water spray or regular foam.

Unsuitable extinguishing media
Avoid heavy hose streams.

5.2. Special hazards arising from the substance or mixture

The essential breakdown products are volatile, toxic, irritant and inflammable compounds such as hydrogen fluoride, nitrogen oxides, carbon monoxide, carbon dioxide and various fluorinated organic compounds.

5.3. Advice for firefighters

Use water spray to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Fight fire from protected location or maximum possible distance. Dike area to prevent water runoff. Firemen should wear self-contained breathing apparatus and protective clothing.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal Precautions
It is recommended to have a predetermined plan for the handling of spills. Empty, closable vessels for the collection of spills should be available.

In case of large spill (involving 10 tonnes of the product or more):

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, gloves and rubber boots. Stop the source of the spill immediately if safe to do so. Keep unprotected persons away from the spill area.

For further clean-up instructions, call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.

For emergency responders
Use personal protection recommended in Section 8.

6.2. 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.

6.3. Methods and material for containment and cleaning up

Methods for Containment	It is recommended to consider possibilities to prevent damaging effects of spills, such as bunding or capping. Use non-sparking tools and equipment. If appropriate, surface water drains should be covered. Minor spills on the floor or other impervious surface should immediately be swept up or preferably vacuumed up using equipment with high efficiency final filter. Transfer to suitable containers. Clean area with detergent and much water. Absorb wash liquid onto inert absorbent such as universal binder, Fuller's earth, bentonite or other absorbent clay and collect in suitable containers. The used containers should be properly closed and labelled.
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 damp cloth and/or strong industrial detergent with much water. Absorb wash liquid onto a suitable absorbent such as universal binder, attapulgite, bentonite or other absorbent clays and transfer contaminated absorbent to suitable containers. The used containers should be properly closed and labelled. spills which soak into the ground should be dug up and transferred to suitable containers. 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.

6.4. Reference to other sections
See section 8 for more information. See section 13 for more information.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Handling
In an industrial environment it is recommended to avoid all personal contact with the product, if possible by using closed systems with remote system control. Otherwise it is recommended to handle the material by mechanical means as much as possible. Adequate ventilation or local exhaust ventilation is required. The exhaust gases should be filtered or treated otherwise. For personal protection in this situation, see section 8. Remove contaminated clothing and shoes. Wash thoroughly after handling. 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. Do not discharge to the environment. Do not contaminate water when disposing of equipment wash waters. Collect all waste material and remains from cleaning equipment, etc., and dispose of as hazardous waste. See section 13 for disposal.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage
Protect from moisture. To maintain quality, maximum storage temperatures should not exceed 30°C. Store in closed, labelled containers. The storage room should be constructed of incombustible material, closed, dry, ventilated and with impermeable floor, without access of unauthorised persons or children. A warning sign reading “POISON” is recommended. The room should only be used for storage of chemicals. Food, drink, feed and seed should not be present. A hand wash station should be available.

7.3. Specific end use(s)

Risk Management Methods (RMM)
The information required is contained in this Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

To our knowledge, personal exposure limits have not been established for the active ingredient in this product.

Derived No Effect Level (DNEL) No information available.

Predicted No Effect Concentration (PNEC) No information available.

Freshwater Diflufenican: 2.5 ng/l
Florasulam: 62 ng/l

8.2. Exposure controls

Engineering measures Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

Personal protective equipment

Eye/Face Protection For exposure to mists or sprays, wear safety goggles or face shield for chemical agents. Maintain eye wash fountain and quick-drench facilities in work area.

Hand Protection Wear chemical protective gloves made of materials such as nitrile or neoprene.

Skin and Body Protection Wear appropriate chemical resistant clothing to prevent skin contact depending on the extent of exposure. During most normal work situations where exposure to the material cannot be avoided for a limited time span, waterproof pants and apron of chemical resistant material or coveralls of polyethylene (PE) will be sufficient. Coveralls of PE must be discarded after use if contaminated. In cases of appreciable or prolonged exposure, coveralls of barrier laminate may be required.

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.

