

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



BRIGADE® 100 EC insecticide

Version	Revision Date:	SDS Number:	Date of last issue: -
1.3	12/13/2024	50000361	Date of first issue: 11/16/2017

SECTION 1. IDENTIFICATION

Product identifier

Product name BRIGADE® 100 EC insecticide

Other means of identification

Product code 50000361

Recommended use of the chemical and restrictions on use

Recommended use Can be used as insecticide only.

Restrictions on use Use as recommended by the label.

Manufacturer or supplier's details

Manufacturer FMC Corporation
2929 WALNUT ST
PHILADELPHIA PA 19104
USA
(215) 299-6000
SDS-Info@fmc.com

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)

Flammable liquids : Category 3

Acute toxicity (Oral) : Category 4

Acute toxicity (Inhalation) : Category 4

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Acute toxicity (Dermal)	: Category 4
Serious eye damage	: Category 1
Skin sensitization	: Category 1
Carcinogenicity	: Category 2
Specific target organ toxicity - single exposure	: Category 1
Specific target organ toxicity - single exposure	: Category 3 (Respiratory system, Central nervous system)
Specific target organ toxicity - repeated exposure	: Category 1
Aspiration hazard	: Category 1

GHS label elements

Hazard pictograms :    

Signal Word : DANGER

Hazard Statements : H226 Flammable liquid and vapor.
H302 + H312 + H332 Harmful if swallowed, in contact with skin or if inhaled.
H304 May be fatal if swallowed and enters airways.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.
H351 Suspected of causing cancer.
H370 Causes damage to organs.
H372 Causes damage to organs through prolonged or repeated exposure.

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.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.

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P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe mist or vapors.
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.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P307 + P311 IF exposed: Call a POISON CENTER or doctor/ physician.
P331 Do NOT induce vomiting.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-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

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
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Bifenthrin	82657-04-3	11
Solvent naphtha (petroleum), light arom.; Low boiling point naphtha - unspecified	64742-95-6	$\geq 70 - < 90$
calcium bis(dodecylbenzenesulphonate), branched	70528-83-5	$\geq 1 - < 5$

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.
Symptoms of poisoning may appear several hours later.
Do not leave the victim unattended.
- If inhaled : Consult a physician after significant exposure.
If unconscious, place in recovery position and seek medical advice.
- In case of skin contact : Wash off with soap and water.
If symptoms persist, call a physician.
Wash contaminated clothing before re-use.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Never give anything by mouth to an unconscious person.
Rinse mouth with water.
Keep respiratory tract clear.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
If symptoms persist, call a physician.
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : Swallowing or inhaling may result in sudden shortness of breath, coughing, nausea and or abdominal pain.
Exposure to skin may result in mild symptoms include itching, hives or rash, and skin redness. More severe symptoms include sneezing, itchy watery eyes, and difficulty breathing.
Contact with skin may cause tingling, itching, burning, or numbness at the site of contact. Inhalation may irritate the nose, throat, and lungs. Swallowing large quantities may result in throat irritation, nausea, abdominal pain, and vomiting.

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Exposure may result in neurotoxicity with symptoms including tremors, impaired gait, and excessive salivation. Tremors may disappear with continued exposure.
Harmful if swallowed, in contact with skin or if inhaled.
May be fatal if swallowed and enters airways.
May cause an allergic skin reaction.
Causes serious eye damage.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Suspected of causing cancer.
Causes damage to organs.
Causes damage to organs through prolonged or repeated exposure.

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.

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

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

Hazardous combustion products : Fire may produce irritating, corrosive and/or toxic gases.
Carbon oxides
Fluorinated compounds
Chlorinated compounds
Hydrogen chloride
Hydrogen fluoride

Specific extinguishing methods : Remove undamaged containers from fire area if it is safe to do so.
Use a water spray to cool fully closed containers.

Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
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.

