SAFETY DATA SHEET

Surveil®

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	07/01/2022	800080005288	Date of first issue: 07/01/2022

Corteva Agriscience™ encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container. This Safety Data Sheet adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. IDENTIFICATION

Product name : Surveil®

Manufacturer or supplier's details

COMPANY IDENTIFICATION

Manufacturer/importer : CORTEVA AGRISCIENCE LLC
9330 ZIONSVILLE RD
INDIANAPOLIS, IN, 46268-1053
UNITED STATES

Customer Information Number : 800-992-5994

E-mail address : customerinformation@corteva.com

Emergency telephone : INFOTRAC (CONTRACT 84224).

800-992-5994 or 317-337-6009

Recommended use of the chemical and restrictions on use

Recommended use : End use herbicide product

Restrictions on use : Methylene chloride is not restricted under TSCA for agricultural use. USEPA has imposed restrictions on methylene chloride for consumer paint or coating removal such that it is not and cannot be distributed in commerce (as defined in TSCA section 3(5)) or processed (as defined in TSCA section 3(13)).

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Eye irritation : Category 2B

Reproductive toxicity : Category 1B

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H320 Causes eye irritation.
H360 May damage fertility or the unborn child.

Precautionary Statements :

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide	103361-09-7	36
Cloransulam-methyl	147150-35-4	12
Kaolin	1332-58-7	>= 25 - < 30
Sodium lauryl sulfate	151-21-3	>= 3 - < 10
citric acid	77-92-9	>= 1 - < 3
titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]	1317-70-0	>= 0.3 - < 1

Balance	Not Assigned	> 5

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

If inhaled	:	Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.
In case of skin contact	:	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
In case of eye contact	:	Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.
If swallowed	:	No emergency medical treatment necessary.
Most important symptoms and effects, both acute and delayed	:	None known.
Protection of first-aiders	:	First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to physician	:	No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Water spray Alcohol-resistant foam
Unsuitable extinguishing media	:	None known.
Specific hazards during fire fighting	:	Exposure to combustion products may be a hazard to health. Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Sulfur oxides Nitrogen oxides (NOx) Hydrogen chloride gas

Carbon oxides

Specific extinguishing methods	:	Remove undamaged containers from fire area if it is safe to do so. Evacuate area. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Avoid dust formation. Avoid breathing dust. Use personal protective equipment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Environmental precautions	:	If the product contaminates rivers and lakes or drains inform respective authorities. Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained. Prevent from entering into soil, ditches, sewers, underwater. See Section 12, Ecological Information.
Methods and materials for containment and cleaning up	:	Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in. Pick up and arrange disposal without creating dust. Recovered material should be stored in a vented container. The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to overpressurization of the container. Keep in suitable, closed containers for disposal. Sweep up or vacuum up spillage and collect in suitable container for disposal. See Section 13, Disposal Considerations, for additional information.

SECTION 7. HANDLING AND STORAGE

Local/Total ventilation	:	Use with local exhaust ventilation.
Advice on safe handling	:	Avoid formation of respirable particles. Do not breathe vapors/dust. Do not smoke.

		Handle in accordance with good industrial hygiene and safety practice. Avoid exposure - obtain special instructions before use. Smoking, eating and drinking should be prohibited in the application area. Do not get on skin or clothing. Avoid inhalation of vapor or mist. Do not swallow. Do not get in eyes. Avoid contact with skin and eyes. Keep container tightly closed. Take care to prevent spills, waste and minimize release to the environment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Conditions for safe storage	:	Store in a closed container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in properly labeled containers. Store in accordance with the particular national regulations.
Materials to avoid	:	Do not store near acids. Strong oxidizing agents Organic peroxides Explosives
Packaging material	:	Unsuitable material: None known.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Kaolin	1332-58-7	TWA (Respirable particulate matter)	2 mg/m3	ACGIH
		TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Total dust)	10 mg/m3	OSHA P0
		TWA (respirable dust fraction)	5 mg/m3	OSHA P0
		PEL (respirable)	0.05 mg/m3	OSHA CARC
Cloransulam-methyl	147150-35-4	TWA	3 mg/m3	Dow IHG
titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]	1317-70-0	TWA	10 mg/m3 (Titanium dioxide)	ACGIH

Engineering measures : Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations.
Local exhaust ventilation may be necessary for some operations.

Personal protective equipment

Respiratory protection : Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, in dusty atmospheres, use an approved particulate respirator.

