

# SAFETY DATA SHEET



## Biflex™ insecticide

Version	Revision Date:	SDS Number:	Date of last issue: -
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### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Biflex™ insecticide

#### 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

Company : FMC Agro Philippines, Inc.

Address : Unit 10-A Six/NEO Bldg.,  
5th Avenue cor. 26th Street,  
1634 Bonifacio Global City, Taguig City  
Philippines

Telephone : +63279443400

Telefax : +63279443465

E-mail address : SDS-Info@fmc.com

National Poison Control Center : U.P. PGH, Padre Faura, Manila (+63) 2 8524 1078  
East Avenue, Quezon City (+63) 2 8928 0611  
Southern Philippines Medical Center (+63) 82 227 2731  
(formerly Davao Medical Center Davao City)

Emergency telephone : For leak, fire, spill or accident emergencies, call:  
+63) 2-395-3308 (CHEMTREC)  
Toll-free mobile enabled: 1800 1 322 0553 (CHEMTREC)

Medical emergency:  
All other countries: +1 651 / 632-6793 (Collect)

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### 2. HAZARDS IDENTIFICATION

#### GHS Classification

Acute toxicity (Oral) : Category 4

Skin corrosion/irritation : Category 2

Serious eye damage/eye irritation : Category 1

Carcinogenicity : Category 2

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Specific target organ toxicity - single exposure : Category 2 (Central nervous system)

Specific target organ toxicity - single exposure : Category 3 (Central nervous system)

Specific target organ toxicity - repeated exposure : Category 2 (Central nervous system)

Aspiration hazard : Category 1

Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1

### GHS label elements

Hazard pictograms :



Signal Word : DANGER

Hazard Statements : H302 Harmful if swallowed.  
H304 May be fatal if swallowed and enters airways.  
H315 Causes skin irritation.  
H318 Causes serious eye damage.  
H336 May cause drowsiness or dizziness.  
H351 Suspected of causing cancer.  
H371 May cause damage to organs (Central nervous system).  
H373 May cause damage to organs (Central nervous system) through prolonged or repeated exposure.  
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P260 Do not breathe 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.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
**Response:**  
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

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P302 + P352 IF ON SKIN: Wash with plenty of 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.  
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.  
P308 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor.  
P331 Do NOT induce vomiting.  
P332 + P313 If skin irritation occurs: Get medical advice/ attention.  
P362 + P364 Take off contaminated clothing and wash it before reuse.  
P391 Collect spillage.

### Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.  
P405 Store locked up.

### Disposal:

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

### Other hazards which do not result in classification

None known.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Components

Chemical name	CAS-No.	Concentration (% w/w)
Bifenthrin	82657-04-3	$\geq 2.5$ -< 10
calcium dodecylbenzenesulphonate	26264-06-2	$\geq 1$ -< 3
2-methylpropan-1-ol	78-83-1	$\geq 1$ -< 3
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified	64742-94-5	$\geq 70$ -< 90

## 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

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- advice.
- In case of skin contact : If skin irritation persists, call a physician.  
If on skin, rinse well with water.  
If on clothes, remove clothes.
- 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 : Clean mouth with water and drink afterwards plenty of water.  
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 : Harmful if swallowed.  
May be fatal if swallowed and enters airways.  
Causes skin irritation.  
Causes serious eye damage.  
May cause drowsiness or dizziness.  
Suspected of causing cancer.  
May cause damage to organs.  
May cause damage to organs through prolonged or repeated exposure.
- Notes to physician : Treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Dry chemical, CO<sub>2</sub>, 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 : Thermal decomposition can lead to release of irritating gases and vapors.  
Carbon oxides  
Sulfur oxides  
Halogenated compounds
- Specific extinguishing method : Collect contaminated fire extinguishing water separately. This

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ods 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.

### 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Ensure adequate ventilation.  
If it can be safely done, stop the leak.  
Do not touch or walk through the spilled material.

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

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

### 7. HANDLING AND STORAGE

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

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.  
Provide sufficient air exchange and/or exhaust in work rooms.  
To avoid spills during handling keep bottle on a metal tray.  
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Observe label precautions.  
Electrical installations / working materials must comply with the technological safety standards.

