

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

This Safety Data Sheet adheres to the standards and regulatory requirements of USA and may not meet the regulatory requirements in other countries.

SECTION 1. IDENTIFICATION

Product identifier

Product name ETHOS® XB INSECTICIDE/FUNGICIDE

Other means of identification

Product code 50001476

Recommended use of the chemical and restrictions on use

Recommended use Insecticide and fungicide

Restrictions on use Use as recommended by the label.

Manufacturer or supplier's details

Manufacturer FMC Corporation
2929 WALNUT ST
PHILADELPHIA PA 19104
USA
+1 (215) 299-6000 (Corporate)
SDS-Info@fmc.com, +1-(800)-346-0833 (FMC Cust. Service)

Supplier Address FMC Corporation
2929 Walnut Street
Philadelphia PA 19104
USA

Emergency telephone

For leak, fire, spill or accident emergencies, call:
1 800 / 424-9300 (CHEMTREC - U.S.A.)
1 703 / 741-5970 (CHEMTREC - International)
1 703 / 527-3887 (CHEMTREC - Alternate)

Medical emergency:
U.S.A. & Canada: +1 800 / 331-3148
All other countries: +1 651 / 632-6793 (Collect)

SECTION 2. HAZARDS IDENTIFICATION

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

Hazards for the product as supplied

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Acute toxicity (Oral)	: Category 4
Acute toxicity (Inhalation)	: Category 4
Skin sensitization	: Category 1
Specific target organ toxicity - single exposure	: Category 1 (Central nervous system)
Specific target organ toxicity - repeated exposure	: Category 1 (Central nervous system)

Other hazards

Very toxic to aquatic life.

Very toxic to aquatic life with long lasting effects.

GHS label elements

Hazard pictograms :

Signal Word : DANGER

Hazard Statements : H302 + H332 Harmful if swallowed or if inhaled.
H317 May cause an allergic skin reaction.
H370 Causes damage to organs (Central nervous system).
H372 Causes damage to organs (Central nervous system) through prolonged or repeated exposure.

Precautionary Statements : **Prevention:**
P260 Do not breathe mist or vapors.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
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.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P307 + P311 IF exposed: Call a POISON CENTER or doctor/ physician.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.

Storage:

P405 Store locked up.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version 1.1 Revision Date: 07/13/2026 SDS Number: 50001476 Date of last issue: 01/09/2023
Date of first issue: 01/09/2023

Disposal:

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
Bifenthrin	82657-04-3*	15.67	-
Bacillus amyloliquefaciens	68038-60-8*	5	-
ammonium sulphate	7783-20-2*	$\geq 5 - \leq 10$	-
D-Glucopyranose, oligomeric, C9-11-alkyl glycosides	132778-08-6*	$\geq 1 - < 5$	-
Poly(oxy-1,2-ethanediyl), α -tridecyl- ω -hydroxy-, phosphate, potassium salt	68186-36-7*	$\geq 1 - < 5$	-

* Indicates that the identifier is a CAS No.

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Consult a physician.
Show this material safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : Move to fresh air.
If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.
If experiencing any discomfort, immediately remove from exposure. Light cases: Keep person under surveillance. Get medical attention immediately if symptoms develop. Serious cases: Get medical attention immediately or call for an ambulance.

In case of skin contact : Take off all contaminated clothing immediately.
Wash contaminated clothing before re-use.
Wash off immediately with plenty of water for at least 15 minutes.
Call a physician if irritation develops or persists.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
Seek medical advice.

If swallowed : If accidentally swallowed obtain immediate medical attention.
Do NOT induce vomiting.
Give small amounts of water to drink.
Never give anything by mouth to an unconscious person.

General Symptoms : None known.

Symptoms After Inhalation : None known.

Symptoms After Skin Contact : None known.

Symptoms After Eye Contact : None known.

Symptoms After Swallowing : None known.

Protection of first-aiders : First Aid responders should pay attention to self-protection
and use the recommended protective clothing
Avoid inhalation, ingestion and contact with skin and eyes.
If potential for exposure exists refer to Section 8 for specific
personal protective equipment.

