SAFETY DATA SHEETS

This SDS packet was issued with item:

078942455

The safety data sheets (SDS) in this packet apply to the individual products listed below. Please refer to invoice for specific item number(s).

078942448 078942449 078942450 078942451 078942452 078942453 078942454 078942456 078942457

SAFETY DATA SHEET

FRONTLINE SHIELD (finished product)

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	10/28/2019	000000053639	Date of first issue: 10/28/2019

SECTION 1. IDENTIFICATION

Product name	:	FRONTLINE SHIELD (finished product)
Synonyms	:	Active ingredient: Fipronil, Permethrin, Pyriproxyfen

Manufacturer or supplier's details

Company name of supplier	:	Boehringer Ingelheim AH USA
Address	:	3239 Satellite Blvd Duluth, GA 30096
Telephone	:	1-888-637-4251
Prepared by	:	EHS-Services@Boehringer-Ingelheim.com
Emergency telephone number	:	Int. Emergency Telephone number: +1 703-527-3887 Chemtrec 24-hours

Recommended use of the chemical and restrictions on use

Recommended use	:	Pharmaceutical
Restrictions on use	:	Safety Data Sheet only for the professional user.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Flammable liquids	:	Category 4
Acute toxicity (Oral)	:	Category 4
Acute toxicity (Inhalation)	:	Category 4
Skin irritation	:	Category 2
Eye irritation	:	Category 2A
Skin sensitisation	:	Category 1
Reproductive toxicity	:	Category 1B
Specific target organ toxicity - single exposure	:	Category 3 (Respiratory system)
Specific target organ toxicity - repeated exposure	:	Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements :
H227 Combustible liquid.
H302 + H332 Harmful if swallowed or if inhaled.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H360D May damage the unborn child.
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.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of soap and 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 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash 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

This drug is not subject to the labelling requirements under the Globally Harmonized System (GHS)
The pharmacological effect of the medicament has to be considered (see package leaflet).

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : organic

Hazardous components

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate	52645-53-1	>= 50 - < 70
1-methyl-2-pyrrolidone	872-50-4	>= 30 - < 50
Fipronil	120068-37-3	>= 5 - < 10

SECTION 4. FIRST AID MEASURES

General advice : In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
First Aid responders should pay attention to self-protection and use the recommended protective clothing
Remove from exposure, lie down.
Take off immediately all contaminated clothing.
Victim to lie down in the recovery position, cover and keep him warm.

If inhaled : Move to fresh air.

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

In case of eye contact : Rinse immediately with plenty of water for at least 15 minutes.
Keep eye wide open while rinsing.

If swallowed : Rinse mouth.
Drink plenty of water.

Most important symptoms and effects, both acute and delayed : Harmful if swallowed or if inhaled.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.

May cause respiratory irritation.
May damage the unborn child.
Causes damage to organs through prolonged or repeated exposure.

Notes to physician : Observe the summary of product characteristics of proprietary medicinal products
Symptomatic treatment (decontamination, vital functions).

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Water
Dry chemical
Foam
Carbon dioxide (CO2)

Specific hazards during firefighting : In case of fire and/or explosion do not breathe fumes.
Can be released in case of fire:
Carbon oxides

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
complete suit protecting against chemicals

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Wear personal protective equipment.
Ensure adequate ventilation.
High risk of slipping due to leakage/spillage of product.

Environmental precautions : Do not flush into surface water or sanitary sewer system.

Methods and materials for containment and cleaning up : Wear personal protective equipment.
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Pick up and transfer to properly labelled containers.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : Keep away from heat and sources of ignition.

Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms.

Conditions for safe storage : Keep in a well-ventilated place.
Protect from heat and direct sunlight.
Jointless smooth floor

Materials to avoid : Keep away from food, drink and animal feedingstuffs. Observe joint storage prohibition.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate	52645-53-1	OEL-8h	0.03 mg/m3	Sanofi OEL
Fipronil	120068-37-3	OEL-8h	0.001 mg/m3	Sanofi OEL
2,6-di-tert-butyl-p-cresol	128-37-0	TWA (Inhalable fraction and vapor)	2 mg/m3	ACGIH
		TWA	10 mg/m3	NIOSH REL
		TWA	10 mg/m3	OSHA P0
1-methyl-2-pyrrolidone	872-50-4	TWA	10 ppm	US WEEL

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
1-methyl-2-pyrrolidone	872-50-4	5-Hydroxy-N-methyl-2-pyrrolidone	Urine	End of shift (As soon as possible after exposure ceases)	100 mg/l	ACGIH BEI

Engineering measures : Local exhaust

Emergency sprinkling nozzle

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.
Breathing apparatus needed only when aerosol or mist is formed.
Respiratory protection
ABEK2

Use NIOSH approved respiratory protection.