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

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### 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 — unspecified	64742-94-5	TWA	200 mg/m <sup>3</sup> (total hydrocarbon vapor)	ACGIH
2-methylpropan-1-ol	78-83-1	TWA	100 ppm 300 mg/m <sup>3</sup>	PH OEL
		TWA	50 ppm	ACGIH

#### Personal protective equipment

- Respiratory protection : In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.
- Hand protection  
Material : Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber.
- Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.
- Eye protection : Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- Hygiene measures : When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and at the end of workday.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Form : liquid
- Color : Light amber to yellow
- Odor : Mild fatty soap
- pH : 4.9 - 5.4

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Melting point/freezing point	: No data available
Boiling point/boiling range	: No data available
Flash point	: > 101.7 °C Method: closed cup
Vapor pressure	: No data available
Density	: 0.9203 g/cm <sup>3</sup> (22 °C)
Solubility(ies)	
Water solubility	: emulsifiable
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: Not applicable
Viscosity	
Viscosity, dynamic	: 6 mPa.s ( 22 °C)
Viscosity, kinematic	: No data available
Explosive properties	: Not explosive
Oxidizing properties	: Not applicable

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### 10. STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: No decomposition if stored and applied as directed.
Possibility of hazardous reactions	: No decomposition if stored and applied as directed.
Conditions to avoid	: Heat, flames and sparks.
Incompatible materials	: Strong acids Strong bases Strong oxidizing agents
Hazardous decomposition products	: Stable under recommended storage conditions.

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### 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

Harmful if swallowed.

#### Product:

Acute oral toxicity	: LD50 (Rat, male and female): 1,657 mg/kg
Acute inhalation toxicity	: LC50 (Rat, male and female): > 5.5 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	: LD50 (Rabbit, male and female): > 2,000 mg/kg

#### Components:

##### **Bifenthrin:**

Acute oral toxicity	: LD50 (Rat, male and female): 56.7 mg/kg Symptoms: Convulsions, Tremors, ataxia  LD50 (Mouse, female): 42.5 mg/kg Method: OPPTS 870.1100
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

##### **calcium dodecylbenzenesulphonate:**

Acute oral toxicity	: LD50 (Rat, male and female): 1,300 mg/kg Remarks: Based on data from similar materials
Acute inhalation toxicity	: Remarks: Not classified
Acute dermal toxicity	: LD50 (Rat, male and female): > 2000 milligram per kilogram Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity Remarks: Based on data from similar materials



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### 2-methylpropan-1-ol:

Acute oral toxicity	: LD50 (Rat): 3,350 mg/kg
Acute inhalation toxicity	: LC50 (Rat): > 18.18 mg/l Exposure time: 6 h Test atmosphere: vapor Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	: LD50 (Rabbit): 2,460 mg/kg

### Solvent naphtha (petroleum), heavy arom.; Kerosine — 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): > 5.28 mg/l Exposure time: 4 h Test atmosphere: vapor 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): > 2,000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity Remarks: Based on data from similar materials

### Skin corrosion/irritation

Causes skin irritation.

#### Product:

Species	: Rabbit
Method	: Draize Test
Result	: Skin irritation
Remarks	: May cause skin irritation and/or dermatitis.
Remarks	: Extremely corrosive and destructive to tissue.

#### Components:

##### Bifenthrin:

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

##### calcium dodecylbenzenesulphonate:

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

### 2-methylpropan-1-ol:

Species : Rabbit  
Result : Skin irritation

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

Species : Rabbit  
Result : No skin irritation

Assessment : Repeated exposure may cause skin dryness or cracking.

### Serious eye damage/eye irritation

Causes serious eye damage.

#### Product:

Species : Rabbit  
Result : Irreversible effects on the eye  
Method : Draize Test

Remarks : May cause irreversible eye damage.

#### Components:

##### **Bifenthrin:**

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

##### **calcium dodecylbenzenesulphonate:**

Species : Rabbit  
Result : Irreversible effects on the eye  
Method : OECD Test Guideline 405  
Remarks : Based on data from similar materials

Species : Rabbit  
Result : Irreversible effects on the eye  
Method : OECD Test Guideline 405

### 2-methylpropan-1-ol:

Species : Rabbit  
Result : Irreversible effects on the eye

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

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

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### Respiratory or skin sensitization

#### Skin sensitization

Not classified based on available information.

#### Respiratory sensitization

Not classified based on available information.

#### Product:

Test Type	:	Skin sensitization
Routes of exposure	:	Skin contact
Species	:	Guinea pig
Result	:	Not a skin sensitizer.

#### 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

##### calcium dodecylbenzenesulphonate:

Test Type	:	Maximization Test
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	Not a skin sensitizer.
Remarks	:	Based on data from similar materials

##### 2-methylpropan-1-ol:

Routes of exposure	:	Skin contact
Result	:	Not a skin sensitizer.

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

Test Type	:	Buehler Test
Species	:	Guinea pig
Result	:	Does not cause skin sensitization.
Remarks	:	Based on data from similar materials

### Germ cell mutagenicity

Not classified based on available information.