Notes to physician : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Dry chemical, CO2, water spray or regular foam.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : Do not spread spilled material with high-pressure water streams.
High volume water jet

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : Thermal decomposition can lead to release of irritating gases and vapors.
Carbon oxides
Fluorinated compounds
Chlorinated compounds
Hydrogen chloride
Hydrogen fluoride
Ammonia

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Sulfur oxides
Sulphuric acid

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 : Firefighters should wear protective clothing and self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
If it can be safely done, stop the leak.
Do not touch or walk through the spilled material.
Never return spills in original containers for re-use.
Mark the contaminated area with signs and prevent access to unauthorized personnel.
Only qualified personnel equipped with suitable protective equipment may intervene.
For disposal considerations see section 13.

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Advice on safe handling : Do not breathe vapors/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.
Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

- be employed in any process in which this mixture is being used.
- Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.
- Materials to avoid : Do not store near acids.
- Further information on storage stability : No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

Personal protective equipment

- Respiratory protection : No personal respiratory protective equipment normally required.
- Hand protection
Material : Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber.
- Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.
- Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- Protective measures : Plan first aid action before beginning work with this product.
Always have on hand a first-aid kit, together with proper instructions.
Wear suitable protective equipment.
Ensure that eye flushing systems and safety showers are located close to the working place.
- Hygiene measures : When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid
Color	: No data available
Odor	: No data available
Odor Threshold	: No data available
pH	: 4.25 (72 °F / 22 °C)) In a 1% aqueous dispersion
Melting point/freezing point	: No data available
Initial boiling point and boiling range	: No data available
Flash point	: > 212 °F / 100 °C
Evaporation rate	: No data available
Upper explosion limit / Upper flammability limit	: No data available
Lower explosion limit / Lower flammability limit	: No data available
Vapor pressure	: No data available
Relative vapor density	: No data available
Density	: 9.5989 lb/gal (72.5 °F / 22.5 °C)
Solubility(ies)	
Water solubility	: No data available
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Autoignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	
Viscosity, dynamic	: 929.3 mPa.s (75.4 °F / 24.1 °C) 607.4 mPa.s (111.4 °F / 44.1 °C)
Viscosity, kinematic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: No decomposition if stored and applied as directed.
Possibility of hazardous reactions	: No decomposition if stored and applied as directed.
Conditions to avoid	: Avoid formation of aerosol. Avoid extreme temperatures. Protect from frost, heat and sunlight.
Incompatible materials	: Avoid strong acids, bases, and oxidizers.
Hazardous decomposition products	: No decomposition if stored and applied as directed.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if swallowed or if inhaled.

Product:

Acute oral toxicity : LD50 (Rat): ca. 1,103 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 2.08 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

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

Components:

Bifenthrin:

Acute oral toxicity : LD50 (Rat, male and female): 50.2 - 58.8 mg/kg
Symptoms: Convulsions, Tremors

Acute inhalation toxicity : LC50 (Rat, female): 0.6 - 1.2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Symptoms: Tremors, Convulsions

LC50 (Rat, male): 1.10 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Symptoms: Tremors, Fatality

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Remarks: no mortality

Bacillus amyloliquefaciens:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Remarks: Based on data from similar materials

Acute inhalation toxicity : LC50: > 2.18 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 5,050 mg/kg
Remarks: Based on data from similar materials

ammonium sulphate:

Acute oral toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 423

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

LD50 (Rat): 4,250 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC0 (Rat, male): 0.0035 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 433

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 434

D-Glucopyranose, oligomeric, C9-11-alkyl glycosides:

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

Poly(oxy-1,2-ethanediyl), α -tridecyl- ω -hydroxy-, phosphate, potassium salt:

Acute oral toxicity : Assessment: Toxic effects cannot be excluded

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Product:

Species : Rabbit
Assessment : Not classified as irritant
Result : slight irritation

Components:

Bifenthrin:

Species : Rabbit
Result : slight or no skin irritation.
GLP : yes

Species : Rabbit
Method : OECD Test Guideline 404
Result : slight or no skin irritation.
GLP : yes

Bacillus amyloliquefaciens:

Result : No skin irritation

ammonium sulphate:

Species : Rabbit
Exposure time : 20 h
Method : Draize Test
Result : slight irritation

Species : Rabbit
Method : OECD Test Guideline 404
Result : slight irritation

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

D-Glucopyranose, oligomeric, C9-11-alkyl glycosides:

Species	: Rabbit
Result	: slight irritation

Poly(oxy-1,2-ethanediyl), α -tridecyl- ω -hydroxy-, phosphate, potassium salt:

Result	: Skin irritation
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Serious eye damage/eye irritation

Based on available data, the classification criteria are not met.

