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

SECTION 1. IDENTIFICATION

Product name : RIDGEBACK™

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 insecticide product

SECTION 2. HAZARDS IDENTIFICATION

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

Flammable liquids : Category 4

Acute toxicity (Oral) : Category 3

Carcinogenicity : Category 2

Specific target organ toxicity

- single exposure

Category 3 (Central nervous system)

Specific target organ toxicity

- repeated exposure (Inhala-

tion)

Category 1 (Central nervous system)

Aspiration hazard : Category 1

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GHS label elements

Hazard pictograms







Signal Word : Danger

Hazard Statements : H227 Combustible liquid.

H301 Toxic if swallowed.

H304 May be fatal if swallowed and enters airways.

H336 May cause drowsiness or dizziness. H351 Suspected of causing cancer.

H372 Causes damage to organs (Central nervous system)

through prolonged or repeated exposure if inhaled.

Precautionary Statements

Prevention:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat/ sparks/ open flames/ hot surfaces.

No smoking.

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.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ protective clothing/ eye protection/

face protection.

Response:

P301 + P310 + P330 IF SWALLOWED: Immediately call a

POISON CENTER/ doctor. 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.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P331 Do NOT induce vomiting.

P370 + P378 In case of fire: Use dry sand, dry chemical or alco-

hol-resistant foam to extinguish.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container

tightly closed.

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

Disposal:

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

Other hazards

None known.





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SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
bifenthrin (ISO)	82657-04-3	11.2
sulfoxaflor (ISO)	946578-00-3	3.7
Solvent naphtha (petroleum), heavy	64742-94-5	>= 25 - < 30
arom.; Kerosine — unspecified		
Propylene glycol	57-55-6	>= 3 - < 10
naphthalene	91-20-3	>= 0.1 - < 0.3
Balance	Not Assigned	> 40

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

If inhaled : Move person to fresh air; if effects occur, consult a physician.

In case of skin contact : Wash off with plenty of water.

In case of eye contact : Flush eyes thoroughly with water for several minutes. Re-

move contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, con-

sult a physician, preferably an ophthalmologist.

If swallowed : If swallowed, seek medical attention. Do not induce vomiting

unless directed to do so by medical personnel.

Seek medical attention immediately.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and

delaved

None known.

Protection of first-aiders

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical re-

sistant 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.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray

Alcohol-resistant foam Carbon dioxide (CO2)

Unsuitable extinguishing

media

Do not use direct water stream.

High volume water jet

Specific hazards during fire

fighting

Exposure to combustion products may be a hazard to health.

Vapors may form explosive mixtures with air.

Do not allow run-off from firefighting to enter drains or water

courses.

Flash back possible over considerable distance.





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Specific extinguishing meth-

ods

: Remove undamaged containers from fire area if it is safe to do

SO.

Evacuate area.

Use extinguishing measures that are appropriate to local cir-

cumstances 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.

Further information : Use water spray to cool fire exposed containers and fire af-

fected zone until fire is out and danger of reignition has

passed.

Do not use a solid water stream as it may scatter and spread

fire.

Use a water spray to cool fully closed 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

In the event of fire, wear self-contained breathing apparatus.

Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emer-

gency procedures

Ensure adequate ventilation.

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.

Prevent spreading over a wide area (e.g., by containment or

oil barriers).

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

Clean up remaining materials from spill with suitable absorbant.

Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in.

For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped.

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.





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Keep in suitable, closed containers for disposal. Wipe up with absorbent material (e.g. cloth, fleece).

Non-sparking tools should be used.

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local

/ national regulations (see section 13).

Suppress (knock down) gases/vapors/mists with a water spray

iet.

See Section 13, Disposal Considerations, for additional infor-

mation.

SECTION 7. HANDLING AND STORAGE

Local/Total ventilation : Use with local exhaust ventilation.

Advice on safe handling : Avoid formation of aerosol.

Provide sufficient air exchange and/or exhaust in work rooms.

Do not breathe vapors/dust.

Do not smoke.

Handle in accordance with good industrial hygiene and safety

practice.

Avoid exposure - obtain special instructions before use. Smoking, eating and drinking should be prohibited in the ap-

plication area.

Do not breathe vapors or spray mist.

Do not swallow.

