SAFETY DATA SHEET

Trivence®

Version	Revision Date:	SDS Number:	Date of last issue: -
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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 : Trivence®

Manufacturer or supplier's details

COMPANY IDENTIFICATION

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

Customer Information Number : 1-800-258-3033

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 : Herbicide

Restrictions on use : Do not use product for anything outside of the above specified uses.

SECTION 2. HAZARDS IDENTIFICATION

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

Acute toxicity (Oral) : Category 4

Eye irritation : Category 2A

Reproductive toxicity : Category 1B

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.
H319 Causes serious 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.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
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.

Additional Labeling

The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity:
4.752 %

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
metribuzin (ISO)	21087-64-9	44.6

N-(7-fluoro-3,4-dihydro3-oxo-4-prop2-ynyl-2H-1,4-benzoxazin6-yl)cyclohex1-ene-1,2-dicarboximide	103361-09-7	12.8
Chlorimuron ethyl	90982-32-4	3.9
Kaolin	1332-58-7	>= 10 - < 20
Sucrose	57-50-1	>= 3 - < 10
Sodium lauryl sulfate	151-21-3	>= 1 - < 3
titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]	13463-67-7	>= 0.3 - < 1

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : For medical emergencies involving this product, call toll free 1-888-226-8832. See Label for Additional Precautions and Directions for Use.
Information presented in Section 4 conforms to the requirements of theOccupational Safety and Health Administration (OSHA) Hazard Communication Standard of 2012. See Section 15 for applicable information conforming to the requirements of the Federal Insecticide Fungicide and Rodenticide Act (FIFRA), as required by the US Environmental Protection Agency (EPA), or by state Regulatory Agencies.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

If inhaled : Move to fresh air.
If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
Call a poison control center or doctor for treatment advice.

In case of skin contact : Take off all contaminated clothing immediately.
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 eye 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 eye.
Call a poison control center or doctor for treatment advice.

If swallowed : Call a poison control center or doctor for treatment advice.
Have person sip a glass of water if able to swallow.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed : None known.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Water spray Alcohol-resistant foam
Unsuitable extinguishing media	:	Dry chemical
Specific hazards during fire fighting	:	Exposure to combustion products may be a hazard to health. Applying foam will release significant amounts of hydrogen gas that can be trapped under the foam blanket. 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.
Specific extinguishing methods	:	Do not allow extinguishing medium to contact container contents. Most fire extinguishing media will cause hydrogen evolution, and once the fire is put out, may accumulate in poorly ventilated or confined areas and result in flash fire or explosion if ignited. 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,undwater. 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 : 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
metribuzin (ISO)	21087-64-9	TWA	5 mg/m3	ACGIH
		TWA	5 mg/m3	OSHA P0
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
Sucrose	57-50-1	TWA	10 mg/m3	ACGIH
		TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Total dust)	15 mg/m3	OSHA P0
		TWA (respirable dust fraction)	5 mg/m3	OSHA P0
titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]	13463-67-7	TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA	10 mg/m3 (Titanium dioxide)	ACGIH
		TWA (Total dust)	10 mg/m3	OSHA P0

Engineering measures : Information presented in Section 8 conforms to the requirements of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard of 2012. See Section 15 for applicable information conforming to the requirements of the Federal Insecticide Fungicide and Rodenticide Act (FIFRA), as required by the US Environmental Protection Agency (EPA), or by state Regulatory

Ensure adequate ventilation.

Personal protective equipment

Skin and body protection	:	PPE required for early entry to treated areas that is permitted underthe Worker Protection Standard and that involves contact with anythingthat has been treated, such as plants, soil, or water, is: Coveralls Chemical resistant gloves made of any waterproofmaterial, such as polyethylene or polyvinyl chloride. Shoes plus socks Mixers, loaders, applicators and other handlers must wear: Long sleeved shirt and long pants Chemical resistant gloves made of any waterproofmaterial, such as polyethylene or polyvinyl chloride. Shoes plus socks
Protective measures	:	Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hotwater. Keep and wash PPE separately from other laundry. Use this product in accordance with its label.
Hygiene measures	:	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/PPE immediately if material gets inside. Wash thoroughly and put on clean clothing. Remove personal protective equipment immediately after handling this product.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	solid, granules
Color	:	blend of white and brown
Odor	:	pungent
Odor Threshold	:	No data available
pH	:	7.6
Melting point/range	:	No data available
Freezing point		Not applicable
Boiling point/boiling range	:	Not applicable
Flash point	:	Not applicable
Evaporation rate	:	Not applicable

Flammability (solid, gas)	:	The product is not flammable.
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
Bulk density	:	0.52 - 0.72 g/cm3 (68 °F / 20 °C)
Solubility(ies)		
Water solubility	:	No data available
Autoignition temperature	:	Not applicable
Viscosity		
Viscosity, dynamic	:	Not applicable
Explosive properties	:	No data available
Oxidizing properties	:	No data available

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.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity	:	Acute toxicity estimate: 718.12 mg/kg Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 11.78 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Components:

metribuzin (ISO):

Acute oral toxicity : LD50 (Rat): 322 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 5.04 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

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

Acute oral toxicity : Remarks: Very low toxicity if swallowed.
Harmful effects not anticipated from swallowing small amounts.