Product:

Species	: Rabbit
Result	: Mild eye irritant
Assessment	: Not classified as irritant

Components:

Bifenthrin:

Species	: Rabbit
Result	: Slight or no eye irritation
Method	: OECD Test Guideline 405
GLP	: yes

Bacillus amyloliquefaciens:

Result	: No eye irritation
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ammonium sulphate:

Species	: Rabbit
Result	: slight irritation

D-Glucopyranose, oligomeric, C9-11-alkyl glycosides:

Result	: Irreversible effects on the eye
Method	: in vitro eye irritation test

Poly(oxy-1,2-ethanediyl), α -tridecyl- ω -hydroxy-, phosphate, potassium salt:

Result	: Irreversible effects on the eye
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Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Based on available data, the classification criteria are not met.

Product:

Assessment	: May cause sensitization by skin contact.
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SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Result : Causes skin sensitization.

Components:

Bifenthrin:

Test Type	: Maximization Test
Routes of exposure	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: May cause sensitization by skin contact.
GLP	: yes

Bacillus amyloliquefaciens:

Remarks : No data available

ammonium sulphate:

Test Type	: Maximization Test
Routes of exposure	: Dermal
Species	: Guinea pig
Result	: Not a skin sensitizer.

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Components:

Bifenthrin:

Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: gene mutation test
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Result: negative

Genotoxicity in vivo : Test Type: Sex-linked Recessive Lethal Test
Species: Drosophila melanogaster (vinegar fly)
Result: negative

Test Type: unscheduled DNA synthesis assay
Species: Rat
Method: OECD Test Guideline 486
Result: negative

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse (male and female)
Method: OECD Test Guideline 474
Result: negative

ammonium sulphate:

Genotoxicity in vitro : Test Type: reverse mutation assay
Method: OECD Test Guideline 471
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (male)
Application Route: Intraperitoneal injection
Exposure time: 4 d
Result: negative

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Carcinogenicity

Based on available data, the classification criteria are not met.

Components:

Bifenthrin:

Species	: Rat, female
Application Route	: Oral
Exposure time	: 2 Years
NOAEL	: 3 mg/kg bw/day
Result	: negative
Species	: Mouse, male
Application Route	: Oral
Exposure time	: 18 month(s)
NOAEL	: 7.6 mg/kg bw/day
Result	: positive
Symptoms	: malignant tumors

ammonium sulphate:

Species	: Rat, male
Application Route	: Oral
Exposure time	: 2 y

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Dose : 564, 1288 mg/kg food
Method : OECD Test Guideline 453
Result : negative

Species : Rat, female
Application Route : Oral
Exposure time : 2 y
Dose : 649, 1371 mg/kg food
Method : OECD Test Guideline 453
Result : negative

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen

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

Based on available data, the classification criteria are not met.

Components:

Bifenthrin:

Effects on fertility : Test Type: Two-generation study
Species: Rat
Application Route: Oral
General Toxicity Parent: NOAEL: 3 mg/kg bw/day
General Toxicity F1: NOAEL: 5 mg/kg bw/day
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rabbit
Application Route: Oral
General Toxicity Maternal: NOAEL: 2.7 mg/kg bw/day
Teratogenicity: NOAEL: 2.7 mg/kg bw/day
Symptoms: Maternal effects.
Result: No teratogenic effects.

Test Type: Embryo-fetal development
Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL: 1 mg/kg bw/day
Teratogenicity: NOAEL: 2 mg/kg bw/day
Result: No teratogenic effects.

Species: Rat
Application Route: Oral
General Toxicity Maternal: LOAEL: 7.2 mg/kg bw/day

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Developmental Toxicity: LOAEL: 7.2 mg/kg bw/day
Embryo-fetal toxicity.: NOEL: 9.0 mg/kg bw/day
Method: OECD Test Guideline 426
Result: Animal testing did not show any effects on fertility.,
Some evidence of adverse effects on development, based on
animal experiments.

ammonium sulphate:

Effects on fertility : Species: Rat
Application Route: Oral
Dose: 250, 750, 1500 mg/kg
General Toxicity Parent: LOAEL: 250 mg/kg body weight
Fertility: NOAEL: 1,500 mg/kg body weight
Method: OECD Test Guideline 422
Result: No effects on fertility and early embryonic develop-
ment were detected.

