

SAFETY DATA SHEET



Tanos®

Version 1.0 Revision Date: 03/10/2022 SDS Number: 800080000304 Date of last issue: -
Date of first issue: 03/10/2022

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 : Tanos®

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 : Fungicide

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

Skin sensitization : Sub-category 1B

Reproductive toxicity : Category 2

Specific target organ toxicity - repeated exposure (Oral) : Category 2 (Eyes)

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GHS label elements

Hazard pictograms



Signal Word

: Warning

Hazard Statements

: H302 Harmful if swallowed.
H317 May cause an allergic skin reaction.
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.
H373 May cause damage to organs (Eyes) through prolonged or repeated exposure if swallowed.

Precautionary Statements

: **Prevention:**

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing must not be allowed out of the workplace.
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.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.

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)
cymoxanil (ISO)	57966-95-7	25

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famoxadone (ISO)	131807-57-3	25
Sodium lignosulfonate, sulfomethylated	68512-34-5	$\geq 20 - < 25$
Aromatic hydrocarbons, C10-13, reaction products with branched nonene, sulfonated, sodium salts	1258274-08-6	$\geq 3 - < 10$
fumaric acid	110-17-8	$\geq 1 - < 3$
Lignin, Alkali, Reaction Products with Disodium Sulfite and Formaldehyde	105859-97-0	$\geq 1 - < 3$
Sodium chloride	7647-14-5	$\geq 1 - < 3$
Balance	Not Assigned	> 5

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

- General advice : Information presented in Section 4 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 Agencies. For medical emergencies involving this product, call toll free 1-888-226-8832. See Label for Additional Precautions and Directions for Use. 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.
Do not give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and delayed : Skin contact may provoke the following symptoms:
Erythema
Dermatitis
Sensitization
Irritation
Ingestion may provoke the following symptoms:
Nausea
Vomiting

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Diarrhea
Gastrointestinal discomfort
Inhalation may provoke the following symptoms:
Asthmatic appearance
Irritation
sensitizing effects
Central nervous system depression
Headache
Lack of coordination
Disorientation
More severe effects if alcohol is consumed.

Notes to physician : Treat symptomatically.

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.
- 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.
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.
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SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Avoid dust formation.
Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

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- 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.
- 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 over-pressurization of the container.
Sweep up and shovel.
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.
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.
Keep in properly labeled containers.
Store in accordance with the particular national regulations.
- Materials to avoid : 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
fumaric acid	110-17-8	TWA	10 mg/m ³	Dow IHG
Sodium chloride	7647-14-5	TWA	10 mg/m ³	Dow IHG

- Engineering measures : Ensure adequate ventilation, especially in confined areas.
Provide for appropriate exhaust ventilation and dust collection at machinery.

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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.

Personal protective equipment

- Respiratory protection : Where there is potential for airborne exposures in excess of applicable limits, wear NIOSH approved respiratory protection.
- Hand protection
- Remarks : Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). 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 safety glasses (with side shields).
- Skin and body protection : Applicators and other handlers must wear:
 Long sleeved shirt and long pants
 Chemical-resistant gloves, Category A (such as butyl rubber, natural rubber, neoprene rubber, or nitrile rubber), all greater than or equal to 14 mils
 Shoes plus socks
 PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:
 Coveralls
 Chemical-resistant gloves, Category A (such as butyl rubber, natural rubber, neoprene rubber, or nitrile rubber), all greater than or equal to 14 mils
 Shoes plus socks
- Protective measures : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
 All chemical protective clothing should be visually inspected prior to use. Clothing and gloves should be replaced in case of chemical or physical damage or if contaminated.
 Only protected handlers may be in the area during application.
- Hygiene measures : Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.
 Remove personal protective equipment immediately after handling this product.

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Wash the outside of gloves before removing.
As soon as possible, wash thoroughly and change into clean clothing.
Remove clothing/PPE immediately if material gets inside.
Wash thoroughly and put on clean clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : solid

Color : brown

Odor : sweet

Odor Threshold : not determined

pH : ca. 6 (68 °F / 20 °C)
Concentration: 10 g/L

Melting point/range : No data available

Freezing point : Not applicable

Flash point : Not applicable

Evaporation rate : Not applicable

Flammability (solid, gas) : Does not sustain combustion.