Hand protection

Remarks : Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyvinyl chloride ("PVC" or "vinyl"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Eye protection : Use chemical goggles.

Skin and body protection : Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Granules.
Color	:	Tan
Odor	:	Mild
Odor Threshold	:	No data available
pH	:	4.6 (69.4 °F / 20.8 °C) Method: pH Electrode
Freezing point	:	Not applicable
Melting point/range		No data available
Boiling point/boiling range	:	Not applicable

Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	No data available
Upper explosion limit / Upper flammability limit	:	Not applicable
Lower explosion limit / Lower flammability limit	:	Not applicable
Vapor pressure	:	Not applicable
Relative vapor density	:	Not applicable
Relative density	:	No data available
Density	:	No data available
Bulk density	:	0.54 g/mL (69.6 °F / 20.9 °C) Method: Loose Volumetric
Solubility(ies)		
Water solubility	:	No data available
Autoignition temperature	:	Not applicable
Viscosity		
Viscosity, dynamic	:	Not applicable
Explosive properties	:	No
Oxidizing properties	:	No significant increase (>5C) in temperature.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	No decomposition if stored and applied as directed. Stable under normal conditions.
Possibility of hazardous reactions	:	Stable under recommended storage conditions. No hazards to be specially mentioned. None known.
Conditions to avoid	:	None known.
Incompatible materials	:	None.
Hazardous decomposition products	:	Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Sulfur oxides Nitrogen oxides (NOx) Hydrogen chloride gas Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity : LD50 (Rat, female): > 5,000 mg/kg
Method: OECD Test Guideline 423
Symptoms: No deaths occurred at this concentration.

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.49 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 402

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

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

Acute inhalation toxicity : LC50 (Rat): > 3.93 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): > 2,000 mg/kg

Cloransulam-methyl:

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

Acute inhalation toxicity : Remarks: No adverse effects are anticipated from single exposure to dust.
Vapors are unlikely due to physical properties.

LC50 (Rat, male and female): > 3.77 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Symptoms: The LC50 value is greater than the Maximum Attainable Concentration., No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute dermal

toxicity

Kaolin:

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

Sodium lauryl sulfate:

Acute oral toxicity : LD50 (Rat): 1,200 mg/kg

Acute inhalation toxicity : Remarks: No adverse effects are anticipated from single exposure to dust.
Dust may cause irritation to upper respiratory tract (nose and throat).

LC0 (Rat): > 0.975 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 10,000 mg/kg

citric acid:

Acute oral toxicity : LD50 (Mouse): 5,400 mg/kg
Assessment: The substance or mixture has no acute oral toxicity

LD50 (Rat): 3,000 - 12,000 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute dermal toxicity

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

Acute oral toxicity : LD50 (Rat): > 10,000 mg/kg

Acute inhalation toxicity : LC50 (Rat, male): > 6.82 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): 10,000 mg/kg

Skin corrosion/irritation

Product:

Species : Rabbit

Method : OECD Test Guideline 404
Result : No skin irritation

Components:

Kaolin:
Species : Rabbit
Result : No skin irritation

Sodium lauryl sulfate:
Result : Skin irritation

citric acid:
Result : No skin irritation

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:
Result : No skin irritation

Serious eye damage/eye irritation

Product:
Species : Rabbit
Result : Mild eye irritation
Method : OECD Test Guideline 405

Components:

Kaolin:
Species : Rabbit
Result : No eye irritation

Sodium lauryl sulfate:
Result : Corrosive

citric acid:
Result : Eye irritation

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:
Result : No eye irritation

Respiratory or skin sensitization

Product:
Test Type : Local lymph node assay
Species : Mouse
Assessment : Does not cause skin sensitization.

Method : OECD Test Guideline 429

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

Remarks : Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Cloransulam-methyl:

Remarks : Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Sodium lauryl sulfate:

Assessment : Does not cause skin sensitization.
Remarks : For skin sensitization:
For similar material(s):
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No data available.

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

Remarks : Did not demonstrate the potential for contact allergy in mice.
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Germ cell mutagenicity

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

Germ cell mutagenicity - Assessment : In vitro genetic toxicity studies were predominantly negative., Animal genetic toxicity studies were negative.

Cloransulam-methyl:

Germ cell mutagenicity - Assessment : In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

Sodium lauryl sulfate:

Germ cell mutagenicity - Assessment : In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

citric acid:

Germ cell mutagenicity - Assessment : In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

Germ cell mutagenicity - Assessment : In vitro genetic toxicity studies were negative in some cases and positive in other cases., Animal genetic toxicity studies were negative.