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SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Remove all sources of ignition.
Evacuate personnel to safe areas.
Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
If it can be safely done, stop the leak.
Do not touch or walk through the spilled material.
- 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 : Never return spills in original containers for re-use.
Collect as much of the spill as possible with a suitable absorbent material.
Pick up and transfer to properly labeled containers.
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material.
Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors).
Keep away from open flames, hot surfaces and sources of ignition.
- Advice on safe handling : Avoid formation of aerosol.
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.
Take precautionary measures against static discharges.
Provide sufficient air exchange and/or exhaust in work rooms.
Open drum carefully as content may be under pressure.
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 be employed in any process in which this mixture is being used.
- Conditions for safe storage : No smoking.
Keep container tightly closed in a dry and well-ventilated

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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.

Further information on storage stability : No decomposition if stored and applied as directed.

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), light arom.; Low boiling point naphtha -unspecified	64742-95-6	TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
		TWA	400 ppm 1,600 mg/m3	OSHA P0

Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

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
Face-shield

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.

Hygiene measures

: Avoid contact with skin, eyes and clothing.
Provide adequate ventilation.
Do not inhale aerosol.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid
Form	: suspension
Color	: light brown
Odor	: aromatic
Odor Threshold	: No data available
pH	: No data available
Melting point/freezing point	: No data available
Initial boiling point and boiling range	: No data available
Flash point	: 104 °F / 40 °C Method: closed cup
Evaporation rate	: No data available
Flammability (liquids)	: Sustains combustion
Self-ignition	: 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
Relative density	: No data available
Density	: 7.61 lb/gal 0.913 g/cm ³
Bulk density	: No data available

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Solubility(ies)	
Water solubility	: emulsifiable
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	: No data available
Viscosity, kinematic	: No data available
Explosive properties	: Not explosive
Oxidizing properties	: Non-oxidizing
Molecular weight	: Not applicable
Particle size	: 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	: Vapors may form explosive mixture with air. No decomposition if stored and applied as directed.
Conditions to avoid	: Avoid extreme temperatures. Heat, flames and sparks.
Incompatible materials	: Avoid strong acids, bases, and oxidizers.
Hazardous decomposition products	: No decomposition if stored and applied as directed.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if swallowed, in contact with skin or if inhaled.

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Product:

Acute oral toxicity	: LD50 (Rat): 520 mg/kg Assessment: The component/mixture is moderately toxic after single ingestion.
Acute inhalation toxicity	: LC50 (Rat): > 5.2 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The component/mixture is minimally toxic after short term inhalation.
Acute dermal toxicity	: LD50 (Rabbit): > 2,000 mg/kg Assessment: The component/mixture is minimally toxic after single contact with skin.

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

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Acute oral toxicity	: LD50 (Rat, female): 3,492 mg/kg Method: OECD Test Guideline 401 LD50 (Rat, male): 6,984 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	: LC50 (Rat, male and female): > 6.193 mg/l Exposure time: 4 h Test atmosphere: vapor Assessment: The substance or mixture has no acute inhalation toxicity Remarks: no mortality
Acute dermal toxicity	: LD50 (Rabbit, male and female): > 3,160 mg/kg

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Assessment: The component/mixture is minimally toxic after single contact with skin.

calcium bis(dodecylbenzenesulphonate), branched:

Acute oral toxicity : Acute toxicity estimate: 3,333 mg/kg

Acute dermal toxicity : Acute toxicity estimate: 1,470 mg/kg

Skin corrosion/irritation

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

Product:

Species : Rabbit
Assessment : Causes mild skin irritation.
Result : Mild skin irritant

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

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Species : Rabbit
Method : OECD Test Guideline 404
Result : Mild skin irritation

calcium bis(dodecylbenzenesulphonate), branched:

Result : Skin irritation

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Species : Rabbit
Result : Irreversible effects on the eye
Assessment : Risk of serious damage to eyes.

Components:

Bifenthrin:

Species : Rabbit

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

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Species	:	Rabbit
Result	:	No eye irritation

calcium bis(dodecylbenzenesulphonate), branched:

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:

Species	:	Guinea pig
Assessment	:	May cause sensitization by skin contact.
Result	:	Causes 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

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Test Type	:	Maximization Test
Routes of exposure	:	Skin contact
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
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: gene mutation test Test system: Chinese hamster ovary cells
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Metabolic activation: with and without metabolic activation
Result: negative

Test Type: reverse mutation assay
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

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

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Genotoxicity in vitro : Test Type: in vitro DNA damage and/or repair study
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Result: negative

Test Type: reverse mutation assay
Metabolic activation: with and without metabolic activation
Result: negative

Genotoxicity in vivo : Test Type: Bone marrow chromosome aberration.
Species: Rat (male and female)
Application Route: Inhalation
Result: negative

Carcinogenicity

Suspected of causing cancer.