Avoid contact with skin and eyes.

Avoid contact with eyes.

Avoid prolonged or repeated contact with skin.

Keep container tightly closed.

Keep away from heat and sources of ignition.

Take precautionary measures against static discharges.

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.

No smoking.

Prevent unauthorized access.

Containers which are opened must be carefully resealed and

kept upright to prevent leakage. Keep in properly labeled containers.

Store in accordance with the particular national regulations.

Materials to avoid : Do not store near acids.

Strong oxidizing agents Organic peroxides

Explosives

Gases

Packaging material : Unsuitable material: None known.





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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Solvent naphtha (petroleum), heavy arom.; Kerosine — un- specified	64742-94-5	TWA	100 mg/m3	Corteva OEL
		STEL	300 mg/m3	Corteva OEL
		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
Propylene glycol	57-55-6	TWA	10 mg/m3	US WEEL
sulfoxaflor (ISO)	946578-00-3	TWA (Inhal- able particu- late matter)	0.1 mg/m3	ACGIH
naphthalene	91-20-3	TWA	10 ppm	Dow IHG
		STEL	15 ppm	Dow IHG
		TWA	10 ppm	ACGIH
		TWA	10 ppm 50 mg/m3	OSHA Z-1

Engineering measures

Use engineering controls to maintain airborne level below

exposure limit requirements or guidelines.

If there are no applicable exposure limit requirements or guidelines, use only in enclosed systems or with local ex-

haust ventilation.

Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people

working at this point.

Lethal concentrations may exist in areas with poor ventilation.

Personal protective equipment

Respiratory protection : Respiratory protection should be worn when there is a poten-

tial to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or

guidelines, use an approved respirator.

When respiratory protection is required, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. For emergency conditions, use an approved positive-

pressure self-contained breathing apparatus.

Hand protection

Remarks : Chemical protective gloves should not be needed when han-

dling this material. Consistent with general hygienic practice

for any material, skin contact should be minimized.

Eye protection : Use safety glasses (with side shields).

Skin and body protection : No precautions other than clean body-covering clothing

should be needed.





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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid.

Color : Off-white

Odor : Mild

Odor Threshold : No data available

pH : 4.32 (72.1 °F / 22.3 °C)

Concentration: 1 %

Melting point/range : Not applicable

Freezing point No data available

Boiling point/boiling range : No data available

Flash point : 153 °F / 67 °C

Method: closed cup

Evaporation rate : No data available

Flammability (solid, gas) : 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 : 1.0041 g/cm3 (68 °F / 20 °C)

Solubility(ies)

Water solubility : No data available

Autoignition temperature : No data available

Viscosity

Viscosity, dynamic : No data available

Explosive properties : No data available

Oxidizing properties : No significant increase (>5C) in temperature.





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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 reac-

tions

Stable under recommended storage conditions.

No hazards to be specially mentioned. Vapors may form explosive mixture with air. May form explosive dust-air mixture.

Conditions to avoid : Heat, flames and sparks.

Incompatible materials : None.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity : LD50 (Rat, female): 300 mg/kg

Method: OECD Test Guideline 423

Acute inhalation toxicity : LC50 (Rat, female): > 5.95 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Acute toxicity estimate: 7.02 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist Method: Calculation method

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

Method: OECD Test Guideline 402

Components:

bifenthrin (ISO):

Acute oral toxicity : Remarks: Moderate toxicity if swallowed.

Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause serious injury, even

death.

May cause nausea and vomiting.

May cause abdominal discomfort or diarrhea.

LD50 (Rat, female): 53.4 mg/kg

Acute inhalation toxicity : Remarks: Prolonged excessive exposure may cause serious

adverse effects, even death.

LC50 (Rat): 0.8 mg/l Exposure time: 4 h

Test atmosphere: dust/mist





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Acute dermal toxicity : Remarks: Prolonged skin contact is unlikely to result in ab-

sorption of harmful amounts.

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

sulfoxaflor (ISO):

Acute oral toxicity : LD50 (Rat, female): 1,000 mg/kg

Remarks: Observations in animals include:

Muscle spasms or twitches.

Tremors. Convulsions.