Carcinogenicity

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

Carcinogenicity - Assessment : Did not cause cancer in laboratory animals.

Cloransulam-methyl:

Carcinogenicity - Assessment : Did not cause cancer in laboratory animals.

Kaolin:

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

Sodium lauryl sulfate:

Carcinogenicity - Assessment : Did not cause cancer in laboratory animals.

citric acid:

Carcinogenicity - Assessment : Did not cause cancer in laboratory animals.

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

Carcinogenicity - Assessment : Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.

IARC	Group 1: Carcinogenic to humans	
	Kaolin	1332-58-7
	(Silica dust, crystalline)	
	Group 2B: Possibly carcinogenic to humans	

	titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]	1317-70-0
OSHA	OSHA specifically regulated carcinogen Kaolin (crystalline silica)	 1332-58-7
NTP	Known to be human carcinogen Kaolin (Silica, Crystalline (Respirable Size))	 1332-58-7

Reproductive toxicity

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

Reproductive toxicity - Assessment : Presumed human reproductive toxicant

In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.
Has caused birth defects in laboratory animals at doses non-toxic to the mother., Has been toxic to the fetus in lab animals at doses nontoxic to the mother.

Cloransulam-methyl:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Sodium lauryl sulfate:

Reproductive toxicity - Assessment : Has been toxic to the fetus in laboratory animals at doses toxic to the mother., Did not cause birth defects in laboratory animals.

citric acid:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
Did not cause birth defects or any other fetal effects in laboratory animals.

STOT-single exposure

Product:

Assessment : Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Components:

Cloransulam-methyl:

Assessment : Evaluation of available data suggests that this material is not

an STOT-SE toxicant.

Kaolin:

Assessment : Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Sodium lauryl sulfate:

Routes of exposure : Inhalation
Target Organs : Respiratory Tract
Assessment : May cause respiratory irritation.

citric acid:

Assessment : Available data are inadequate to determine single exposure specific target organ toxicity.

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

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

STOT-repeated exposure

Product:

Assessment : Evaluation of available data suggests that this material is not an STOT-RE toxicant.

Repeated dose toxicity

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

Remarks : In animals, effects have been reported on the following organs:
Blood.
Liver.
Kidney.

Cloransulam-methyl:

Remarks : In animals, effects have been reported on the following organs:
Kidney.
Liver.
Testes.
Thyroid.

Kaolin:

Remarks : Repeated excessive exposure to crystalline silica may cause silicosis, a progressive and disabling disease of the lungs.

Sodium lauryl sulfate:

Remarks : May cause abdominal discomfort or diarrhea.

citric acid:

Remarks : Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

Remarks : Repeated excessive inhalation exposures to dusts may cause respiratory effects.
In animals, effects have been reported on the following organs:
Lung.

Aspiration toxicity

Product:

Based on physical properties, not likely to be an aspiration hazard.

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

Based on physical properties, not likely to be an aspiration hazard.

Cloransulam-methyl:

Based on physical properties, not likely to be an aspiration hazard.

Kaolin:

Based on physical properties, not likely to be an aspiration hazard.

Sodium lauryl sulfate:

Based on physical properties, not likely to be an aspiration hazard.

citric acid:

Based on physical properties, not likely to be an aspiration hazard.

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

Based on physical properties, not likely to be an aspiration hazard.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

Toxicity to fish	:	Remarks: Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species). LC50 (Oncorhynchus mykiss (rainbow trout)): 2.7 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 5.9 mg/l Exposure time: 48 h LC50 (saltwater mysid Mysidopsis bahia): 0.23 mg/l Exposure time: 96 h
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 0.000852 mg/l Exposure time: 72 h EC50 (Lemna gibba): 0.00035 mg/l Exposure time: 14 d
M-Factor (Acute aquatic toxicity)	:	1,000
Toxicity to fish (Chronic toxicity)	:	(Oncorhynchus mykiss (rainbow trout)): 0.37 mg/l Exposure time: 21 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	(Daphnia magna (Water flea)): 0.057 mg/l Exposure time: 21 d
M-Factor (Chronic aquatic toxicity)	:	1,000
Toxicity to soil dwelling organisms	:	LC50 (Eisenia fetida (earthworms)): > 982 mg/kg Exposure time: 14 d
Toxicity to terrestrial organisms	:	Remarks: Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg)., Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm). oral LD50 (Colinus virginianus (Bobwhite quail)): > 2250 mg/kg bodyweight. dietary LC50 (Colinus virginianus (Bobwhite quail)): > 5620 mg/kg diet. oral LD50 (Apis mellifera (bees)): > 100 µg/bee Exposure time: 48 d

(Apis mellifera (bees)): > 105 µg/bee
Exposure time: 48 d

Cloransulam-methyl:

Toxicity to fish : Remarks: Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species).