Environmental exposure controls Do not release to the environment.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Opaque Off-white
Odor	Smell of mixed chemicals.
Color	No information available
Odor threshold	No information available

pH	4.46 (25°C) Undiluted
Melting point/freezing point	No information available
Boiling Point/Range	No information available
Flash point	Not flammable
Evaporation Rate	No information available
Flammability (solid, gas)	Not applicable
Flammability Limit in Air	
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	Diflufenican : 4.25 x 10^{-6} Pa at 25°C 8.19 x 10^{-6} Pa at 35°C Florasulam : 6.55 x 10^{-5} Pa at 25°C
Vapor density	No information available
Specific gravity	No information available
Water solubility	Diflufenican: < 0.05 mg/l (25°C) Florasulam: 0.027 g/l (pH 4, 20° C) 4.8 g/l (pH 7, 20° C) 49 g/l (pH 9, 20° C)
Solubility in other solvents	Diflufenican (20°C): ethyl acetate 67 - 80 g/l hexane < 10 g/l Florasulam (20°C): ethyl acetate 16 g/l n-heptane 0.036 g/l
Partition coefficient	Diflufenican : log Kow = 4.9 Florasulam : log Kow = 1.11 at pH 3 and 25°C log Kow = -1.10 at pH 7 and 25°C log Kow = -1.79 at pH 10.0 and 25°C
Autoignition temperature	>600° C
Decomposition temperature	No information available
Viscosity, kinematic	No information available
Viscosity, dynamic	1446 mPa.s (20° C) 1277 mPa.s (40° C)
Explosive properties	Not explosive
Oxidizing properties	Non-oxidizing

9.2. Other information

Softening point	No information available
Molecular weight	No information available
VOC content (%)	No information available
Relative density	1.22
Bulk density	No information available
K_{st}	No information available

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

To our knowledge, the product has no special reactivities.

10.2. Chemical stability

The product is stable during normal handling and storage at ambient temperatures.

Explosion data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

10.3. Possibility of hazardous reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous reactions
None under normal processing.

10.4. Conditions to avoid

Heating can release hazardous gases.

10.5. Incompatible materials

Strong acids, Strong bases, Strong oxidizing agents.

10.6. Hazardous decomposition products

See Section 5 for more information.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity

Product Information
Product does not present an acute toxicity hazard based on known or supplied information.

LD50 Oral > 5000 mg/kg (rat) (Method OECD 425)
LD50 Dermal > 5000 (rat) mg/kg (Method: OECD 402)
LC50 Inhalation > 3.98 mg/L 4 hr (rat) (Method: OECD 403)

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
3-Pyridinecarboxamide, N-(2,4-difluorophenyl)-2-[3-(trifluoromethyl)phenoxy]-	= 2 g/kg (Rat)	= 2 g/kg (Rat)	
Florasulam	>= 5000 mg/kg (Rat)	>= 2000 mg/kg (Rabbit)	>= 5 mg/L (Rat) 4 h

Skin corrosion/irritation Minimally irritating. (Method: OECD 404).
Serious eye damage/eye irritation Minimally irritating. (Method: OECD 405).
Sensitization Not a skin sensitizer (Method OECD 429)
Mutagenicity The product contains no ingredients known to be mutagenic.
Carcinogenicity The product contains no ingredients known to be carcinogenic.

Reproductive toxicity The product contains no ingredients known to have adverse effects on reproduction.
STOT - single exposure No specific effects after single exposure have been observed.
STOT - repeated exposure Diflufenican:
NOEL: 8-8.7 mg/kg bw/day (rat, 13-weeks) (Method: OECD 408).
Symptoms Not known. Poisoning is unlikely, unless large quantities are ingested. In acute toxicity tests on diflufenican, only non-specific signs of toxicity were observed.

Aspiration hazard The product does not present an aspiration pneumonia hazard.

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity The ecotoxicity of the product is measured as:

- Fish Rainbow trout (Oncorhynchus mykiss).....96-h LC50: > 100 mg/l
- Invertebrates Daphnids (Daphnia magna) .....48-h EC50: >100 mg/l
- Algae Green algae (Desmodesmus subspicatus) .....72-h IrC50: 1.9 µg/l
- Plants Duckweed (Lemna minor) .....7-day ErC50: 0.027 mg/l
- Earthworms Eisenia foetida .....14-day LC50: 1000 mg/kg dry soil
- Insects Bees .....48-h LD50, oral: > 214 µg/bee

48-h LD50, contact: > 235 µg/bee

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12.2. Persistence and degradability

Diflufenican: Not readily biodegradable. Primary half-life in soil can vary from several months to one year depending on circumstances.

Florasulam: Not readily biodegradable. Degradation products are not readily biodegradable. Degradation occurs microbiologically. The product contains minor amounts of not readily biodegradable components, which may not be degradable in waste water treatment plants.

12.3. Bioaccumulative potential

See section 9 for n-octanol/water partition coefficient.

Bioconcentration factor (BCF)	Diflufenican: 1500 (rainbow trout) Florasulam: <2.21

12.4. Mobility in soil

Mobility in soil
Diflufenican: Not mobile in soil.
Florasulam: Mobile in soil. It has a potential for leaching to groundwater.

12.5. Results of PBT and vPvB assessment

None of the ingredients in the product meets the criteria for being PBT or vPvB.