Effects on fetal development : Species: Rat
Application Route: Oral
Dose: 250, 750, 1500 mg/kg
Developmental Toxicity: NOAEL: 1,500 mg/kg body weight
Method: OECD Test Guideline 415
Result: negative

Reproductive toxicity - As- : Weight of evidence does not support classification for repro-
sessment ductive toxicity

STOT-single exposure

Causes damage to organs (Central nervous system).

Components:

Bifenthrin:

Target Organs : Central nervous system
Assessment : Causes damage to organs.

STOT-repeated exposure

Causes damage to organs (Central nervous system) through prolonged or repeated exposure.

Components:

Bifenthrin:

Target Organs : Central nervous system
Assessment : The substance or mixture is classified as specific target organ
toxicant, repeated exposure, category 1.

ammonium sulphate:

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

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Repeated dose toxicity

Components:

Bifenthrin:

Species	: Rat, male and female
NOEL	: 100 ppm
Application Route	: Oral - feed
Exposure time	: 90 d
Remarks	: No toxicologically significant effects were found.

Species	: Dog, male and female
NOEL	: 2.5 mg/kg bw/day
Application Route	: Oral - feed
Exposure time	: 13 w
Symptoms	: Tremors

Species	: Dog, male and female
NOEL	: 1.5 mg/kg
Application Route	: Oral
Exposure time	: 52 w
Dose	: 0.75, 1.5, 3, 5 mg/kg bw/day
GLP	: yes
Symptoms	: Tremors

ammonium sulphate:

Species	: Rat, female
NOAEL	: 284 mg/kg
Application Route	: Oral
Exposure time	: 1 y
Dose	: 48, 284, 1490 mg/kg
Method	: OECD Test Guideline 453
Symptoms	: Liver effects, kidney effects

Species	: Rat, male
NOAEL	: 256 mg/kg
Application Route	: Oral
Exposure time	: 1 y
Dose	: 42, 256, 1527 mg/kg
Method	: OECD Test Guideline 453
Symptoms	: Liver effects, kidney effects

Species	: Rat
NOAEC	: 0.3 mg/l
Application Route	: Inhalation
Exposure time	: 14 d
Number of exposures	: 8 h/d
Dose	: 0.3 mg/L
Symptoms	: No adverse effects.

Aspiration toxicity

Based on available data, the classification criteria are not met.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Components:

Bifenthrin:

The substance does not have properties associated with aspiration hazard potential.

Further information

Product:

Remarks : No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Bifenthrin:

Toxicity to fish	:	LC50 (Salmo gairdneri): 0.00015 mg/l Exposure time: 96 h Test Type: flow-through test LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.00035 mg/l Exposure time: 96 h Test Type: flow-through test LC50 (Oncorhynchus mykiss (rainbow trout)): 0.000256 mg/l Exposure time: 96 h Test Type: semi-static test Method: OECD Test Guideline 203 GLP: yes LC50 (Pimephales promelas (fathead minnow)): 0.000234 mg/l Exposure time: 96 h Test Type: semi-static test Method: OECD Test Guideline 203 GLP: yes
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia): 0.00011 mg/l Exposure time: 48 h LC50 (Daphnia): 0.0016 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	EC50 (algae): 0.822 mg/l Exposure time: 72 h
Toxicity to fish (Chronic toxicity)	:	NOEC (Oncorhynchus mykiss (rainbow trout)): 0.00012 mg/l Exposure time: 21 d
Toxicity to daphnia and other aquatic invertebrates (Chronic)	:	NOEC (Daphnia magna (Water flea)): 0.0013 µg/l Exposure time: 21 d

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

ic toxicity)

NOEC (*Daphnia magna* (Water flea)): 0.00095 µg/l
Exposure time: 21 d

Toxicity to soil dwelling organisms

: LD50 (*Eisenia fetida* (earthworms)): > 16 mg/kg
Exposure time: 14 d

Method: OECD Test Guideline 216
Remarks: No significant adverse effect on Nitrogen mineralization.