Hand protection

Material	:	Nitrile rubber
Glove thickness	:	0.43 mm
Directive	:	Protective gloves against chemicals and micro-organisms
Protective index	:	Class 6
Remarks	:	The break through time depends amongst other things on the material, the thickness and the type of glove and therefore has to be measured for each case.

Eye protection : Safety glasses with side-shields

Skin and body protection : Laboratory: laboratory coat; factory: disposable Overall.

Protective measures : Handle in accordance with good industrial hygiene and safety practice.
Avoid contact with skin, eyes and clothing.
Only use protective equipment in accordance with national/international regulations. Follow the national regulations about wearing personal protective equipment and the warranty given by the manufacturer for the safe function.

Hygiene measures : General industrial hygiene practice.
Wash hands and face before breaks and immediately after handling the product.
Keep working clothes separately.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	amber
Odour	:	No data available
Odour Threshold	:	No data available
pH	:	5.41
Melting point/range	:	Not applicable

Boiling point/boiling range	:	No data available
Flash point	:	208 °F / 98 °C
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Self-ignition	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	1.122 g/cm3
Bulk density	:	Not applicable
Solubility(ies)		
Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	0.19 mm2/s (68 °F / 20 °C)
Explosive properties	:	Not tested
Oxidizing properties	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.

Conditions to avoid	:	Extremes of temperature and direct sunlight.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	No data available

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if swallowed or if inhaled.

Product:

Acute oral toxicity	:	Acute toxicity estimate: 575.84 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate: 3.53 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method
Acute dermal toxicity	:	Acute toxicity estimate: 2,497 mg/kg Method: Calculation method

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Acute oral toxicity	:	LD50 (Rat): 554 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	:	LC50 (Rat): 4.6 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Acute Inhalation Toxicity
Acute dermal toxicity	:	LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 402

1-methyl-2-pyrrolidone:

Acute oral toxicity	:	LD50 (Rat): = 4,150 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 5.1 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403
Acute dermal toxicity	:	LD50 (Rabbit): = 8,000 mg/kg

Fipronil:

Acute oral toxicity	:	LD50 (Rat): 97 mg/kg Assessment: The component/mixture is toxic after single ingestion.

Acute inhalation toxicity	:	LC50 (Rabbit): 0.68 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The component/mixture is toxic after short term inhalation.
Acute dermal toxicity	:	LD50 (Rat): 354 mg/kg Assessment: The component/mixture is toxic after single contact with skin.

Skin corrosion/irritation

Causes skin irritation.

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	No skin irritation
Remarks	:	May cause irritation of the mucous membranes.

1-methyl-2-pyrrolidone:

Species	:	Rabbit
Method	:	Draize test
Result	:	irritating

Fipronil:

Species	:	Rabbit
Exposure time	:	4 h
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Species	:	Rabbit
Result	:	No eye irritation
Method	:	OECD Test Guideline 405

1-methyl-2-pyrrolidone:

Species	:	Rabbit
Result	:	Eye irritation
Method	:	Draize test

Fipronil:

Species	:	Rabbit
Result	:	No eye irritation

Method	:	OECD Test Guideline 405
Remarks	:	No data available

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified based on available information.

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

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

1-methyl-2-pyrrolidone:

Species	:	Guinea pig
Result	:	No alert for skin sensitization

Fipronil:

Test Type	:	Maximisation Test
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	Does not cause skin sensitisation.

Germ cell mutagenicity

Not classified based on available information.

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Genotoxicity in vitro	:	Remarks: In vitro tests did not show mutagenic effects
Genotoxicity in vivo	:	Remarks: No mutagenic effects reported.

1-methyl-2-pyrrolidone:

Genotoxicity in vitro	:	Test Type: Ames-test Test system: Salmonella typhimurium Result: negative Remarks: Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
Genotoxicity in vivo	:	Remarks: No mutagenic effects reported.