12.6. Other adverse effects

No other adverse effects relevant to the environment are known.

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from residues / unused products	Remaining quantities of the material and empty but unclean packaging should be regarded as hazardous waste. Dispose of as hazardous waste in compliance with local and national regulations. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.
Contaminated Packaging	It is recommended to consider possible ways of disposal in the following order: 1. Reuse or recycling should first be considered. Reuse is prohibited except by the authorisation holder. If offered for recycling, containers must be emptied and triply rinsed (or equivalent). Do not discharge rinsing water to sewer systems. 2. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials. 3. Delivery of the packaging to a licensed service for disposal of hazardous waste. 4. Disposal in a landfill or burning in open air should only occur as a last resort. For disposal in a landfill containers should be emptied completely, rinsed and punctured to make them unusable for other purposes. If burned, stay out of smoke.

Section 14: TRANSPORT INFORMATION

IMDG/IMO

14.1 UN/ID no	3082
14.2 Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s. (diflufenican and florasulam)
14.3 Hazard class	9
14.4 Packing Group	III
14.5 Marine Pollutant	Yes
Environmental Hazard	Marine Pollutant
14.6 Special Provisions	Do not release to the environment
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	The product is not transported in bulk by ship.

RID

14.1 UN/ID no	3082
14.2 Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s. (diflufenican and florasulam)
14.3 Hazard class	9
14.4 Packing Group	III
14.5 Environmental Hazard	Marine Pollutant
14.6 Special Provisions	Do not release to the environment.

ADR/RID

14.1 UN/ID no	3082
14.2 Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s. (diflufenican and florasulam)
14.3 Hazard class	9
14.4 Packing Group	III
14.5 Environmental Hazard	Marine Pollutant
14.6 Special Provisions	Do not release to the environment

ICAO/IATA

14.1 UN/ID no	3082
14.2 Proper Shipping Name	Environmentally hazardous substance, liquid, n.o.s. (diflufenican and florasulam)
14.3 Hazard class	9
14.4 Packing Group	III
14.5 Environmental Hazard	Marine Pollutant
14.6 Special Provisions	Do not release to the environment

Section 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

European Union

Authorizations and/or restrictions on use:
This product does not contain substances subject to authorization (Regulation (EC) No. 1907/2006 (REACH), Annex XIV)
This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Persistent Organic Pollutants
Not Applicable

Dangerous substance category per Seveso Directive (2012/18/EU)
DANGEROUS FOR THE ENVIRONMENT

Ozone-depleting substances (ODS) regulation (EC) 1005/2009
Not Applicable

International Inventories

Chemical name	TSCA (United States)	DSL (Canada)	EINECS/ELINCS (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)
3-Pyridinecarboxamide, N-(2,4-difluorophenyl)-2-[3-(trifluoromethyl)phenoxy]-83164-33-4								X
1,2 benzisothiazolin-3-one 2634-33-5	X	X	X	X	X	X	X	X

15.2. Chemical safety assessment

A chemical safety assessment is not required to be included for this product.

Section 16: OTHER INFORMATION

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under sections 2 and 3
H302 - Harmful if swallowed
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects
H412 - Harmful to aquatic life with long lasting effects
EUH401 - To avoid risks to human health and the environment, comply with the instructions for use
EUH208: Contains 1,2-Benzisothiazolin-3-one. May produce an allergic reaction.

Legend

ADR:	European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS:	CAS (Chemical Abstracts Service)
Ceiling:	Maximum limit value:
DNEL:	Derived No Effect Level (DNEL)
EINECS:	EINECS (European Inventory of Existing Chemical Substances)
GHS:	Globally Harmonized System (GHS)
IATA:	International Air Transport Association (IATA)
ICAO:	International Civil Aviation Organization
IMDG:	International Maritime Dangerous Goods (IMDG)
LC50:	LC50 (lethal concentration)
LD50:	LD50 (lethal dose)
PBT:	Persistent, Bioaccumulative, and Toxic (PBT) Chemicals
RID:	Regulations Concerning the International Transport of Dangerous Goods by Rail
STEL:	Short term exposure limit
SVHC	SVHC: Substances of Very High Concern for Authorization:
TWA:	time weighted average
vPvB:	very Persistent and very Bioaccumulative

Classification procedure
Test data

Key literature references and sources for data
Data measured on the product are unpublished company data. Data on ingredients are available from published literature and can be found several places.

Revision date: 2019-02-14

Reason for revision: Initial Release.

Training Advice This material should only be used by persons who are made aware of its hazardous properties and have been instructed in the required safety precautions.

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Prepared By:

FMC Corporation

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End of Safety Data Sheet