

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version 1.1	Revision Date: 12/21/2023	SDS Number: 50001766	Date of last issue: - Date of first issue: 05/05/2020
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SECTION 1. IDENTIFICATION

Product identifier

Product name BRIGADE® 2EC Insecticide/Miticide

Other means of identification

Product code 50001766

Chemical nature Mixture

Product Registration Number PCP #31396

Recommended use of the chemical and restrictions on use

Recommended use Can be used as insecticide/miticide

Restrictions on use Use as recommended by the label.

Details of the supplier of the safety data sheet

Manufacturer

FMC of Canada Ltd
6755 Mississauga Road, Suite 204
Mississauga, ON L5N 7Y2
Canada
Phone (AgHotline): 1-833-FMC-PPAC (1-833-362-7722),
Web: <https://ag.fmc.com/ca/en>
SDS-Info@fmc.com

Supplier Address

FMC of Canada Limited
6755 Mississauga Road, Suite 204
Mississauga, ON L5N 7Y2
Canada

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 Hazardous Products Regulations

Flammable liquids : Category 3

SAFETY DATA SHEET

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BRIGADE® 2EC Insecticide/Miticide

Version 1.1	Revision Date: 12/21/2023	SDS Number: 50001766	Date of last issue: - Date of first issue: 05/05/2020
----------------	------------------------------	-------------------------	--

Acute toxicity (Oral)	:	Category 3
Acute toxicity (Inhalation)	:	Category 4
Skin sensitization	:	Category 1
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. H301 Toxic if swallowed. H304 May be fatal if swallowed and enters airways. H317 May cause an allergic skin reaction. H332 Harmful if inhaled. 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, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 Keep container tightly closed. P240 Ground and bond container and receiving equipment. P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment. P242 Use non-sparking tools. P243 Take action to prevent static discharges. P260 Do not breathe mist or vapors. P264 Wash skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product.

SAFETY DATA SHEET

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BRIGADE® 2EC Insecticide/Miticide

Version
1.1

Revision Date:
12/21/2023

SDS Number:
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Date of last issue: -
Date of first issue: 05/05/2020

P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:

P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
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 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor.
P331 Do NOT induce vomiting.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 + P364 Take off contaminated clothing and wash it 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

Chemical nature : Mixture

Components

Chemical name	Common Name/Synonym	CAS-No.	Concentration (% w/w)
Bifenthrin	Bifenthrin	82657-04-3	25.1
Solvent naphtha (petroleum), light arom.; Low boiling point naphtha - unspecified	Solvent naphtha (petroleum), light arom.; Low boiling point naphtha - unspecified	64742-95-6	>= 60 - < 80 *
Distillates (petroleum),	Distillates (pe-	64742-56-9	>= 5 - < 10 *

SAFETY DATA SHEET

according to the Hazardous Products Regulations



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solvent-dewaxed light paraffinic; Baseoil — unspecified

troleum), solvent-dewaxed light paraffinic; Baseoil — unspecified

* Actual concentration or concentration range is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Symptoms of poisoning may appear several hours later.
Do not leave the victim unattended.
- If inhaled : Move to fresh air.
If not breathing, give artificial respiration.
Consult a physician after significant exposure.
If unconscious, place in recovery position and seek medical advice.
- In case of skin contact : If on clothes, remove clothes.
Wash off immediately with plenty of water for at least 15 minutes.
Get medical attention if irritation develops and persists.
- In case of eye contact : Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : Toxic if swallowed.
May be fatal if swallowed and enters airways.
May cause an allergic skin reaction.
Harmful if inhaled.
May cause respiratory irritation.
May cause drowsiness or dizziness.
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

SAFETY DATA SHEET

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

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.
For safety reasons in case of fire, cans should be stored separately in closed containments.
Use a water spray to cool fully closed containers.

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.
Remove all sources of ignition.
Evacuate personnel to safe areas.
Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
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

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version
1.1

Revision Date:
12/21/2023

SDS Number:
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Date of last issue: -
Date of first issue: 05/05/2020

respective authorities.