#### Components:

##### Bifenthrin:

Genotoxicity in vitro	:	Test Type: gene mutation test Test system: Chinese hamster ovary cells Metabolic activation: with and without metabolic activation
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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

### calcium dodecylbenzenesulphonate:

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

Genotoxicity in vivo : Test Type: chromosome aberration assay  
Species: Rat (male and female)  
Application Route: Oral  
Exposure time: 90 d  
Result: negative  
Remarks: Based on data from similar materials

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

### 2-methylpropan-1-ol:

Genotoxicity in vitro : Result: negative

Genotoxicity in vivo : Result: negative

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

Genotoxicity in vitro : Test Type: reverse mutation assay  
Result: negative  
Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: sister chromatid exchange assay  
Species: Mouse  
Application Route: Intraperitoneal injection  
Result: negative  
Remarks: Based on data from similar materials

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### 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
Result	:	positive
Symptoms	:	malignant tumors

##### **calcium dodecylbenzenesulphonate:**

Species	:	Rat, male and female
Application Route	:	Oral
Exposure time	:	720 d
NOAEL	:	250 mg/kg body weight
Result	:	negative
Remarks	:	Based on data from similar materials

Carcinogenicity - Assessment	:	Weight of evidence does not support classification as a carcinogen
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##### **Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

Species	:	Mouse
Application Route	:	Dermal
Exposure time	:	104 weeks
Result	:	negative
Remarks	:	Based on data from similar materials

Carcinogenicity - Assessment	:	Limited evidence of carcinogenicity in animal studies
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### Reproductive toxicity

Not classified based on available information.

#### 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

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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  
animal experiments.

### calcium dodecylbenzenesulphonate:

Effects on fertility : Test Type: Fertility/early embryonic development  
Species: Rat, male and female  
Application Route: Ingestion  
General Toxicity Parent: NOAEL: 400 mg/kg body weight  
Method: OECD Test Guideline 422  
Result: negative

Effects on fetal development : Test Type: reproductive and developmental toxicity study  
Species: Rat  
Application Route: Ingestion  
General Toxicity Maternal: NOAEL: 300 mg/kg body weight  
Developmental Toxicity: NOAEL: 600 mg/kg body weight  
Method: OECD Test Guideline 422  
Result: negative

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

### 2-methylpropan-1-ol:

Effects on fertility : Species: Rat  
Application Route: Inhalation  
Fertility: NOAEC Mating/Fertility: 7.5 mg/l

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

Effects on fertility : Test Type: Fertility

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Species: Rat, male and female  
Application Route: Oral  
Method: OECD Test Guideline 415  
Result: negative  
Remarks: Based on data from similar materials

Effects on fetal development : Test Type: reproductive and developmental toxicity study  
Species: Rat  
Application Route: Oral  
Method: OECD Test Guideline 414  
Result: negative  
Remarks: Based on data from similar materials

### STOT-single exposure

May cause drowsiness or dizziness.  
May cause damage to organs (Central nervous system).

#### Components:

##### 2-methylpropan-1-ol:

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

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

Assessment : May cause drowsiness or dizziness.

### STOT-repeated exposure

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

#### Components:

##### Bifenthrin:

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

### 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

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### calcium dodecylbenzenesulphonate:

Species	: Rat, male and female
NOAEL	: 85 mg/kg
LOAEL	: 145 mg/kg
Application Route	: Oral
Exposure time	: 9 Months
Remarks	: Based on data from similar materials

Species	: Rat, male
LOAEL	: 286 mg/kg
Application Route	: Skin contact
Exposure time	: 15 Days
Remarks	: Based on data from similar materials

Species	: Rat, male and female
NOAEL	: 100 mg/kg bw/day
LOAEL	: 200 mg/kg bw/day
Application Route	: Oral - gavage
Exposure time	: 28 - 54 Days
Method	: OECD Test Guideline 422
Remarks	: Based on data from similar materials

### 2-methylpropan-1-ol:

Species	: Rat
	: 1450 mg/kg
Application Route	: Oral

Species	: Rat
	: 7.5 mg/l
Application Route	: Inhalation

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

Species	: Rat, male and female
NOAEL	: 750 mg/kg
Application Route	: Oral - gavage
Exposure time	: 90 day
Remarks	: Based on data from similar materials

Species	: Rat, male and female
NOAEL	: 1 mg/l
LOAEL	: 0.5 mg/l
Application Route	: inhalation (vapor)
Exposure time	: 90 day
Symptoms	: Alpha-2u-globulin nephropathy

### Aspiration toxicity

May be fatal if swallowed and enters airways.