Fipronil:

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

Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: Cytogenetic assay
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Test Type: Chromosomal aberration test
Test system: V79 cells (Chinese hamster)
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Test Type: Mammalian cell gene mutation assay
Test system: V79 cells (Chinese hamster)
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (male and female)
Application Route: Oral
Result: negative

Test Type: Unscheduled DNA synthesis
Species: Rat (male)
Application Route: Oral
Result: negative

Carcinogenicity

Not classified based on available information.

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Remarks : Did not show carcinogenic effects in animal experiments.

1-methyl-2-pyrrolidone:

Remarks : Results from a number of long-term carcinogenity studies and short-term tests are available. Taking into account all of the information, there is no indication that the substance itself is carcinogenic.

Fipronil:

Application Route : Oral
: 0.06 mg/kg bw/day

IARC No component 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 component 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

May damage the unborn child.

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Effects on fertility	:	Species: Rat Application Route: Oral Fertility: NOAEL: = 180 mg/kg body weight Remarks: Experiments have shown no reproductive toxicity effects on laboratory animals.
Effects on foetal development	:	Species: Rat Application Route: Oral Developmental Toxicity: NOAEL: = 500 mg/kg body weight Method: OECD Test Guideline 416 Remarks: Showed no teratogenic and / or embryotoxic effects in animal experiments.

1-methyl-2-pyrrolidone:

Effects on fertility	:	Remarks: The results of animal studies suggest a fertility
Effects on foetal development	:	Remarks: In animal studies the substance showed a developmental toxic/teratogenic effect.
Reproductive toxicity - Assessment	:	Clear evidence of adverse effects on development, based on animal experiments.

Fipronil:

Effects on fertility	:	Remarks: No data available
Effects on foetal development	:	Species: Rat General Toxicity Maternal: NOAEL: 4 mg/kg body weight Developmental Toxicity: NOAEL: 20 mg/kg body weight

STOT - single exposure

May cause respiratory irritation.

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Remarks	:	No data available

1-methyl-2-pyrrolidone:

Target Organs	:	Respiratory system

Assessment	:	The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.
Remarks	:	Expert judgement

Fipronil:

Remarks	:	No data available

STOT - repeated exposure

Causes damage to organs through prolonged or repeated exposure.

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Remarks	:	No data available

1-methyl-2-pyrrolidone:

Remarks	:	No data available

Fipronil:

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

Repeated dose toxicity

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Species	:	dog
NOAEL	:	5 mg/kg
Application Route	:	Oral
Exposure time	:	52 weeks
Species	:	Rat
NOAEL	:	1000 mg/kg
Application Route	:	Dermal
Exposure time	:	90-day
Species	:	Rat
NOAEL	:	0.22 mg/l
Application Route	:	Inhalation
Exposure time	:	90-day

Fipronil:

Species	:	Rat
Application Route	:	Oral
Exposure time	:	13 weeks
Dose	:	1,5,30,300 ppm

Aspiration toxicity

Not classified based on available information.

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:
No data available

1-methyl-2-pyrrolidone:
No data available

Fipronil:
No data available

Further information

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Remarks	:	Poisoning affects the central nervous system

1-methyl-2-pyrrolidone:

Remarks	:	No data available

Fipronil:

Remarks	:	No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): 0.145 mg/l Exposure time: 96 h Test Type: semi-static test Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0.02 mg/l Exposure time: 24 h Test Type: Immobilization Method: OECD Test Guideline 202
Toxicity to algae	:	Exposure time: Remarks: The LC50 is higher than the solubility limit.
Toxicity to fish (Chronic toxicity)	:	NOEC (Danio rerio (zebra fish)): 0.00041 mg/l Exposure time: 35 d Method: OECD Test Guideline 210
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia (water flea)): 0,0047 Exposure time: 21 d Method: OECD Test Guideline 211

Toxicity to microorganisms	:	EC50 (wastewater bacteria): > 0.42 mg/l Exposure time: 3 h Method: Activated Sludge, Respiration Inhibition Test.
Toxicity to soil dwelling organisms	:	LC50 (other soil dwelling worm): > 1,200 mg/kg Exposure time: 14 d Method: Earthworm, Acute Toxicity Test.