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 : Not applicable

Bulk density : 600 kg/m³

Solubility(ies)
Water solubility : dispersible

Autoignition temperature : > 680 °F / > 360 °C

Viscosity
Viscosity, kinematic : Not applicable

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Explosive properties : Not explosive

Oxidizing properties : Oxidizing properties (solids)

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 : LD50 (Rat, male): 1,732 mg/kg
Method: OECD Test Guideline 401

LD50 (Rat, female): 566 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 5.1 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Symptoms: Lethargy

Acute toxicity estimate: 10.66 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg
Method: OECD Test Guideline 402

Components:**cymoxanil (ISO):**

Acute oral toxicity : LD50 (Rat): 960 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

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Method: OECD Test Guideline 403

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

famoxadone (ISO):Acute oral toxicity : LD50 (Rat, Male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401Acute inhalation toxicity : LC50 (Rat, male and female): > 5.3 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403Acute dermal toxicity : LD50 (Rat, Male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402**Sodium lignosulfonate, sulfomethylated:**Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity
Remarks: For similar material(s):**Aromatic hydrocarbons, C10-13, reaction products with branched nonene, sulfonated, sodium salts:**Acute oral toxicity : LD50 (Rat): > 2,000 - 5,000 mg/kg
Method: OECD Test Guideline 401**fumaric acid:**

Acute oral toxicity : LD50 (Rat, male): 10,700 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): > 1.306 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
Remarks: The LC50 value is greater than the Maximum Attainable Concentration.

Acute dermal toxicity : LD50 (Rabbit): > 20,000 mg/kg

Sodium chloride:Acute oral toxicity : LD50 (Rat): > 3,550 mg/kg
Remarks: Excessive exposure may cause:
Nausea and/or vomiting.Acute inhalation toxicity : LC50 (Rat): > 42 mg/l
Exposure time: 1 h
Test atmosphere: dust/mist

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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:**famoxadone (ISO):**

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

Aromatic hydrocarbons, C10-13, reaction products with branched nonene, sulfonated, sodium salts:

Species : Rabbit
Result : Skin irritation

Sodium chloride:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation**Product:**

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

Components:**famoxadone (ISO):**

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

Sodium lignosulfonate, sulfomethylated:

Species : Rabbit
Result : Eye irritation

Aromatic hydrocarbons, C10-13, reaction products with branched nonene, sulfonated, sodium salts:

Species : Rabbit
Result : Corrosive

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fumaric acid:

Species : Rabbit
Result : Eye irritation

Lignin, Alkali, Reaction Products with Disodium Sulfite and Formaldehyde:

Species : Rabbit
Result : Eye irritation

Sodium chloride:

Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitization**Product:**

Test Type : Buehler Test
Species : Guinea pig
Assessment : The product is a skin sensitizer, sub-category 1B.
Method : OECD Test Guideline 406

Components:**cymoxanil (ISO):**

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

famoxadone (ISO):

Test Type : Maximization Test
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Did not cause sensitization on laboratory animals.

fumaric acid:

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

Germ cell mutagenicity**Components:****cymoxanil (ISO):**

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.

famoxadone (ISO):

Germ cell mutagenicity - Assessment : Did not show mutagenic effects in animal experiments.

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fumaric acid:

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

Sodium chloride:

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

Carcinogenicity**Components:****cymoxanil (ISO):**

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

famoxadone (ISO):

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

fumaric acid:

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

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity**Components:****cymoxanil (ISO):**

Reproductive toxicity - Assessment : Suspected human reproductive toxicant
Did not cause birth defects or any other fetal effects in laboratory animals.

famoxadone (ISO):

Reproductive toxicity - Assessment : Has been toxic to the fetus in laboratory animals at doses toxic to the mother.
Did not show mutagenic or teratogenic effects in animal experiments.

fumaric 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.

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STOT-single exposure**Product:**

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

Components:**famoxadone (ISO):**

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

Aromatic hydrocarbons, C10-13, reaction products with branched nonene, sulfonated, sodium salts:

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

fumaric acid:

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

Sodium chloride:

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

STOT-repeated exposure**Components:****famoxadone (ISO):**

Routes of exposure : Oral
Target Organs : Eyes
Assessment : May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity**Components:****cymoxanil (ISO):**

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

famoxadone (ISO):

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

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Sodium lignosulfonate, sulfomethylated:

Remarks : For similar material(s):
Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

fumaric acid:

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

Sodium chloride:

Remarks : Medical experience with sodium chloride has shown a strong association between elevated blood pressure and prolonged dietary overuse. Related effects could occur in the kidneys.

