SAFETY DATA SHEET

TeamMate™

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	05/18/2022	800080005367	Date of first issue: 05/18/2022

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 : TeamMate™

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

SECTION 2. HAZARDS IDENTIFICATION

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

Eye irritation : Category 2B

GHS label elements

Signal Word : Warning

Hazard Statements : H320 Causes eye irritation.

Precautionary Statements :

Prevention:

P264 Wash skin thoroughly after handling.

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.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Substituted Quinoline Derivative		45.15
pyroxsulam (ISO)	422556-08-9	21.5
Sodium lignosulfonate	8061-51-6	>= 10 - < 20
citric acid	77-92-9	>= 3 - < 10
Kaolin	1332-58-7	>= 3 - < 10
Sodium N-methyl-N-oleoyltaurine	137-20-2	>= 1 - < 3
Balance	Not Assigned	> 10

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.
Suitable emergency safety shower facility should be available in work area.

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 : Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor.
Never give anything by mouth to an unconscious person.

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: Nitrogen oxides (NOx) 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	:	Wear self-contained breathing apparatus for firefighting if necessary. 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

Advice on safe handling : Handle in accordance with good industrial hygiene and safety practice.
Smoking, eating and drinking should be prohibited in the application area.
Do not get in eyes.
Avoid contact with skin and eyes.
Avoid prolonged or repeated contact with skin.
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

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
pyroxsulam (ISO)	422556-08-9	TWA	5 mg/m3	Dow IHG
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

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, if discomfort is experienced, use an approved air-purifying 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	:	4.13 (75.9 °F / 24.4 °C) Method: pH Electrode
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)	:	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
Bulk density	:	540 g/L (75 °F / 24 °C) Method: Loose Volumetric 533 g/L (75 °F / 24 °C) Method: Tapped Volumetric
Solubility(ies) Water solubility	: :	 Dispersible
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	:	Strong acids Strong bases
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: Nitrogen oxides (NOx) Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity	:	LD50 (Rat, female): > 2,000 - 5,000 mg/kg Method: OECD Test Guideline 423
Acute inhalation toxicity	:	LC50 (Rat, male and female): > 5.24 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 436 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 Symptoms: No deaths occurred at this concentration.

Components:

Substituted Quinoline Derivative:

Acute oral toxicity	:	LD50 (Rat, female): > 2,000 mg/kg Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute oral toxicity
Acute inhalation toxicity	:	LC50 (Rat, male and female): > 6.11 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

pyroxsulam (ISO):

Acute oral toxicity	:	LD50 (Rat, female): > 5,000 mg/kg Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute oral toxicity
Acute inhalation toxicity	:	LC50 (Rat): > 5.12 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 Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute dermal toxicity

Sodium lignosulfonate:

Acute oral toxicity	:	LD50 (Rat, male and female): > 10,000 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): 0.48 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity

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

Kaolin:

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

Sodium N-methyl-N-oleoyltaurine:

Acute oral toxicity	:	LD50 (Rat): > 2,000 mg/kg
Acute dermal toxicity	:	LD50 (Rat): > 2,000 mg/kg

Skin corrosion/irritation

Product:

Species	:	Rabbit

Method : OECD Test Guideline 404
Result : No skin irritation

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

Components:

citric acid:

Result : No skin irritation

Kaolin:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation

Product:

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

Remarks : May cause moderate eye irritation.
Corneal injury is unlikely.

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

Remarks : May cause moderate eye irritation.
Corneal injury is unlikely.

Components:

pyroxsulam (ISO):

Species : Rabbit
Result : No eye irritation

Sodium lignosulfonate:

Result : Eye irritation

citric acid:

Result : Eye irritation

Kaolin:

Species : Rabbit
Result : No eye irritation

Sodium N-methyl-N-oleoyltaurine:

Species	:	Rabbit
Result	:	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

Test Type	:	Local lymph node assay
Species	:	Mouse
Assessment	:	Does not cause skin sensitization.
Method	:	OECD Test Guideline 429

Components:

Substituted Quinoline Derivative:

Species	:	Mouse
Result	:	Does not cause skin sensitization.

pyroxsulam (ISO):

Species	:	Guinea pig
Assessment	:	The product is a skin sensitizer, sub-category 1B.