- Methods and materials for containment and cleaning up : 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).

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. 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 : Prevent unauthorized access. No smoking. 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.
- 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 parame- ters / Permissible concentration	Basis

SAFETY DATA SHEET

according to the Hazardous Products Regulations



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Version
1.1

Revision Date:
12/21/2023

SDS Number:
50001766

Date of last issue: -
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Distillates (petroleum), solvent-dewaxed light paraffinic; Baseoil — unspecified	64742-56-9	TWA (Mist)	5 mg/m ³	CA AB OEL
		STEL (Mist)	10 mg/m ³	CA AB OEL
		TWAEV (Mist)	5 mg/m ³	CA QC OEL
		STEV (Mist)	10 mg/m ³	CA QC OEL
		TWA (Mist)	1 mg/m ³	CA BC OEL
		TWA (Inhalable particulate matter)	5 mg/m ³	ACGIH

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
- 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.
Ensure that eye flushing systems and safety showers are located close to the working place.
Wear suitable protective equipment.
- Hygiene measures : Avoid contact with skin, eyes and clothing.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and immediately after handling the product.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : liquid

Color : amber

Odor : aromatic

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Version 1.1	Revision Date: 12/21/2023	SDS Number: 50001766	Date of last issue: - Date of first issue: 05/05/2020
----------------	------------------------------	-------------------------	--

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	: 44 - 46 °C
Evaporation rate	: No data available
Flammability (liquids)	: Sustains combustion
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	: 0.94 - 0.96 (20 °C)
Density	: 7.8 - 8.0 lb/gal
Bulk density	: No data available
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	: No data available

SAFETY DATA SHEET

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BRIGADE® 2EC Insecticide/Miticide

Version 1.1	Revision Date: 12/21/2023	SDS Number: 50001766	Date of last issue: - Date of first issue: 05/05/2020
----------------	------------------------------	-------------------------	--

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.
Vapors may form explosive mixture with air.

Hazardous decomposition products : No decomposition if stored and applied as directed.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Toxic if swallowed.

Harmful if inhaled.

Product:

Acute oral toxicity : LD50 (Rat): 262 mg/kg

Acute inhalation toxicity : LC50 (Rat): 1.86 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 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

SAFETY DATA SHEET

according to the Hazardous Products Regulations



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Version
1.1

Revision Date:
12/21/2023

SDS Number:
50001766

Date of last issue: -
Date of first issue: 05/05/2020

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

Distillates (petroleum), solvent-dewaxed light paraffinic; Baseoil — unspecified:

- Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401
Remarks: Based on data from similar materials
- Acute inhalation toxicity : LC50 (Rat, male and female): > 5.53 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: Based on data from similar materials
- Acute dermal toxicity : LD50 (Rabbit, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 402
Remarks: Based on data from similar materials

Skin corrosion/irritation

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

Product:

- Species : Rabbit
Assessment : Not classified as irritant
Result : No skin irritation
- Remarks : May cause skin irritation and/or dermatitis.

Components:

Bifenthrin:

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

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version 1.1	Revision Date: 12/21/2023	SDS Number: 50001766	Date of last issue: - Date of first issue: 05/05/2020
----------------	------------------------------	-------------------------	--

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

Distillates (petroleum), solvent-dewaxed light paraffinic; Baseoil — unspecified:

Species	:	Rabbit
Result	:	No skin irritation
Remarks	:	Based on data from similar materials

Serious eye damage/eye irritation

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

Product:

Species	:	Rabbit
Result	:	slight irritation
Assessment	:	Not classified as irritant
Remarks	:	Vapors may cause irritation to the eyes, respiratory system and the skin.

Components:

Bifenthrin:

Species	:	Rabbit
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

Distillates (petroleum), solvent-dewaxed light paraffinic; Baseoil — unspecified:

Species	:	Rabbit
Result	:	No eye irritation
Method	:	OECD Test Guideline 405
Remarks	:	Based on data from similar materials

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version
1.1

Revision Date:
12/21/2023

SDS Number:
50001766

Date of last issue: -
Date of first issue: 05/05/2020

Respiratory sensitization

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

Product:

Assessment : May cause sensitization by skin contact.
Result : May cause sensitization by skin contact.