Aspiration toxicity

Product:

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

Components:

cymoxanil (ISO):

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

famoxadone (ISO):

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

Sodium lignosulfonate, sulfomethylated:

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

Aromatic hydrocarbons, C10-13, reaction products with branched nonene, sulfonated, sodium salts:

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

fumaric acid:

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

Sodium chloride:

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.0287 mg/l
Exposure time: 96 h

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Test Type: flow-through test
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.055 mg/l
Exposure time: 48 h
Test Type: flow-through test
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 9 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Components:

cymoxanil (ISO):

Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 13.5 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 27 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EbC50 (Pseudokirchneriella subcapitata (green algae)): 0.35 mg/l
End point: Biomass
Exposure time: 72 h

M-Factor (Acute aquatic toxicity) : 1

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.067 mg/l
End point: number of offspring
Exposure time: 21 d
Method: OECD Test Guideline 211 or Equivalent

LOEC (Daphnia magna (Water flea)): 0.15 mg/l
End point: number of offspring
Exposure time: 21 d
Method: OECD Test Guideline 211 or Equivalent

M-Factor (Chronic aquatic toxicity) : 1

Toxicity to soil dwelling organisms : NOEC (Eisenia fetida (earthworms)): < 500 mg/kg
Exposure time: 14 d
End point: mortality
Method: Other guidelines

Toxicity to terrestrial organisms : LC50 (Colinus virginianus (Bobwhite quail)): > 2,250 mg/kg
Exposure time: 1 d
End point: mortality

NOEC (Apis mellifera (bees)): 25 micrograms/bee
Exposure time: 1 d
End point: mortality

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LC50 (*Colinus virginianus* (Bobwhite quail)): 2,847 ppm
 Exposure time: 5 d
 End point: mortality

famoxadone (ISO):

- Toxicity to fish : LC50 (*Oncorhynchus mykiss* (rainbow trout)): 0.011 mg/l
 Exposure time: 96 h
 Test Type: flow-through test
 Method: OECD Test Guideline 203
 GLP: yes
- Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 0.0157 mg/l
 Exposure time: 48 h
 Test Type: flow-through test
 Method: OECD Test Guideline 202
 GLP: yes
- Toxicity to algae/aquatic plants : ErC50 (*Pseudokirchneriella subcapitata* (green algae)): > 0.048 mg/l
 Exposure time: 72 h
 Method: Directive 67/548/EEC, Annex V, C.3.
 GLP: yes
 Remarks: Information source: Internal study report
- M-Factor (Acute aquatic toxicity) : 10
- Toxicity to fish (Chronic toxicity) : NOEC (*Oncorhynchus mykiss* (rainbow trout)): 0.0014 mg/l
 Exposure time: 90 d
 Method: OECD Test Guideline 210
 GLP: yes
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (*Daphnia magna* (Water flea)): 0.0037 mg/l
 Exposure time: 21 d
 Test Type: flow-through test
 Method: OECD Test Guideline 202
 GLP: yes
- M-Factor (Chronic aquatic toxicity) : 10
- Toxicity to soil dwelling organisms : LC50 (*Eisenia fetida* (earthworms)): 470 mg/kg
 Exposure time: 14 d
 Method: OECD Test Guideline 207
 GLP: yes
- Toxicity to terrestrial organisms : LC50 (*Colinus virginianus* (Bobwhite quail)): > 5,620 mg/kg
 Exposure time: 8 d
 Method: OECD Test Guideline 205
 GLP: yes
- LC50 (*Anas platyrhynchos* (Mallard duck)): > 5,620 mg/kg
 Exposure time: 8 d
 Method: OECD Test Guideline 205
 GLP: yes

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LD50 (Apis mellifera (bees)): > 0.025 mg/kg
 Exposure time: 48 h
 Method: OEPP/EPPO Test Guideline 170
 GLP: yes
 Remarks: Contact

LC50 (Apis mellifera (bees)): > 1,000 mg/kg
 Exposure time: 48 h
 Method: OEPP/EPPO Test Guideline 170
 Remarks: Oral

Aromatic hydrocarbons, C10-13, reaction products with branched nonene, sulfonated, sodium salts:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 10 - 100 mg/l
 Exposure time: 96 h
 Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna): > 100 mg/l
 Exposure time: 48 h

fumaric acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 100 mg/l
 Exposure time: 96 h
 Test Type: semi-static test
 Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (water flea Daphnia magna): 212 mg/l
 Exposure time: 48 h
 Test Type: semi-static test
 Method: EPA-660/3-75-009