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

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Result : positive
Symptoms : malignant tumors

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

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
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

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animal experiments.

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Effects on fertility : Test Type: Three-generation study
Species: Rat
Application Route: inhalation (vapor)
Fertility: NOAEC Mating/Fertility: 7.5 mg/l
Result: negative
Remarks: Based on data from similar materials

Effects on fetal development : Species: Mouse
Application Route: inhalation (vapor)
General Toxicity Maternal: LOAEC: 500 part per million
Symptoms: Maternal effects.

STOT-single exposure

May cause respiratory irritation.
May cause drowsiness or dizziness.
Causes damage to organs.

Product:

Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.

Components:

Bifenthrin:

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

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Assessment : May cause respiratory irritation., May cause drowsiness or dizziness.

STOT-repeated exposure

Causes damage to organs through prolonged or repeated exposure.

Product:

Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Components:

Bifenthrin:

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

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Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

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

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

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Species : Rat, male and female
NOAEC : 0.8 - 0.9 mg/l
Application Route : Inhalation
Test atmosphere : vapor
Remarks : Based on data from similar materials

Species : Rat, male
NOAEL : 600 mg/kg
Application Route : Oral
Remarks : Based on data from similar materials

Aspiration toxicity

May be fatal if swallowed and enters airways.

Product:

May be fatal if swallowed and enters airways.

Components:

Bifenthrin:

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

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

May be fatal if swallowed and enters airways.

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Further information

Product:

Remarks : Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.
Concentrations substantially above the TLV value may cause narcotic effects.
Solvents may degrease the skin.

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

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BRIGADE® 100 EC insecticide

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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)): 0.1 - 0.35 µg/bee
Exposure time: 24 h
End point: Acute oral toxicity
Method: OECD Test Guideline 213

LD50 (*Apis mellifera* (bees)): 0.1 - 0.3 µg/bee
Exposure time: 24 h
End point: Acute contact toxicity
Method: OECD Test Guideline 214

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Toxicity to fish

: NOEC (*Oncorhynchus mykiss* (rainbow trout)): 4.5 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
Remarks: Based on data from similar materials

LL50 (*Pimephales promelas* (fathead minnow)): 8.2 mg/l
Exposure time: 96 h
Test Type: semi-static test
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates

: EL50 (*Daphnia magna* (Water flea)): 4.5 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants

: EL50 (*Pseudokirchneriella subcapitata* (microalgae)): 3.1 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

Toxicity to fish (Chronic tox-

: NOELR (*Pimephales promelas* (fathead minnow)): 2.6 mg/l

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Exposure time: 14 d
Method: OECD Test Guideline 204
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOELR (Daphnia magna (Water flea)): 2.6 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50 (Tetrahymena pyriformis): 15.41 mg/l
Exposure time: 40 h
Test Type: Growth inhibition
Remarks: The value is given based on a SAR/AAR approach using OECD Toolbox, DEREK, VEGA QSAR models (CAESAR models), etc.

Ecotoxicology Assessment

Acute aquatic toxicity : Toxic to aquatic life.

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

calcium bis(dodecylbenzenesulphonate), branched:

Toxicity to fish : LC50 (Fish): > 1 - 10 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1 - 10 mg/l
Exposure time: 48 h
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : EC50 (algae): > 1 - 10 mg/l
Exposure time: 72 h
Remarks: Based on data from similar materials

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

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Biodegradability : Concentration: 49.2 mg/l
Result: Inherently biodegradable.
Biodegradation: 77.05 %

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Exposure time: 28 d
Method: OECD Test Guideline 301F

calcium bis(dodecylbenzenesulphonate), branched:

Biodegradability : Result: Readily biodegradable.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: No data available

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.
See section 9 for octanol-water partition coefficient.

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

calcium bis(dodecylbenzenesulphonate), branched:

Bioaccumulation : Bioconcentration factor (BCF): 1
Remarks: Bioaccumulation is unlikely.