Toxicity to terrestrial organisms

: LD50 (*Colinus virginianus* (Bobwhite quail)): 1,800 mg/kg

LD50 (*Anas platyrhynchos* (Mallard duck)): > 2,150 mg/kg

LD50 (*Apis mellifera* (bees)): 0.07 µg a.i./bee
Exposure time: 48 h
End point: Acute oral toxicity
Method: OECD Test Guideline 213

LD50 (*Apis mellifera* (bees)): 0.0201 µg a.i./bee
Exposure time: 48 h
End point: Acute contact toxicity
Method: OECD Test Guideline 214

ED50 (*Apis mellifera* (bees)): 143 ng ai larva
Exposure time: 7 d
End point: Acute larval toxicity
Method: OECD 237

ED50 (*Apis mellifera* (bees)): 15.15 ng ai larva/day
Exposure time: 22 d
End point: Chronic larval toxicity
Method: OECD 239

NOAEL (*Apis mellifera* (bees)): 2.30 ng ai larva/day
Exposure time: 22 d
End point: Chronic larval toxicity
Method: OECD 239

ED50 (*Apis mellifera* (bees)): 300 ng a.i./bee/day
Exposure time: 10 d
End point: Chronic oral toxicity
Method: OECD TG 245

NOAEL (*Apis mellifera* (bees)): 170 ng a.i./bee/day
Exposure time: 10 d
End point: Chronic oral toxicity
Method: OECD TG 245

Bacillus amyloliquefaciens:

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): $>8.1 \times 10^{10}$ CFU/L Exposure time: 30 d
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): $>2.3 \times 10^{10}$ CFU/L Exposure time: 21 d
Toxicity to terrestrial organisms	:	LC50 (Apis mellifera (bees)): 1×10^9 CFU/mL Exposure time: 48 h
		LD50 (Colinus virginianus (Bobwhite quail)): $> 2,250$ mg/kg

ammonium sulphate:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 53 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 169 mg/l Exposure time: 48 h
		EC50 (Daphnia): 121.7 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	EC50 (Chlorella vulgaris (Fresh water algae)): 2,700 mg/l Exposure time: 18 h
		EC50 (Chlorella vulgaris (Fresh water algae)): 1,605 mg/l Exposure time: 5 d
Toxicity to fish (Chronic toxicity)	:	EC10 (Lepomis macrochirus (Bluegill sunfish)): 5.29 mg/l Exposure time: 30 d Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	EC10 (Hyalomma azteca (Amphipod)): 3.12 mg/l Exposure time: 70 d Test Type: semi-static test
Toxicity to microorganisms	:	EC50 (activated sludge): 1,618 mg/l Exposure time: 0.5 h Method: OECD Test Guideline 209 Remarks: Based on data from similar materials

D-Glucopyranose, oligomeric, C9-11-alkyl glycosides:

Toxicity to fish	:	LC50 (Brachydanio rerio (zebrafish)): 2.95 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Crustaceans): 26.2 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	EC50 (Skeletonema costatum (Diatom)): 9.05 mg/l Exposure time: 72 h Method: ISO 10253

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Toxicity to microorganisms : EC50 (Pseudomonas putida): > 560 mg/l

Poly(oxy-1,2-ethanediyl), α -tridecyl- ω -hydroxy-, phosphate, potassium salt:

Ecotoxicology Assessment

Acute aquatic toxicity : Harmful to aquatic life.

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

Persistence and degradability

Components:

Bifenthrin:

Biodegradability : Result: Not readily biodegradable.

Stability in water : Degradation half life (DT50): 2.2 d
Hydrolysis: at 60 °C

Degradation half life (DT50): 15.6 d
Hydrolysis: at 40 °C

ammonium sulphate:

Biodegradability : Result: Not biodegradable

D-Glucopyranose, oligomeric, C9-11-alkyl glycosides:

Biodegradability : Result: Readily biodegradable.

Poly(oxy-1,2-ethanediyl), α -tridecyl- ω -hydroxy-, phosphate, potassium salt:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301D
Remarks: Based on data from similar materials

Bioaccumulative potential

Components:

Bifenthrin:

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
Bioconcentration factor (BCF): 1,709
Remarks: Due to the distribution coefficient n-octanol/water, accumulation in organisms is possible.

Partition coefficient: n-octanol/water : log Pow: 6.6

ammonium sulphate:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Partition coefficient: n-octanol/water : log Pow: -5.1 (77 °F / 25 °C)

log Pow: 0.48 (77 °F / 25 °C)

D-Glucopyranose, oligomeric, C9-11-alkyl glycosides:

Partition coefficient: n-octanol/water : log Pow: 3.7
Method: OECD Test Guideline 117

Mobility in soil

Components:

Bifenthrin:

Distribution among environmental compartments : Koc: 236610 ml/g, log Koc: 5.37
Remarks: immobile

Stability in soil :

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

Endocrine disrupting properties

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	: UN 3082
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Bifenthrin)
Class	: 9
Packing group	: III
Labels	: 9
Environmentally hazardous	: yes