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l
 End point: Growth rate
 Exposure time: 72 h
 Test Type: static test
 Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 100 mg/l
 End point: Growth rate
 Exposure time: 72 h
 Test Type: static test
 Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 (activated sludge): > 300 mg/l
 End point: Respiration rates.
 Exposure time: 3 h
 Test Type: static test
 Method: OECD Test Guideline 209

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Sodium chloride:

- Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 5,840 mg/l
Exposure time: 96 h
Test Type: flow-through test
Method: OECD Test Guideline 203 or Equivalent
- LC50 (Pimephales promelas (fathead minnow)): 10,610 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)): 1,900 mg/l
Exposure time: 48 h
Test Type: static test
- Toxicity to algae/aquatic plants : EC50 (Other): 2,430 mg/l
End point: Growth inhibition (cell density reduction)
Exposure time: 120 h
Test Type: static test
Method: OECD Test Guideline 201 or Equivalent
- Toxicity to microorganisms : IC50 (activated sludge): > 1,000 mg/l
Method: OECD 209 Test

Persistence and degradability**Components:****cymoxanil (ISO):**

- Biodegradability : aerobic
Inoculum: activated sludge, domestic, non-adapted
Concentration: 20 mg/l
Result: Readily biodegradable.
Biodegradation: 11 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent
Remarks: 10-day Window: Fail
- aerobic
Inoculum: activated sludge, domestic, non-adapted
Concentration: 2 mg/l
Result: Readily biodegradable.
Biodegradation: 14 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent
Remarks: 10-day Window: Fail

famoxadone (ISO):

- Biodegradability : Result: Not readily biodegradable.

Sodium lignosulfonate, sulfomethylated:

- Biodegradability : Result: Not readily biodegradable.

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Aromatic hydrocarbons, C10-13, reaction products with branched nonene, sulfonated, sodium salts:

Biodegradability : Remarks: Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

fumaric acid:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 67.5 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
Remarks: 10-day Window: Pass

Bioaccumulative potential**Components:****cymoxanil (ISO):**

Partition coefficient: n-octanol/water : log Pow: 4.7 (68 °F / 20 °C)
pH: 7
Method: OECD Test Guideline 107 or Equivalent
GLP: yes
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

famoxadone (ISO):

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
Bioconcentration factor (BCF): 2,950
Method: OECD Test Guideline 305
GLP: yes
Remarks: Does not bioaccumulate.

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

Sodium lignosulfonate, sulfomethylated:

Partition coefficient: n-octanol/water :
Remarks: For similar material(s):
Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Aromatic hydrocarbons, C10-13, reaction products with branched nonene, sulfonated, sodium salts:

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

fumaric acid:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 3
Method: Estimated.

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

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log Pow: 4.02
Method: OECD Test Guideline 107

Lignin, Alkali, Reaction Products with Disodium Sulfite and Formaldehyde:

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

Sodium chloride:

Partition coefficient: n-octanol/water : Remarks: No bioconcentration is expected because of the relatively high water solubility. Partitioning from water to n-octanol is not applicable.

Balance:

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

Mobility in soil**Components:****cymoxanil (ISO):**

Distribution among environmental compartments : Koc: 2.7 - 87.1

Sodium lignosulfonate, sulfomethylated:

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

fumaric acid:

Distribution among environmental compartments : Koc: 7.33
Method: Estimated.

Sodium chloride:

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

Balance:

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

Other adverse effects**Components:****cymoxanil (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.

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famoxadone (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).

Sodium lignosulfonate, sulfomethylated:

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.

Aromatic hydrocarbons, C10-13, reaction products with branched nonene, sulfonated, sodium salts:

Results of PBT and vPvB assessment : 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.

fumaric 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 : Regulation: (Update: 07/27/2012, DJ)
Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Lignin, Alkali, Reaction Products with Disodium Sulfite and Formaldehyde:

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 chloride:

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 : Regulation: (Update: 12/17/2010; RT)
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).

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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.
 (Famoxadone, Cymoxanil)
 Class : 9
 Packing group : III
 Labels : 9

IATA-DGR

UN/ID No. : UN 3077
 Proper shipping name : Environmentally hazardous substance, solid, n.o.s.
 (Famoxadone, Cymoxanil)
 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.
 (Famoxadone, Cymoxanil)
 Class : 9
 Packing group : III
 Labels : 9

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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)
Respiratory or skin sensitization
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)

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

fumaric acid

110-17-8

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 : 352-604

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

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

Dow IHG : Dow Industrial Hygiene Guideline
Dow IHG / TWA : 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

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Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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 : 03/10/2022

Product code: GF-3867

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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