Acute inhalation toxicity : LC50 (Rat): > 2.09 mg/l

Test atmosphere: dust/mist

Symptoms: The LC50 value is greater than the Maximum Attainable Concentration., No deaths occurred at this concen-

tration.

Assessment: The substance or mixture has no acute inhala-

tion toxicity

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

Symptoms: No deaths occurred at this concentration.

Assessment: The substance or mixture has no acute dermal

toxicity

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

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

Remarks: For similar material(s):

Acute inhalation toxicity : LC50 (Rat): > 4.688 mg/l

Exposure time: 4 h
Test atmosphere: vapor

Assessment: The substance or mixture has no acute inhala-

tion toxicity

Remarks: For similar material(s): Maximum attainable concentration.

Acute dermal toxicity : LD50 (Rabbit): > 3,160 mg/kg

Assessment: The substance or mixture has no acute dermal

toxicity

Remarks: For similar material(s):

Propylene glycol:

Acute oral toxicity : LD50 (Rat): > 20,000 mg/kg

Acute inhalation toxicity : LC50 (Rabbit): 317.042 mg/l

Exposure time: 2 h

Test atmosphere: dust/mist

Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute inhala-

tion toxicity

Remarks: Mist may cause irritation of upper respiratory tract

(nose and throat).





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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

naphthalene:

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

Lethal Dose (Humans): 5 - 15 grams

Method: Estimated.

Remarks: Excessive exposure may cause hemolysis, thereby

impairing the blood's ability to transport oxygen.

Ingestion of naphthalene by humans has caused hemolytic

anemia.

Toxicity from swallowing may be greater in humans than in

animals.

In humans, symptoms may include:

Confusion. Lethargy.

Muscle spasms or twitches.

Convulsions.

Coma.

Acute inhalation toxicity : Remarks: Excessive exposure may cause irritation to upper

respiratory tract (nose and throat).

Excessive exposure may cause lung injury.

Signs and symptoms of excessive exposure may include:

Headache. Confusion. Sweating.

Nausea and/or vomiting.

LC50 (Rat): > 0.41 mg/l Exposure time: 4 h Test atmosphere: vapor

Symptoms: The LC50 value is greater than the Maximum

Attainable Concentration.

Assessment: The substance or mixture has no acute inhala-

tion toxicity

Acute dermal toxicity : LD50 (Rat): > 2,500 mg/kg

Remarks: Human case reports suggest Naphthalene may be absorbed through the skin in toxic amounts, especially in chil-

dren.

LD50 (Rabbit): > 2,500 mg/kg

Skin corrosion/irritation

Product:

Species : Rabbit

Method : OECD Test Guideline 404

Result : No skin irritation





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Components:

sulfoxaflor (ISO):

Species : Rabbit

Result : No skin irritation

Propylene glycol:

Species : Rabbit

Result : No skin irritation

Serious eye damage/eye irritation

Product:

Species : Rabbit

Result : No eye irritation

Method : OECD Test Guideline 405

Components:

sulfoxaflor (ISO):

Species : Rabbit

Result : No eye irritation

Propylene glycol:

Species : Rabbit

Result : No eye irritation

Respiratory or skin sensitization

Product:

Test Type : Local lymph node assay (LLNA)

Species : Mouse

Method : OECD Test Guideline 429

Result : Does not cause skin sensitization.

Components:

bifenthrin (ISO):

Result : The product is a skin sensitizer, sub-category 1B.

Remarks : For skin sensitization:

Has caused allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:

No relevant data found.

sulfoxaflor (ISO):

Species : Mouse

Assessment : Does not cause skin sensitization.





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Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Remarks For similar material(s):

Did not cause allergic skin reactions when tested in guinea

pigs.

Remarks For respiratory sensitization:

No relevant data found.

Propylene glycol:

Species human

Assessment Does not cause skin sensitization.

naphthalene:

Assessment Does not cause skin sensitization.

Remarks Skin contact may cause an allergic skin reaction in a small

proportion of individuals.

Did not cause allergic skin reactions when tested in guinea

pigs.

Remarks For respiratory sensitization:

No relevant data found.