1-methyl-2-pyrrolidone:

Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): = 832 mg/l Exposure time: 96 h LC50 (rainbow trout): > 500 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): ca. 4,897 mg/l Exposure time: 48 h EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 24 h Method: DIN 38412
Toxicity to algae	:	EC50 (Desmodesmus subspicatus): > 500 mg/l Exposure time: 72 h Method: DIN 38412
Toxicity to fish (Chronic toxicity)	:	Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): = 12.5 mg/l Exposure time: 21 d Test Type: semi-static test Method: Daphnia sp., Reproduction Test.
Toxicity to microorganisms	:	EC50 (bacterium): > 9,000 mg/l Exposure time: 48 h Remarks: Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentratio ns. EC50 (activated sludge): > 600 mg/l Exposure time: 0.5 h Method: Test for inhibition of oxygen consumption by activated sludge. Remarks: The details of the toxic effect relate to the nominal concentration.

Fipronil:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0.248 mg/l Exposure time: 96 h LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.0852 mg/l Exposure time: 96 h

NOEC (Lepomis macrochirus (Bluegill sunfish)): 0.0432 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.190 mg/l
Exposure time: 48 h

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 0.068 mg/l
End point: Growth rate
Exposure time: 96 h
Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 0.04 mg/l
End point: Growth rate
Exposure time: 96 h
Method: OECD Test Guideline 201

EC50 (Anabaena flos-aquae (cyanobacterium)): > 0.17 mg/l
End point: Growth rate
Exposure time: 120 h

NOEC (Anabaena flos-aquae (cyanobacterium)): 0.17 mg/l
End point: Growth rate
Exposure time: 120 h

EC50 (Selenastrum capricornutum (green algae)): > 0.14 mg/l
End point: Growth rate
Exposure time: 120 h

NOEC (Selenastrum capricornutum (green algae)): 0.14 mg/l
End point: Growth rate
Exposure time: 120 h

Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 0.015 mg/l
Exposure time: 90 d
Method: OECD Test Guideline 210

Lowest observed effect concentration (Oncorhynchus mykiss (rainbow trout)): 0.026 mg/l
Exposure time: 90 d
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia (water flea)): 5 - 20
End point: Immobilization
Exposure time: 21 d
Test Type: flow-through test
Method: Daphnia sp., Reproduction Test.

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

Toxicity to soil dwelling organisms : Test Type: artificial soil
LC50 ('Eisenia foetida'): > 1,000 mg/kg
Exposure time: 14 d

Method: Earthworm, Acute Toxicity Test.

Toxicity to terrestrial organisms : LD50 (Apis mellifera (bees)): 0,00000417
Exposure time: 48 d
End point: Acute oral toxicity

Persistence and degradability

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Biodegradation: 57.2 %
Exposure time: 28 d
Method: MITI Test (II), inherent.

1-methyl-2-pyrrolidone:

Biodegradability : Result: Readily biodegradable.
Biodegradation: > 90 %
Exposure time: 20 d

Result: Readily eliminated from water.

Biochemical Oxygen Demand (BOD) : < 2 mg/g
Incubation time: 5 d

Chemical Oxygen Demand (COD) : ca. 1,600 mg/l
Method: Determination of the Chemical Oxygen Demand

ThOD : 1,939 mg/g

Fipronil:

Biodegradability : Result: not rapidly degradable
Biodegradation: 47 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Bioaccumulative potential

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Bioaccumulation : Bioconcentration factor (BCF): 20,700
Method: calculated
Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : Pow: 4.67 (77 °F / 25 °C)

1-methyl-2-pyrrolidone:

Bioaccumulation	:	Remarks: No bioaccumulation is to be expected (log P(o/w)<1).
Partition coefficient: n-octanol/water	:	log Pow: -0.460 (77 °F / 25 °C) Method: OECD Test Guideline 107

Fipronil:

Bioaccumulation	:	Bioconcentration factor (BCF): 321 Exposure time: 14 d Remarks: No bioaccumulation is to be expected (log Pow <= 4).
Partition coefficient: n-octanol/water	:	log Pow: 3.5 - 4.0 (68 °F / 20 °C)

Mobility in soil

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Distribution among environmental compartments	:	log Koc: 5.9

1-methyl-2-pyrrolidone:

Distribution among environmental compartments	:	Remarks: No data available

Fipronil:

Distribution among environmental compartments	:	Remarks: No data available

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).