IATA-DGR

UN/ID No.	: UN 3082
Proper shipping name	: Environmentally hazardous substance, liquid, n.o.s. (Bifenthrin)
Class	: 9
Packing group	: III
Labels	: Miscellaneous
Packing instruction (cargo aircraft)	: 964
Packing instruction (passenger aircraft)	: 964
Environmentally hazardous	: yes

IMDG-Code

UN number	: UN 3082
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Bifenthrin)
Class	: 9
Packing group	: III
Labels	: 9
EmS Code	: F-A, S-F
Marine pollutant	: yes

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number	: UN 3082
Proper shipping name	: Environmentally hazardous substance, liquid, n.o.s. (Bifenthrin)
Class	: 9
Packing group	: III
Labels	: CLASS 9
ERG Code	: 171
Marine pollutant	: no

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

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Listed substances in the product are at low enough levels to not be expected to exceed the RQ

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : No SARA Hazards

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Bifenthrin	82657-04-3	>= 10 - < 20 %
ammonium sulphate	7783-20-2	>= 5 - < 10 %

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

acetic acid	64-19-7	>= 0 - < 0.1 %
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The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

acetic acid	64-19-7	>= 0 - < 0.1 %
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This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

US State Regulations

Massachusetts Right To Know

ammonium sulphate	7783-20-2
Quartz (SiO ₂)	14808-60-7

Pennsylvania Right To Know

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version 1.1	Revision Date: 07/13/2026	SDS Number: 50001476	Date of last issue: 01/09/2023 Date of first issue: 01/09/2023
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water	7732-18-5
Bifenthrin	82657-04-3
ammonium sulphate	7783-20-2
Bacillus amyloliquefaciens	68038-60-8
D-Glucopyranose, oligomeric, C9-11-alkyl glycosides	132778-08-6
acetic acid	64-19-7

Maine Chemicals of High Concern

octamethylcyclotetrasiloxane [D4]	556-67-2
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Vermont Chemicals of High Concern

octamethylcyclotetrasiloxane [D4]	556-67-2
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Washington Chemicals of High Concern

Product does not contain any listed chemicals

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

TW TCSI	: Not in compliance with the inventory
US TSCA	: Product contains substance(s) not listed on TSCA inventory.
AU AIIC	: Not in compliance with the inventory
CA. DSL	: This product contains chemical substance(s) exempt from CEPA DSL Inventory requirements. It is regulated as a pesticide subject to Pest Control Products Act (PCPA) requirements. Read the PCPA label, authorized under the Pest Control Products Act, prior to using or handling this pest control product.
JP ENCS	: Not in compliance with the inventory
JP ISHL	: Not in compliance with the inventory
KR KECI	: Not in compliance with the inventory
PH PICCS	: Not in compliance with the inventory
CN IECSC	: Not in compliance with the inventory
NZ NZIoC	: Not in compliance with the inventory
TH TECI	: Not in compliance with the inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

FIFRA information

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

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version 1.1 Revision Date: 07/13/2026 SDS Number: 50001476 Date of last issue: 01/09/2023
Date of first issue: 01/09/2023

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:

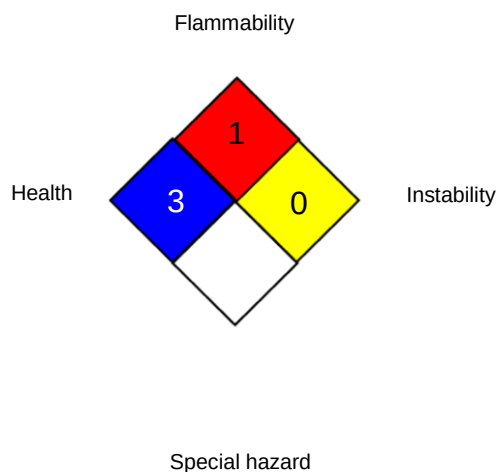
CAUTION

Harmful if swallowed Causes eye irritation Harmful if absorbed through the skin. Avoid contact with skin, eyes and clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV / CED:

HEALTH	*	4
FLAMMABILITY		1
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

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 Standardization; 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 - In-

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



ETHOS® XB INSECTICIDE/FUNGICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 01/09/2023
1.1	07/13/2026	50001476	Date of first issue: 01/09/2023

ternational Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organization 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, Authorization 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

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Person who prepared the SDS:

FMC Corporation

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End of Material Safety Data Sheet