Germ cell mutagenicity

Components:

sulfoxaflor (ISO):

Germ cell mutagenicity -

In vitro genetic toxicity studies were negative., Animal genetic

toxicity studies were negative.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Germ cell mutagenicity -

Assessment

Assessment

For similar material(s):, In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

Propylene glycol:

Germ cell mutagenicity -

In vitro genetic toxicity studies were negative., Animal genetic

Assessment toxicity studies were negative.

naphthalene:

Germ cell mutagenicity -Assessment

In vitro genetic toxicity studies were negative in some cases

and positive in other cases.

Carcinogenicity

Components:

bifenthrin (ISO):

Carcinogenicity - Assess-

ment

Limited evidence of carcinogenicity in animal studies

Has caused cancer in laboratory animals.





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sulfoxaflor (ISO):

Carcinogenicity - Assess-

ment

Has caused cancer in laboratory animals., However, the effects are species specific and are not relevant to humans.

Propylene glycol:

Carcinogenicity - Assess-

ment

Did not cause cancer in laboratory animals.

naphthalene:

Carcinogenicity - Assess-

ment

Limited evidence of carcinogenicity in animal studies

Has caused cancer in some laboratory animals., In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were neg-

ative.

IARC Group 2B: Possibly carcinogenic to humans

naphthalene 91-20-3

OSHANo component of this product present at levels greater than or equal to 0.1% is

on OSHA's list of regulated carcinogens.

NTP Reasonably anticipated to be a human carcinogen

naphthalene 91-20-3

Reproductive toxicity

Components:

bifenthrin (ISO):

Reproductive toxicity - As-

sessment

In animal studies, did not interfere with reproduction.

Did not cause birth defects or any other fetal effects in labora-

tory animals.

sulfoxaflor (ISO):

Reproductive toxicity - As-

sessment

In animal studies, has been shown to interfere with reproduction., However, the effects are species specific and are not relevant to humans., These concentrations exceed relevant

human dose levels.

Has caused birth defects in lab animals at high doses., In laboratory animals, excessive doses toxic to the parent animals caused decreased weight and survival of offspring., However, the effects are species specific and are not relevant

to humans.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Reproductive toxicity - As-

sessment

In animal studies, did not interfere with reproduction.

For similar material(s):, Did not cause birth defects or any

other fetal effects in laboratory animals.





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Propylene glycol:

Reproductive toxicity - As-

sessment

: In animal studies, did not interfere with reproduction., In ani-

mal studies, did not interfere with fertility.

Did not cause birth defects or any other fetal effects in labora-

tory animals.

naphthalene:

Reproductive toxicity - As-

sessment

Available data are inadequate to determine effects on repro-

duction.

Did not cause birth defects in laboratory animals.

STOT-single exposure

Components:

bifenthrin (ISO):

Assessment : Available data are inadequate to determine single exposure

specific target organ toxicity.

sulfoxaflor (ISO):

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

an STOT-SE toxicant.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Routes of exposure : Inhalation

Assessment : May cause drowsiness or dizziness.

Propylene glycol:

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

an STOT-SE toxicant.

naphthalene:

Assessment : Available data are inadequate to determine single exposure

specific target organ toxicity.

STOT-repeated exposure

Components:

bifenthrin (ISO):

Routes of exposure : Inhalation

Target Organs : Central nervous system

Assessment : Causes damage to organs through prolonged or repeated

exposure.

Repeated dose toxicity

Components:

bifenthrin (ISO):





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Remarks : In animals, effects have been reported on the following or-

gans:

Central nervous system.

sulfoxaflor (ISO):

Remarks : In animals, effects have been reported on the following or-

gans: Liver.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Remarks : Based on available data, repeated exposures are not antici-

pated to cause significant adverse effects.

Propylene glycol:

Remarks : In rare cases, repeated excessive exposure to propylene gly-

col may cause central nervous system effects.

naphthalene:

Remarks : Observations in animals include:

Respiratory effects.

Excessive exposure may cause hemolysis, thereby impairing

the blood's ability to transport oxygen.

Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust. Ingestion of naphthalene by humans has caused hemolytic

anemia.

Aspiration toxicity

Components:

bifenthrin (ISO):

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

sulfoxaflor (ISO):

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

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

May be fatal if swallowed and enters airways.