Sodium lignosulfonate:

Remarks	:	Did not cause allergic skin reactions when tested in guinea pigs.
Remarks	:	For respiratory sensitization: No relevant data found.

Sodium N-methyl-N-oleoyltaurine:

Species	:	Guinea pig
Assessment	:	Does not cause skin sensitization.

Germ cell mutagenicity

Components:

Substituted Quinoline Derivative:

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

pyroxsulam (ISO):

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

Sodium lignosulfonate:

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

citric acid:

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

Sodium N-methyl-N-oleoyltaurine:

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

Carcinogenicity

Components:

Substituted Quinoline Derivative:

Carcinogenicity - Assessment : For similar active ingredient(s)., Did not cause cancer in laboratory animals.

pyroxsulam (ISO):

Carcinogenicity - Assessment : There was equivocal evidence of carcinogenic activity in long-term bioassays. These effects are not believed to be relevant to humans.

citric acid:

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

Kaolin:

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

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

Substituted Quinoline Derivative:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
For similar active ingredient(s)., Did not cause birth defects or any other fetal effects in laboratory animals.

pyroxsulam (ISO):

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

Sodium N-methyl-N-oleoyltaurine:

Reproductive toxicity - Assessment : Screening studies suggest that this material does not affect reproduction.

STOT-single exposure

Product:

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

Components:

Substituted Quinoline Derivative:

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

citric acid:

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

Kaolin:

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

Sodium N-methyl-N-oleoyltaurine:

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

STOT-repeated exposure

Product:

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

Repeated dose toxicity

Components:

Substituted Quinoline Derivative:

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

pyroxsulam (ISO):

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

Sodium lignosulfonate:

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

citric acid:

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

Kaolin:

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

Sodium N-methyl-N-oleoyltaurine:

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

Aspiration toxicity

Product:

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

Components:

Substituted Quinoline Derivative:

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

pyroxsulam (ISO):

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

Sodium lignosulfonate:

Based on available information, aspiration hazard could not be determined.

citric acid:

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

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

Sodium N-methyl-N-oleoyltaurine:
Based on available information, aspiration hazard could not be determined.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	NOEC (Oncorhynchus mykiss (rainbow trout)): 25.9 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to algae/aquatic plants	:	ErC50 (Lemna gibba): 0.0015 mg/l Exposure time: 7 d NOEC (Lemna gibba): 0.0026 mg/l Exposure time: 7 d EC50 (Pseudokirchneriella subcapitata (green algae)): 5.3 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to terrestrial organisms	:	LD50 (Colinus virginianus (Bobwhite quail)): > 2,000 mg/kg Exposure time: 14 d Method: OECD Test Guideline 223 LD50 (Apis mellifera (bees)): > 0.156 mg/kg Exposure time: 48 h End point: Acute oral toxicity Method: OECD Test Guideline 213 LD50 (Apis mellifera (bees)): > 0.2 mg/kg Exposure time: 48 h End point: Acute contact toxicity Method: OECD Test Guideline 214

Ecotoxicology Assessment

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

Components:

Substituted Quinoline Derivative:

Toxicity to fish	:	LC50 (Sheepshead minnow (Cyprinodon variegatus)): > 120 mg/l Exposure time: 96 h

Test Type: static test

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Oyster shell (Crassostrea virginica)): > 110 mg/l Exposure time: 96 h LC50 (Mysid shrimp (Mysidopsis bahia)): > 120 mg/l Exposure time: 96 h Test Type: semi-static test
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 66.5 mg/l Exposure time: 72 h Test Type: static test ErC50 (Skeletonema costatum (marine diatom)): 12.5 mg/l Exposure time: 96 h ErC50 (Anabaena flos-aquae (cyanobacterium)): 23.7 mg/l Exposure time: 96 h
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 0.143 mg/l Exposure time: 33 d Test Type: flow-through test
Toxicity to terrestrial organisms	:	Remarks: Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg). oral LD50 (Colinus virginianus (Bobwhite quail)): > 2250 mg/kg bodyweight. contact LD50 (Apis mellifera (bees)): > 200 µg/bee Exposure time: 48 h

pyroxsulam (ISO):