Components:

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate:

Additional ecological information	:	No data available

1-methyl-2-pyrrolidone:

Adsorbed organic bound halogens (AOX)	:	Remarks: This product contains no organically-bound halogen.
Additional ecological information	:	No data available

Fipronil:

Additional ecological information	:	No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Dispose of in accordance with local regulations.
Contaminated packaging	:	Packs that cannot be cleaned should be disposed of in the same manner as the contents. Uncontaminated packaging can be recycled.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No.	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (Permethrin, Fipronil)
Class	:	9
Packing group	:	III
Labels	:	Class 9 - Miscellaneous dangerous substances and articles
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. (Permethrin, Fipronil)
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.

National Regulations

49 CFR

UN/ID/NA number	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (Permethrin, Fipronil)
Class	:	9
Packing group	:	III

Labels	:	Class 9 - Miscellaneous dangerous substances and articles
ERG Code	:	171
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

EPCRA - Emergency Planning and Community Right-to-Know Act

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

Components	CAS-No.	Component TPQ (lbs)

SARA 311/312 Hazards	:	Flammable (gases, aerosols, liquids, or solids) Acute toxicity (any route of exposure) Skin corrosion or irritation Serious eye damage or eye irritation Respiratory or skin sensitisation Reproductive toxicity Specific target organ toxicity (single or repeated exposure)		
SARA 313	:	The following components are subject to reporting levels established by SARA Title III, Section 313:		
		m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate	52645-53-1	>= 50 - < 70 %
		1-methyl-2-pyrrolidone	872-50-4	>= 30 - < 50 %

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 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate	52645-53-1
1-methyl-2-pyrrolidone	872-50-4
Fipronil	120068-37-3

Pennsylvania Right To Know

m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate	52645-53-1
1-methyl-2-pyrrolidone	872-50-4
Capryl caprin Glycerid	65381-09-1
Fipronil	120068-37-3

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

1-methyl-2-pyrrolidone	872-50-4

Washington Chemicals of High Concern

1-methyl-2-pyrrolidone	872-50-4

California Prop. 65

WARNING: This product can expose you to chemicals including 1-methyl-2-pyrrolidone, 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.

California Permissible Exposure Limits for Chemical Contaminants

1-methyl-2-pyrrolidone	872-50-4

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

REACH	:	Not in compliance with the inventory
DSL	:	This product contains the following components that are not on the Canadian DSL nor NDSL. Capryl caprin Glycerid Fipronil m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate Pyriproxyfen
AICS	:	Not in compliance with the inventory
NZIoC	:	Not in compliance with the inventory
ENCS	:	Not in compliance with the inventory
ISHL	:	Not in compliance with the inventory
KECI	:	Not in compliance with the inventory

PICCS	:	Not in compliance with the inventory
IECSC	:	Not in compliance with the inventory
TCSI	:	Not in compliance with the inventory
TSCA	:	Not On TSCA Inventory

TSCA list

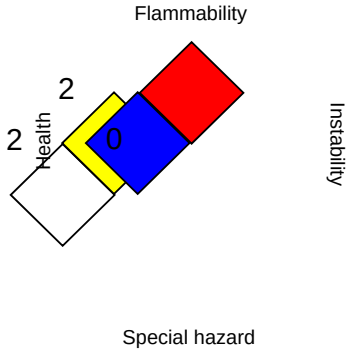
No substances are subject to a Significant New Use Rule.

The following substance(s) is/are subject to TSCA 12(b) export notification requirements:
1-methyl-2-pyrrolidone 872-50-4

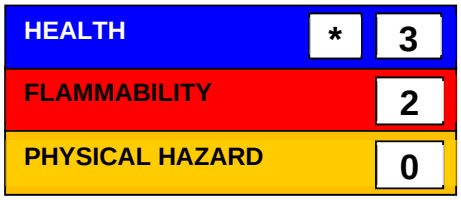
SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:



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)
ACGIH BEI	:	ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
Sanofi OEL	:	Sanofi
US WEEL	:	USA. Workplace Environmental Exposure Levels (WEEL)
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA	:	8-hour time weighted average
Sanofi OEL / OEL-8h	:	Occupational exposure limit value (8h)
US WEEL / TWA	:	8-hr TWA

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

Vertical lines in the left hand margin indicate an amendment from the previous version.

Sources of key data used to compile the Safety Data Sheet	:	The specifications are based on own tests and/or literature data.
Revision Date	:	10/28/2019

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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