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

Acute inhalation toxicity : Remarks: Prolonged excessive exposure to dust may cause adverse effects.
Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

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 : Remarks: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50 (Rat): > 2,000 mg/kg

Chlorimuron ethyl:

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

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.18 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 (Rat, male and female): > 5,000 mg/kg

Kaolin:

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

Sucrose:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity

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

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

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 425

Acute inhalation toxicity : LC50 (Rat): > 6.82 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity

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

Skin corrosion/irritation

Components:

Chlorimuron ethyl:

Species : Rabbit

Kaolin:

Species : Rabbit
Result : No skin irritation

Sucrose:

Species : Rabbit

Result : No skin irritation

Sodium lauryl sulfate:

Result : Skin irritation

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

Species : Rabbit
Method : OECD Test Guideline 404
Result : No skin irritation

Serious eye damage/eye irritation

Components:

Kaolin:

Species : Rabbit
Result : No eye irritation

Sucrose:

Species : Rabbit
Result : No eye irritation

Sodium lauryl sulfate:

Result : Corrosive

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

Species : Rabbit
Result : No eye irritation
Method : OECD Test Guideline 405

Respiratory or skin sensitization

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.

Chlorimuron ethyl:

Remarks : For skin sensitization:
Did not demonstrate the potential for contact allergy in mice.

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]:

Species	:	Guinea pig
Assessment	:	Does not cause skin sensitization.
Method	:	OECD Test Guideline 406
Species	:	Mouse
Assessment	:	Does not cause respiratory sensitization.

Germ cell mutagenicity

Components:

metribuzin (ISO):

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

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.

Sucrose:

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

Sodium lauryl sulfate:

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.

Carcinogenicity

Components:

metribuzin (ISO):

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

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.

Kaolin:

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

Available data suggest that the material is unlikely to cause cancer.

Sodium lauryl sulfate:

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 : Did not cause cancer in laboratory animals.

IARC	Group 1: Carcinogenic to humans Kaolin (Silica dust, crystalline)	1332-58-7
	Group 2B: Possibly carcinogenic to humans titanium dioxide; [in powder form containing 1 % or more of particles with aerodynamic diameter ≤ 10 µm]	13463-67-7
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:

metribuzin (ISO):

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.

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.

Chlorimuron ethyl:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
Has caused birth defects in laboratory animals only at doses toxic to 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.

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

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

Components:

metribuzin (ISO):

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

Chlorimuron ethyl:

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.

Sucrose:

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.

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

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

Repeated dose toxicity

Components:

metribuzin (ISO):

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

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.

Chlorimuron ethyl:

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

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.

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

Species	:	Rat
NOAEL	:	1,000 mg/kg
Application Route	:	Oral
Method	:	OECD Test Guideline 408
Remarks	:	Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Aspiration toxicity

Components:

metribuzin (ISO):
Based on physical properties, not likely to be an aspiration hazard.

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.

Chlorimuron ethyl:
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.

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:

metribuzin (ISO):

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 74.6 mg/l Exposure time: 96 h Remarks: Information source: Data provided by an external source. (Data on the product itself)
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna): 49.0 mg/l Exposure time: 48 h Test Type: Static Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	ErC50 (Desmodesmus subspicatus (green algae)): 0.0265 mg/l Exposure time: 72 h Test Type: Static Method: OECD Test Guideline 201 ErC50 (Pseudokirchneriella subcapita): 0.0265 mg/l Exposure time: 72 h

Test Type: Static
Method: OECD Test Guideline 201

ErC50 (Lemna gibba): 0.0385 mg/l
Exposure time: 7 d
Test Type: semi-static test
Method: OECD Test Guideline 221

ErC50 (Myriophyllum spicatum): 0.154 mg/l
Exposure time: 14 d
Test Type: semi-static test

NOEC (Lemna gibba): 0.000205 mg/l
Exposure time: 7 d
Test Type: semi-static test
Method: OECD Test Guideline 221

M-Factor (Acute aquatic toxicity)	:	10
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 13.1 mg/l Exposure time: 36 d Test Type: flow-through test Method: OECD Test Guideline 210
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 0.32 mg/l Exposure time: 21 d Test Type: semi-static test Method: OECD Test Guideline 211 or Equivalent
M-Factor (Chronic aquatic toxicity)	:	100

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

Chlorimuron ethyl:

Toxicity to fish	:	LC50 (Cyprinodon variegatus (sheepshead minnow)): > 120 mg/l End point: mortality Exposure time: 96 h Test Type: Static
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1,000 mg/l End point: mortality Exposure time: 48 h Test Type: Static
Toxicity to algae/aquatic plants	:	EC50 (Selenastrum capricornutum (green algae)): 0.004 mg/l End point: Growth rate Exposure time: 120 h Test Type: Static NOEC (Selenastrum capricornutum (green algae)): 0.00052 mg/l End point: Growth rate Exposure time: 120 h

Test Type: Static

EC50 (Anabaena flos-aquae (cyanobacterium)): 0.045 mg/l
End point: Growth rate
Exposure time: 120 h
Test Type: Static

NOEC (Anabaena flos-aquae (cyanobacterium)): 0.0031 mg/l
End point: Growth rate
Exposure time: 120 h
Test Type: Static

EC50 (Lemna gibba (gibbous duckweed)): 0.00027 mg/l
End point: Number of fronds
Exposure time: 14 d
Test Type: Static

NOEC (Lemna gibba (gibbous duckweed)): 0.00007 mg/l
End point: Number of fronds
Exposure time: 14 d
Test Type: Static

EC50 (Lemna gibba (gibbous duckweed)): 0.00045 mg/l
End point: Biomass
Exposure time: 14 d
Test Type: Static

NOEC (Lemna gibba (gibbous duckweed)): 0.0002 mg/l
End point: Biomass
Exposure time: 14 d
Test Type: Static

EC50 (Pseudokirchneriella subcapitata (green algae)): 0.001 mg/l
Exposure time: 72 h

M-Factor (Acute aquatic toxicity) : 1,000

Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 7.6 mg/l
Exposure time: 90 d
Test Type: flow-through

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 106 mg/l
Exposure time: 21 d
Test Type: semi-static test

M-Factor (Chronic aquatic toxicity) : 1,000

Toxicity to terrestrial organisms : LC50 (Colinus virginianus (Bobwhite quail)): > 5,620 ppm
Exposure time: 8 d
End point: mortality

contact LD50 (Apis mellifera (bees)): > 12.5 µg/bee

Exposure time: 48 h
End point: mortality

Sucrose:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): > 100 mg/l
Exposure time: 72 h
Test Type: static test
Method: Method Not Specified.

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

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

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): > 1,000 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l
Exposure time: 72 h

NOEC (Algae): 5,600 mg/l
Exposure time: 72 h

Persistence and degradability

Components:

metribuzin (ISO):

Biodegradability : Result: Not readily biodegradable.
Remarks: Not readily biodegraded.

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.

Chlorimuron ethyl:

Biodegradability : Biodegradation: 0.21 %

Result: Not readily biodegradable.
Remarks: Material is not readily biodegradable according to OECD/EEC guidelines.

Sucrose:

ThOD : 1.12 kg/kg

Photodegradation : Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Concentration: 1,500,000 1/cm3
Rate constant: 1.1479E-10 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

Bioaccumulative potential

Components:

metribuzin (ISO):

Partition coefficient: n-octanol/water	:	log Pow: 1.7 Method: Measured

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).

Chlorimuron ethyl:

Partition coefficient: n-octanol/water	:	log Pow: 1.3 (77 °F / 25 °C) pH: 7

Kaolin:

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

Sucrose:

Bioaccumulation	:	Bioconcentration factor (BCF): 3 Method: Estimated.
Partition coefficient: n-octanol/water	:	Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Potential for mobility in soil is very high (Koc between 0 and 50).
		log Pow: -3.7 - -3.67 Method: Estimated. 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

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).

Sucrose:

Distribution among environmental compartments : Koc: 3.16
Method: Estimated.
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.

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.

Chlorimuron ethyl:

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.

Kaolin:

Results of PBT and vPvB : This substance is not considered to be persistent, bioaccumu-

assessment | lating 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.

Sucrose:

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.

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.

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, Metribuzin)
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, Metribuzin)
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, Metribuzin)
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	:	Acute toxicity (any route of exposure) Reproductive toxicity Serious eye damage or eye irritation
SARA 313	:	The following components are subject to reporting levels established by SARA Title III, Section 313:

metribuzin (ISO) 21087-64-9 >= 30 - < 50 %

Chlorimuron ethyl	90982-32-4	>= 1 - < 5 %

US State Regulations

Pennsylvania Right To Know

metribuzin (ISO)	21087-64-9
Kaolin	1332-58-7
Sucrose	57-50-1

California Prop. 65

WARNING: This product can expose you to chemicals including Kaolin, Quartz, Nitrilotriacetic acid, which is/are known to the State of California to cause cancer. 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.

Federal Insecticide, Fungicide and Rodenticide Act

EPA Registration Number : 352-887

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION

Harmful if swallowed, inhaled or absorbed through skin.
Causes moderate eye irritation.
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

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)
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
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 : 05/18/2022

Product code: GF-4247

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.

US / EN