Remarks : 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.

Distillates (petroleum), solvent-dewaxed light paraffinic; Baseoil — unspecified:

Test Type : Buehler Test
Routes of exposure : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Not a skin sensitizer.
Remarks : Based on data from similar materials

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
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

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version 1.1	Revision Date: 12/21/2023	SDS Number: 50001766	Date of last issue: - Date of first issue: 05/05/2020
----------------	------------------------------	-------------------------	--

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

Distillates (petroleum), solvent-dewaxed light paraffinic; Baseoil — unspecified:

Genotoxicity in vitro : Test Type: reverse mutation assay
Metabolic activation: Metabolic activation
Method: OECD Test Guideline 471
Result: positive
Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (male and female)
Application Route: Intraperitoneal injection
Method: OECD Test Guideline 474
Result: negative
Remarks: Based on data from similar materials

Carcinogenicity

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

Product:

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version 1.1	Revision Date: 12/21/2023	SDS Number: 50001766	Date of last issue: - Date of first issue: 05/05/2020
----------------	------------------------------	-------------------------	--

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

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

Carcinogenicity - Assessment	:	Limited evidence of carcinogenicity in animal studies
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Distillates (petroleum), solvent-dewaxed light paraffinic; Baseoil — unspecified:

Species	:	Mouse, female
Application Route	:	Dermal
Exposure time	:	78 weeks
Result	:	negative
Remarks	:	Based on data from similar materials

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

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version
1.1

Revision Date:
12/21/2023

SDS Number:
50001766

Date of last issue: -
Date of first issue: 05/05/2020

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
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 : Shown to produce significant health effects in animals at concentrations of 0.02 mg/l/6h/d or less.

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version
1.1

Revision Date:
12/21/2023

SDS Number:
50001766

Date of last issue: -
Date of first issue: 05/05/2020

Components:

Bifenthrin:

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

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.

Components:

Bifenthrin:

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

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

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

May be fatal if swallowed and enters airways.

Distillates (petroleum), solvent-dewaxed light paraffinic; Baseoil — unspecified:

May be fatal if swallowed and enters airways.

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

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version
1.1

Revision Date:
12/21/2023

SDS Number:
50001766

Date of last issue: -
Date of first issue: 05/05/2020

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 toxicity) : NOEC (Daphnia magna (Water flea)): 0.0013 µg/l
Exposure time: 21 d

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

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version 1.1	Revision Date: 12/21/2023	SDS Number: 50001766	Date of last issue: - Date of first issue: 05/05/2020
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Test Type: static test
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

- Toxicity to fish (Chronic toxicity) : NOELR (Pimephales promelas (fathead minnow)): 2.6 mg/l
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.

Distillates (petroleum), solvent-dewaxed light paraffinic; Baseoil — unspecified:

- Toxicity to fish : LL50 (Pimephales promelas (fathead minnow)): > 100 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): > 10,000 mg/l
Exposure time: 24 h
Test Type: static test
Method: OECD Test Guideline 202
- Toxicity to algae/aquatic plants : NOELR (Pseudokirchneriella subcapitata (green algae)): 100 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
- Toxicity to fish (Chronic toxicity) : NOELR (Oncorhynchus mykiss (rainbow trout)): 1,000 mg/l
Exposure time: 14 d
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : (Daphnia magna (Water flea)): 10 mg/l
Exposure time: 21 d
Test Type: semi-static test
Method: OECD Test Guideline 211
- Toxicity to microorganisms : NOEL: > 1.93 mg/l
Exposure time: 0.16 h

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version
1.1

Revision Date:
12/21/2023

SDS Number:
50001766

Date of last issue: -
Date of first issue: 05/05/2020

Persistence and degradability

Components:

Bifenthrin:

Biodegradability : Result: Not readily biodegradable.