Propylene glycol:

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

naphthalene:

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





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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

bifenthrin (ISO):

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.00015 mg/l

Exposure time: 96 h

Toxicity to daphnia and other :

aquatic invertebrates

LC50 (Daphnia magna (Water flea)): 0.00016 mg/l

Exposure time: 48 h

M-Factor (Acute aquatic tox-

icity)

M-Factor (Chronic aquatic

toxicity)

1,000

1,000

Toxicity to terrestrial organ-

isms

LD50 (Anas platyrhynchos (Mallard duck)): > 2150 mg/kg

bodyweight.

LD50 (Colinus virginianus (Bobwhite quail)): 1800 mg/kg bod-

yweight.

(Apis mellifera (bees)): 0.1 µg/bee End point: Acute oral toxicity

(Apis mellifera (bees)): 0.01462 μg/bee

End point: Acute contact toxicity

sulfoxaflor (ISO):

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 387 mg/l

Exposure time: 96 h Test Type: static test

Method: OECD Test Guideline 203 or Equivalent

LC50 (Lepomis macrochirus (Bluegill sunfish)): > 363 mg/l

Exposure time: 96 h

EC50 (Cyprinus carpio (Carp)): > 402 mg/l

Exposure time: 96 h

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): > 399 mg/l

Exposure time: 48 h Test Type: static test

Method: OECD Test Guideline 202 or Equivalent

LC50 (Chironomus sp.): 0.622 mg/l

Exposure time: 96 h

Toxicity to algae/aquatic

plants

ErC50 (Pseudokirchneriella subcapitata (green algae)): > 100

mg/l

Exposure time: 96 h Test Type: static test

Method: OECD Test Guideline 201 or Equivalent





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ErC50 (Lemna gibba): > 100 mg/l

Exposure time: 7 d

Toxicity to fish (Chronic tox-

icity)

NOEC (Pimephales promelas (fathead minnow)): > 12.9 mg/l

End point: mortality Exposure time: 30 d

Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates (Chron-

ic toxicity)

NOEC (Daphnia magna (Water flea)): 50.5 mg/l

End point: growth Exposure time: 21 d Test Type: semi-static test

NOEC (saltwater mysid Mysidopsis bahia): 0.114 mg/l

End point: number of offspring

Exposure time: 28 d

Test Type: flow-through test

Method: OECD Test Guideline 211 or Equivalent

Toxicity to soil dwelling or-

ganisms

LC50 (Eisenia fetida (earthworms)): 0.885 mg/kg

Toxicity to terrestrial organ-

isms

dietary LC50 (Colinus virginianus (Bobwhite quail)): > 5620

mg/kg bodyweight.

oral LD50 (Colinus virginianus (Bobwhite quail)): 676 mg/kg

oral LD50 (Apis mellifera (bees)): 0.146 micrograms/bee

Exposure time: 48 h

contact LD50 (Apis mellifera (bees)): 0.539 micrograms/bee

Exposure time: 48 d

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Toxicity to fish : Remarks: For similar material(s):

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensi-

tive species tested).

LC50 (Oncorhynchus mykiss (rainbow trout)): 2 - 5 mg/l

Exposure time: 96 h

Remarks: For similar material(s):

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 3 - 10 mg/l

Exposure time: 48 h

Remarks: For similar material(s):

Toxicity to algae/aquatic

plants

EC50 (Pseudokirchneriella subcapitata (green algae)): 11 mg/l

Exposure time: 72 h





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Remarks: For similar material(s):

Toxicity to terrestrial organ-

isms

Remarks: Material is practically non-toxic to birds on an acute

basis (LD50 > 2000 mg/kg).

Ecotoxicology Assessment

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

Propylene glycol:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 40,613 mg/l

Exposure time: 96 h
Test Type: static test

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

LC50 (Ceriodaphnia dubia (water flea)): 18,340 mg/l

Exposure time: 48 h Test Type: static test

Method: OECD Test Guideline 202

Toxicity to algae/aquatic

plants

ErC50 (Pseudokirchneriella subcapitata (green algae)):

19,000 mg/l

End point: Growth rate inhibition

Exposure time: 96 h

Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chron-

ic toxicity)

NOEC (Ceriodaphnia dubia (water flea)): 13,020 mg/l

End point: number of offspring

Exposure time: 7 d

Test Type: semi-static test

Toxicity to microorganisms : NOEC (Pseudomonas putida): > 20,000 mg/l

Exposure time: 18 h

naphthalene:

Toxicity to fish : Remarks: Material is highly toxic to aquatic organisms on an

acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most

sensitive species tested).