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### Components:

#### **Bifenthrin:**

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

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

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

### **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.
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## 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

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Toxicity to algae/aquatic plants	:	EC50 (algae): 0.822 mg/l Exposure time: 72 h
M-Factor (Acute aquatic toxicity)	:	1,000
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
M-Factor (Chronic aquatic toxicity)	:	100,000
Toxicity to soil dwelling organisms	:	LD50 (Eisenia fetida (earthworms)): > 16 mg/kg Exposure time: 14 d
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

### calcium dodecylbenzenesulphonate:

Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): 10 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 Remarks: Based on data from similar materials  LC50 (Pimephales promelas (fathead minnow)): 4.6 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)): 3.5 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 Remarks: Based on data from similar materials
Toxicity to algae/aquatic	:	NOEC (Pseudokirchneriella subcapitata (green algae)): 7.9

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plants	mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Based on data from similar materials  EC50 (Pseudokirchneriella subcapitata (green algae)): 65.4 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): 1.65 mg/l Exposure time: 21 d Remarks: Based on data from similar materials  NOEC (Daphnia magna (Water flea)): 1.18 mg/l Exposure time: 21 d Remarks: Based on data from similar materials
Toxicity to microorganisms	: EC50 (activated sludge): 500 mg/l Exposure time: 3 h Method: OECD Test Guideline 209
Toxicity to soil dwelling organisms	: LC50 (Eisenia fetida (earthworms)): 1,000 mg/kg Exposure time: 14 d Method: OECD Test Guideline 207
Toxicity to terrestrial organisms	: LD50 (Colinus virginianus (Bobwhite quail)): 1,356 mg/kg Exposure time: 14 d Method: OECD Test Guideline 223

### 2-methylpropan-1-ol:

Toxicity to fish	: LC50 : 1,430 mg/l Exposure time: 4 d
Toxicity to daphnia and other aquatic invertebrates	: EC50: 1,100 mg/l Exposure time: 48 h
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC: 20 mg/l Exposure time: 21 d
Toxicity to microorganisms	: EC50 (Anabaena flos-aquae (cyanobacterium)): 593 - 1,799 mg/l Exposure time: 72 h  IC50 (Natural microorganism): 1,000 mg/l Exposure time: 16 h

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

Toxicity to fish	: LL50 (Oncorhynchus mykiss (rainbow trout)): 2 - 5 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
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Remarks: water accommodated fractions (WAF)

Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): 1.4 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
Remarks: water accommodated fractions (WAF)

Toxicity to algae/aquatic plants : EL50 (Pseudokirchneriella subcapitata (green algae)): > 1 - 3 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Remarks: water accommodated fractions (WAF)

Toxicity to microorganisms : LL50 (Tetrahymena pyriformis): 677.9 mg/l  
Exposure time: 72 h  
Test Type: Growth inhibition

### 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

##### **calcium dodecylbenzenesulphonate:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301E

##### **2-methylpropan-1-ol:**

Biodegradability : Result: Readily biodegradable.

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

Biodegradability : Result: Inherently biodegradable.  
Biodegradation: 58.6 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F  
Remarks: Based on data from similar materials

### Bioaccumulative potential

#### Components:

##### **Bifenthrin:**

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)  
Bioconcentration factor (BCF): 1,709

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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 dodecylbenzenesulphonate:

Bioaccumulation : Species: Fish  
Bioconcentration factor (BCF): 70.79  
Method: QSAR

Partition coefficient: n-octanol/water : log Pow: 4.77 (25 °C)

### 2-methylpropan-1-ol:

Bioaccumulation : Remarks: No bioaccumulation is to be expected (log Pow <= 4).

Partition coefficient: n-octanol/water : Pow: 10 (25 °C)

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

Partition coefficient: n-octanol/water : log Pow: 1.99 - 18.02  
Method: QSAR

### Mobility in soil

#### Components:

#### **Bifenthrin:**

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

### 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.

## 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.

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

### 14. TRANSPORT INFORMATION

#### International Regulations

##### UNRTDG

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

##### IATA-DGR

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

##### IMDG-Code

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

#### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

#### 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.

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### 15. REGULATORY INFORMATION

#### Safety, health and environmental regulations/legislation specific for the substance or mixture

Priority Chemical List (PCL) : Not applicable

Chemical Control Order (CCO) : Not applicable

#### 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

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

### 16. OTHER INFORMATION

Revision Date : 2024/08/30

Date format : yyyy/mm/dd

#### Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

PH OEL : Philippines. Threshold Limit Values For Airborne Contaminants

ACGIH / TWA : 8-hour, time-weighted average

PH OEL / TWA : Threshold limit for airborne contaminants

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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 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; 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

### Disclaimer

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