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

Biodegradability : Concentration: 49.2 mg/l
Result: Inherently biodegradable.
Biodegradation: 77.05 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Distillates (petroleum), solvent-dewaxed light paraffinic; Baseoil — unspecified:

Biodegradability : Result: Inherently biodegradable.
Biodegradation: 31 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

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.
See section 9 for octanol-water partition coefficient.

Partition coefficient: n-octanol/water : log Pow: 6

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:

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.

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version 1.1	Revision Date: 12/21/2023	SDS Number: 50001766	Date of last issue: - Date of first issue: 05/05/2020
----------------	------------------------------	-------------------------	--

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.
Do not burn, or use a cutting torch on, the empty drum.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

- UN number : UN 3351
Proper shipping name : PYRETHROID PESTICIDE, LIQUID, TOXIC, FLAMMABLE
(Bifenthrin, Aromatic hydrocarbons, C10)
Class : 6.1
Subsidiary risk : 3
Packing group : III
Labels : 6.1 (3)
Environmentally hazardous : yes

IATA-DGR

- UN/ID No. : UN 3351
Proper shipping name : Pyrethroid pesticide, liquid, toxic, flammable
(Bifenthrin, Aromatic hydrocarbons, C10)
Class : 6.1
Subsidiary risk : 3
Packing group : III
Labels : Toxic, Flammable Liquids
Packing instruction (cargo aircraft) : 663
Packing instruction (passenger aircraft) : 655
Environmentally hazardous : yes

IMDG-Code

- UN number : UN 3351
Proper shipping name : PYRETHROID PESTICIDE, LIQUID, TOXIC, FLAMMABLE
(Bifenthrin, Aromatic hydrocarbons, C10)
Class : 6.1
Subsidiary risk : 3
Packing group : III
Labels : 6.1 (3)
EmS Code : F-E, S-D

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version 1.1	Revision Date: 12/21/2023	SDS Number: 50001766	Date of last issue: - Date of first issue: 05/05/2020
----------------	------------------------------	-------------------------	--

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

TDG

UN number	: UN 3351
Proper shipping name	: PYRETHROID PESTICIDE, LIQUID, TOXIC, FLAMMABLE (Bifenthrin, Aromatic hydrocarbons, C10)
Class	: 6.1
Subsidiary risk	: 3
Packing group	: III
Labels	: 6.1 (3)
ERG Code	: 131
Marine pollutant	: yes
Remarks	: Display "inhalation hazard" mark on package in accordance with TDG 4.23.

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

NPRI Components	: Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified butan-1-ol Oxirane, methyl-, polymer with oxirane, mono(nonylphenyl) ether ethylene oxide propylene oxide
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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. 2-METHYLBIPHENYL-3-YLMETHYL (Z)-(1RS,3RS)-3-(2-CHLORO-3,3,3-TRIFLUOROPROP-1-ENYL)-2,2-DIMETHYLCYCLOPROPANE CARBOXYLATE
ENCS	: Not in compliance with the inventory
ISHL	: Not in compliance with the inventory

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version 1.1	Revision Date: 12/21/2023	SDS Number: 50001766	Date of last issue: - Date of first issue: 05/05/2020
----------------	------------------------------	-------------------------	--

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

Canadian lists

The following substance(s) is/are subject to a Significant New Activity Notification:
propylene oxide
75-56-9

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
CA AB OEL	: Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
CA BC OEL	: Canada. British Columbia OEL
CA QC OEL	: Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
ACGIH / TWA	: 8-hour, time-weighted average
CA AB OEL / TWA	: 8-hour Occupational exposure limit
CA AB OEL / STEL	: 15-minute occupational exposure limit
CA BC OEL / TWA	: 8-hour time weighted average
CA QC OEL / TWAEV	: Time-weighted average exposure value
CA QC OEL / STEV	: Short-term exposure value

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; 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; 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; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Develop-

SAFETY DATA SHEET

according to the Hazardous Products Regulations



BRIGADE® 2EC Insecticide/Miticide

Version
1.1

Revision Date:
12/21/2023

SDS Number:
50001766

Date of last issue: -
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ment; 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; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; 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; WHMIS - Workplace Hazardous Materials Information System

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End of Material Safety Data Sheet