LC50 (Oncorhynchus mykiss (rainbow trout)): 0.11 mg/l

Exposure time: 96 h

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 1.6 - 24.1 mg/l

Exposure time: 48 h Test Type: static test

Toxicity to algae/aquatic

plants

ErC50 (Skeletonema costatum (marine diatom)): 0.4 mg/l

Exposure time: 72 h

Test Type: Growth rate inhibition

M-Factor (Acute aquatic tox-

icity)

: 1

Toxicity to fish (Chronic tox-

icity)

NOEC (Other): 0.37 mg/l

End point: mortality





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

M-Factor (Chronic aquatic

toxicity)

: 1

Ecotoxicology Assessment

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

Persistence and degradability

Components:

sulfoxaflor (ISO):

Biodegradability Result: Not biodegradable.

> Biodegradation: 0 % Exposure time: 28 d

Method: OECD Test Guideline 310

Remarks: Material is not readily biodegradable according to

OECD/EEC guidelines.

ThOD 1.90 kg/kg

Test Type: Half-life (indirect photolysis) Photodegradation

Sensitizer: OH radicals

Rate constant: 1.653E-11 cm3/s

Method: Estimated.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Biodegradability Remarks: Material is inherently biodegradable (reaches >

20% biodegradation in OECD test(s) for inherent biodegrada-

bility).

Propylene glycol:

Biodegradability aerobic

Result: Readily biodegradable.

Biodegradation: 81 % Exposure time: 28 d

Method: OECD Test Guideline 301F or Equivalent

Remarks: 10-day Window: Pass

Biodegradation: 96 % Exposure time: 64 d

Method: OECD Test Guideline 306 or Equivalent

Remarks: 10-day Window: Not applicable

Biochemical Oxygen De-

mand (BOD)

69.000 %

Incubation time: 5 d

70.000 %

Incubation time: 10 d

86.000 %





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1.68 kg/kg

Incubation time: 20 d

Chemical Oxygen Demand

(COD) **ThOD**

1.53 kg/kg

Photodegradation Rate constant: 1.28E-11 cm3/s

Method: Estimated.

naphthalene:

Biodegradability Remarks: Biodegradation under aerobic static laboratory con-

ditions is high (BOD20 or BOD28/ThOD > 40%).

Biochemical Oxygen De-

mand (BOD)

57.000 %

Incubation time: 5 d

71.000 %

Incubation time: 10 d

71.000 %

Incubation time: 20 d

ThOD 3.00 kg/kg

Test Type: Half-life (indirect photolysis) Photodegradation

Sensitizer: OH radicals

Concentration: 1,500,000 1/cm3 Rate constant: 2.16E-11 cm3/s

Method: Estimated.

Bioaccumulative potential

Components:

bifenthrin (ISO):

Bioaccumulation Bioconcentration factor (BCF): 11,750

Remarks: Bioconcentration potential is high (BCF > 3000 or

Log Pow between 5 and 7).

Partition coefficient: n-

octanol/water

octanol/water

log Pow: > 6

sulfoxaflor (ISO):

Partition coefficient: n-

log Pow: 0.802 (68 °F / 20 °C)

pH: 7

Method: Measured

Remarks: Bioconcentration potential is low (BCF < 100 or Log

Pow < 3).

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Partition coefficient: n-

octanol/water

Remarks: For similar material(s):

Bioconcentration potential is high (BCF > 3000 or Log Pow

between 5 and 7).





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Propylene glycol:

Bioaccumulation : Bioconcentration factor (BCF): 0.09

Method: Estimated.

Partition coefficient: n-

octanol/water

log Pow: -1.07 Method: Measured

Remarks: Bioconcentration potential is low (BCF < 100 or Log

Pow < 3).

naphthalene:

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): 40 - 300

Exposure time: 28 d Method: Measured

Partition coefficient: n-

octanol/water

log Pow: 3.3

Method: Measured

Remarks: Bioconcentration potential is moderate (BCF be-

tween 100 and 3000 or Log Pow between 3 and 5).

Balance:

Partition coefficient: n-

octanol/water

Remarks: No relevant data found.