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.

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Very toxic to aquatic life with long lasting effects.

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.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 1993
Proper shipping name : FLAMMABLE LIQUID, N.O.S.
(Aromatic hydrocarbons, C10, Bifenthrin)
Class : 3
Packing group : III
Labels : 3
Environmentally hazardous : yes

IATA-DGR

UN/ID No. : UN 1993
Proper shipping name : Flammable liquid, n.o.s.
(Aromatic hydrocarbons, C10, Bifenthrin)
Class : 3
Packing group : III
Labels : Flammable Liquids
Packing instruction (cargo aircraft) : 366
Packing instruction (passenger aircraft) : 355

IMDG-Code

UN number : UN 1993
Proper shipping name : FLAMMABLE LIQUID, N.O.S.
(Aromatic hydrocarbons, C10, Bifenthrin)
Class : 3
Packing group : III
Labels : 3
EmS Code : F-E, S-E
Marine pollutant : yes

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 Road

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UN/ID/NA number : UN 1993
Proper shipping name : Flammable liquids, n.o.s.
(Aromatic hydrocarbons, C10, Bifenthrin)
Class : 3
Packing group : III
Labels : FLAMMABLE LIQUID
ERG Code : 128
Marine pollutant : yes

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

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
butan-1-ol	71-36-3	100	100 (F003)

SARA 304 Extremely Hazardous Substances Reportable Quantity

Listed substances in the product are at low enough levels to not be expected to exceed the 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 : Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Respiratory or skin sensitization
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)
Aspiration hazard
Serious eye damage or eye irritation

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

Bifenthrin 82657-04-3 >= 10 - < 20 %

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).

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Clean Water Act

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

propylene oxide	75-56-9	>= 0 - < 0.1 %
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The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

propylene oxide	75-56-9	>= 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

ethylene oxide	75-21-8
propylene oxide	75-56-9

Pennsylvania Right To Know

Solvent naphtha (petroleum), light arom.; Low boiling point	64742-95-6
naphtha -unspecified	
Bifenthrin	82657-04-3
butan-1-ol	71-36-3

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including ethylene oxide, propylene oxide, 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:

TCSI	: On the inventory, or in compliance with the inventory
TSCA	: Product contains substance(s) not listed on TSCA inventory.
AIIC	: Not in compliance with the inventory
DSL	: This product contains the following components that are not on the Canadian DSL nor NDSL. Bifenthrin
ENCS	: Not in compliance with the inventory
ISHL	: Not in compliance with the inventory

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KECI	: On the inventory, or in compliance with the inventory
PICCS	: Not in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
NZIoC	: Not in compliance with the inventory
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 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:

DANGER

Corrosive to eyes, Harmful if swallowed, Harmful if inhaled, Harmful if absorbed through the skin., Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals., This pesticide is extremely toxic to fish and aquatic invertebrates.

SECTION 16. OTHER INFORMATION

Further information

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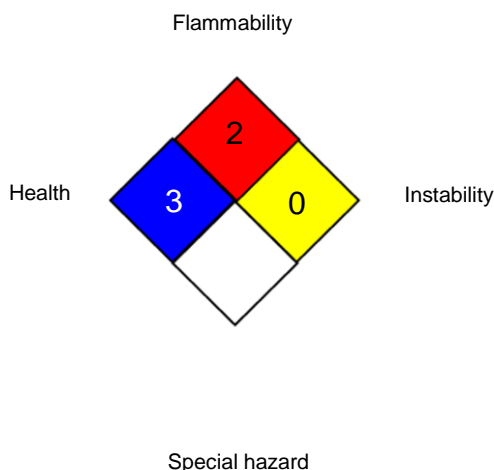
Version
1.3

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12/13/2024

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NFPA 704:



0 No health threat, 1 Slightly Hazardous, 2 Hazardous, 3 Extreme danger, 4 Deadly

HMIS® IV:

HEALTH	*	4
FLAMMABILITY		2
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

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
OSHA P0 : USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
ACGIH / TWA : 8-hour, time-weighted average
OSHA P0 / TWA : 8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumu-

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lative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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End of Material Safety Data Sheet