LC50 (Oncorhynchus mykiss (rainbow trout)): > 86 mg/l
Exposure time: 96 h
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 40 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 41.5 - 2,700 mg/l
End point: Growth inhibition (cell density reduction)
Exposure time: 5 d

ErC50 (Lemna gibba): 0.00154 mg/l
Exposure time: 7 d

M-Factor (Acute aquatic toxicity) : 100

Toxicity to fish (Chronic toxicity) : NOEC (Fathead minnow (Pimephales promelas)): 10.1 mg/l
Exposure time: 33 d
Test Type: flow-through

M-Factor (Chronic aquatic toxicity) : 100

Toxicity to soil dwelling organisms : LC50 (Eisenia fetida (earthworms)): > 859 mg/kg
Exposure time: 14 d
End point: survival

Toxicity to terrestrial organisms : Remarks: Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg)., Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

oral LD50 (Colinus virginianus (Bobwhite quail)): > 2250 mg/kg bodyweight.

dietary LC50 (Colinus virginianus (Bobwhite quail)): > 5000 mg/kg diet.

contact LD50 (Apis mellifera (bees)): > 25 µg/bee
Exposure time: 48 h

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

Sodium lauryl sulfate:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 4.6 mg/l Exposure time: 96 h Method: Method Not Specified. LC50 (Pimephales promelas (fathead minnow)): 29 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 or Equivalent
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 6.2 - 49.4 mg/l Exposure time: 48 h Method: Method Not Specified. LC50 (saltwater mysid Mysidopsis bahia): 6.1 - 18.3 mg/l Exposure time: 96 h
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 117 mg/l End point: Biomass Exposure time: 96 h
Toxicity to microorganisms	:	EC50 (activated sludge): 130 - 170 mg/l Exposure time: 30 min Method: OECD 209 Test

citric acid:

Toxicity to fish	:	Remarks: Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). LC50 (Lepomis macrochirus (Bluegill sunfish)): 1,516 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 203 or Equivalent LC50 (Leuciscus idus (Golden orfe)): 440 - 760 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 203 or Equivalent
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1,535 mg/l Exposure time: 24 h Test Type: Static Method: OECD Test Guideline 202 or Equivalent

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

Toxicity to fish	:	Remarks: Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). NOEC mortality (Leuciscus idus (Golden orfe)): > 1,000 mg/l Exposure time: 48 h

Test Type: static test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
Exposure time: 48 h
Test Type: static test

Persistence and degradability

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

Biodegradability : Result: Not readily biodegradable.
Remarks: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Cloransulam-methyl:

Biodegradability : Remarks: Surface photodegradation is expected with exposure to sunlight.
Material is not readily biodegradable according to OECD/EEC guidelines.
Biodegradation rate may increase in soil and/or water with acclimation.

Stability in water : Test Type: Hydrolysis
Degradation half life (half-life): 33.5 d (25 °C) pH: > 8
Method: Estimated.

Test Type: Hydrolysis
Degradation half life (half-life): 335.34 d (25 °C) pH: 7
Method: Estimated.

Photodegradation : Test Type: Half-life (direct photolysis)

Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Concentration: 1,500,000 1/cm3
Rate constant: 1.082E-11 cm3/s
Method: Estimated.

Sodium lauryl sulfate:

Biodegradability : Remarks: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

aerobic
Concentration: 100 mg/l
Result: Readily biodegradable.
Biodegradation: 85 %
Exposure time: 14 d
Method: OECD Test Guideline 301C or Equivalent
Remarks: 10-day Window: Not applicable

Result: Readily biodegradable.
Biodegradation: 95 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent
Remarks: 10-day Window: Pass

Biochemical Oxygen Demand (BOD) : 57 - 97 %
Incubation time: 5 d

Chemical Oxygen Demand (COD) : 0.68 mg/g

ThOD : 2.00 kg/kg

citric acid:

Biodegradability : Remarks: Material is expected to be readily biodegradable. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).

aerobic
Result: Readily biodegradable.
Biodegradation: 97 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent
Remarks: 10-day Window: Pass

aerobic
Biodegradation: 98 %
Exposure time: 7 d
Method: OECD Test Guideline 302B or Equivalent
Remarks: 10-day Window: Not applicable

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

Biodegradability : Remarks: Biodegradation is not applicable.