Mobility in soil

Components:

sulfoxaflor (ISO):

Distribution among environ-

mental compartments

Koc: 40

Method: Measured

Remarks: Potential for mobility in soil is very high (Koc be-

tween 0 and 50).

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Distribution among environ-

mental compartments

: Remarks: No relevant data found.

Propylene glycol:

Distribution among environ-

mental compartments

Koc: < 1

Method: Estimated.

Remarks: Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be

an important fate process.

Potential for mobility in soil is very high (Koc between 0 and

50).

naphthalene:

Distribution among environ-

mental compartments

Koc: 240 - 1300 Method: Measured

Remarks: Potential for mobility in soil is medium (Koc between

21 / 26





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150 and 500).

Balance:

Distribution among environmental compartments

Remarks: No relevant data found.

Other adverse effects

Components:

bifenthrin (ISO):

Results of PBT and vPvB assessment

: This substance has not been assessed for persistence, bioac-

cumulation and toxicity (PBT).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list

of substances that deplete the ozone layer.

sulfoxaflor (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.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

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.

Propylene glycol:

Results of PBT and vPvB

assessment

: This substance is not considered to be persistent, bioaccumu-

lating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list

of substances that deplete the ozone layer.

naphthalene:

Results of PBT and vPvB

assessment

: This substance has not been assessed for persistence, bioac-

cumulation and toxicity (PBT).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list

of substances that deplete the ozone layer.

Balance:

Results of PBT and vPvB

assessment

: This substance has not been assessed for persistence, bioac-

cumulation 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 regu-

lations.

If the material as supplied becomes a waste, follow all appli-

cable regional, national and local laws.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 2902

Proper shipping name : PESTICIDE, LIQUID, TOXIC, N.O.S.

(Bifenthrin)

Class : 6.1
Packing group : III
Labels : 6.1

IATA-DGR

UN/ID No. : UN 2902

Proper shipping name : Pesticide, liquid, toxic, n.o.s.

(Bifenthrin)

Class : 6.1
Packing group : III
Labels : Toxic
Packing instruction (cargo : 663

aircraft)

Packing instruction (passen: 655

ger aircraft)

IMDG-Code

UN number : UN 2902

Proper shipping name : PESTICIDE, LIQUID, TOXIC, N.O.S.

(Bifenthrin)

Class : 6.1
Packing group : III
Labels : 6.1
EmS Code : F-A, S-A





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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

UN/ID/NA number : UN 2902

Proper shipping name : Pesticides, liquid, toxic, n.o.s.

(Bifenthrin)

Class : 6.1
Packing group : III
Labels : TOXIC
ERG Code : 151
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 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 : Flammable (gases, aerosols, liquids, or solids)

Acute toxicity (any route of exposure)

Carcinogenicity

Specific target organ toxicity (single or repeated exposure)

Aspiration hazard

SARA 313 : The following components are subject to reporting levels es-

tablished by SARA Title III, Section 313:

bifenthrin (ISO) 82657-04-3 >= 10 - < 20 %

naphthalene 91-20-3 >= 0.1 - < 1 %

US State Regulations

Pennsylvania Right To Know

Solvent naphtha (petroleum), heavy arom.; Kerosine — un- 64742-94-5

specified

Propylene glycol 57-55-6

California Prop. 65

WARNING: This product can expose you to chemicals including naphthalene, sulphuric acid, formaldehyde, ethylene oxide, propylene oxide, 1,4-dioxane, acetaldehyde, which is/are known to the State of California to cause cancer, and

ethylene oxide, 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.





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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 : 62719-749

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:

WARNING

May be fatal 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)
Corteva OEL : Corteva Occupational Exposure Limit
Dow IHG : Dow Industrial Hygiene Guideline

OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Lim-

its for Air Contaminants

US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)

ACGIH / TWA : 8-hour, time-weighted average
Corteva OEL / STEL : Short term exposure limit
Corteva OEL / TWA : Time weighted average
Dow IHG / STEL : Short term exposure limit
Dow IHG / TWA : Time weighted average
OSHA Z-1 / TWA : 8-hour time weighted average

US WEEL / TWA : 8-hr TWA

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





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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; 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 : 01/21/2022

Product code: GF-3971

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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