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 87.0 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)): > 100 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 202 or Equivalent
Toxicity to algae/aquatic plants	:	EC50 (Lemna minor (duckweed)): 0.00257 mg/l End point: Biomass Exposure time: 7 d Method: OECD 221.
M-Factor (Acute aquatic toxicity)	:	100
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 3.2 - 10.1 mg/l End point: survival

Exposure time: 40 d
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 10.4 mg/l
End point: survival
Exposure time: 21 d
Test Type: static test

M-Factor (Chronic aquatic toxicity) : 100

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l
Exposure time: 3 h

Toxicity to soil dwelling organisms : LC50 (Eisenia fetida (earthworms)): > 10,000 mg/kg
Exposure time: 14 d

Toxicity to terrestrial organisms : LC50 (Colinus virginianus (Bobwhite quail)): > 5000 mg/kg diet.
Exposure time: 8 d

LD50 (Colinus virginianus (Bobwhite quail)): > 2000 mg/kg bodyweight.

oral LD50 (Apis mellifera (bees)): > 107.4 micrograms/bee
Exposure time: 48 h

contact LD50 (Apis mellifera (bees)): > 100 micrograms/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 lignosulfonate:

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 (Pimephales promelas (fathead minnow)): 615 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202 or Equivalent
Remarks: For this family of materials:

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

Sodium N-methyl-N-oleoyltaurine:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 1.32 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 5.76 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 197 mg/l
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 2 mg/l
Exposure time: 21 d

Persistence and degradability

Components:

pyroxsulam (ISO):

Biodegradability : aerobic
Biodegradation: 20 - 30 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent
Remarks: 10-day Window: Fail

Sodium lignosulfonate:

Biodegradability : Remarks: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

Biodegradation: < 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301E
Remarks: 10-day Window: Fail

Photodegradation : Rate constant: 1.089E-10 cm3/s
Method: Estimated.

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

Sodium N-methyl-N-oleoyltaurine:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent
Remarks: 10-day Window: Pass
Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Bioaccumulative potential

Components:

Substituted Quinoline Derivative:

Partition coefficient: n-octanol/water : log Pow: 2.12
Method: Estimated.
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

pyroxsulam (ISO):

Partition coefficient: n-octanol/water :

log Pow: -1.01
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Sodium lignosulfonate:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 3.2

Partition coefficient: n-octanol/water : log Pow: -3.45

Method: Estimated.

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

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).

Sodium N-methyl-N-oleoyltaurine:

Partition coefficient: n-octanol/water : Pow: 1.36 (68 °F / 20 °C)
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Balance:

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

Mobility in soil

Components:

Substituted Quinoline Derivative:

Distribution among environmental compartments : Koc: 206
Method: Estimated.
Remarks: Potential for mobility in soil is medium (Koc between 150 and 500).

pyroxsulam (ISO):

Distribution among environmental compartments : Koc: <= 42
Method: Estimated.
Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

Sodium lignosulfonate:

Distribution among environmental compartments : Koc: > 99999
Method: Estimated.
Remarks: Expected to be relatively immobile in soil (Koc > 5000).

citric acid:

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

Balance:

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

Other adverse effects

Components:

Substituted Quinoline Derivative:

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.

pyroxsulam (ISO):

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

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

Sodium lignosulfonate:

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.

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 N-methyl-N-oleoyltaurine:

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.

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. (Pyroxsulam)
Class	:	9
Packing group	:	III
Labels	:	9

IATA-DGR

UN/ID No.	:	UN 3077
Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Pyroxsulam)
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. (Pyroxsulam)

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	:	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

California Prop. 65

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

The following substance(s) is/are subject to TSCA 12(b) export notification requirements:
Substituted Quinoline Derivative Not Assigned

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number : 62719-686

This chemical is a pesticide product regulated 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
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 Limits 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 : 05/18/2022

Product code: GF-3361

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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