Bioaccumulative potential

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

Partition coefficient: n-octanol/water :

log Pow: 2.55
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Cloransulam-methyl:

Bioaccumulation : Bioconcentration factor (BCF): 23.97
Method: Estimated.

Partition coefficient: n-octanol/water	:	log Pow: 1.12 Method: Measured Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Sodium lauryl sulfate:

Bioaccumulation	:	Bioconcentration factor (BCF): 70 Method: Estimated.
Partition coefficient: n-octanol/water	:	Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3). log Pow: 1.60 Method: Measured

citric acid:

Bioaccumulation	:	Species: Fish Bioconcentration factor (BCF): 0.01 Method: Measured
Partition coefficient: n-octanol/water	:	log Pow: -1.72 (68 °F / 20 °C) Method: Measured Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

Partition coefficient: n-octanol/water	:	Remarks: Partitioning from water to n-octanol is not applicable.

Balance:

Partition coefficient: n-octanol/water	:	Remarks: No relevant data found.

Mobility in soil

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

Distribution among environmental compartments	:	Koc: 739 - 983 Remarks: Potential for mobility in soil is low (Koc between 500 and 2000).

Cloransulam-methyl:

Distribution among environmental compartments	:	Koc: 12 - 262 Method: Measured Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

Sodium lauryl sulfate:

Distribution among environmental compartments : Remarks: Expected to be relatively immobile in soil (Koc > 5000).
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Koc: > 5000
Method: Estimated.

citric acid:

Distribution among environmental compartments : Remarks: No relevant data found.

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

Distribution among environmental compartments : Remarks: No data available.

Balance:

Distribution among environmental compartments : Remarks: No relevant data found.

Other adverse effects

Components:

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide:

Results of PBT and vPvB assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Cloransulam-methyl:

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Kaolin:

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).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Sodium lauryl sulfate:

Results of PBT and vPvB assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

citric acid:

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).
Ozone-Depletion Potential	:	Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]:

Results of PBT and vPvB assessment	:	This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).
Ozone-Depletion Potential	:	Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Balance:

Results of PBT and vPvB assessment	:	This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).
Ozone-Depletion Potential	:	Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	:	UN 3077
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Flumioxazin, Cloransulam-methyl)
Class	:	9
Packing group	:	III
Labels	:	9

IATA-DGR

UN/ID No.	:	UN 3077
Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Flumioxazin, Cloransulam-methyl)
Class	:	9
Packing group	:	III
Labels	:	Miscellaneous
Packing instruction (cargo aircraft)	:	956
Packing instruction (passenger aircraft)	:	956

IMDG-Code

UN number	:	UN 3077
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Flumioxazin, Cloransulam-methyl)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes
Remarks	:	Stowage category A

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

Further information

Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code, IATA Special provision A197, and ADR/RID special provision 375.

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

SARA 311/312 Hazards	:	Reproductive toxicity Serious eye damage or eye irritation
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.

US State Regulations

Pennsylvania Right To Know

Kaolin	1332-58-7
dichloromethane	75-09-2

California Prop. 65

WARNING: This product can expose you to chemicals including Kaolin, dichloromethane, which is/are known to the State of California to cause cancer, and
methanol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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

TSCA : Product contains substance(s) not listed on 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.

Methylene chloride is not restricted under TSCA for agricultural use. USEPA has imposed restrictions on methylene chloride for consumer paint or coating removal such that it is not and cannot be distributed in commerce (as defined in TSCA section 3(5)) or processed (as defined in TSCA section 3(13)).

Federal Insecticide, Fungicide and Rodenticide Act

EPA Registration Number : 62719-689

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

Causes moderate eye irritation

SECTION 16. OTHER INFORMATION

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	:	Dow Industrial Hygiene Guideline
OSHA CARC	:	OSHA Specifically Regulated Chemicals/Carcinogens
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Lim-

		its for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
Dow IHG / TWA	:	Time Weighted Average (TWA):
OSHA CARC / PEL	:	Permissible exposure limit (PEL)
OSHA P0 / TWA	:	8-hour time weighted average
OSHA Z-1 / TWA	:	8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; 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 Inventory; 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

Revision Date : 07/01/2022

Product code: GF-3192

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.

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