

SAFETY DATA SHEET

Frontline® Plus for Cats, liquid (finished product)

Version 1.0 Revision Date: 07/24/2019 SDS Number: 000000049050 Date of last issue: -
Date of first issue: 07/24/2019

SECTION 1. IDENTIFICATION

Product name : Frontline® Plus for Cats, liquid (finished product)

Synonyms : Frontline Combo® Spot-On Solution for Dogs and Cats, Frontline Plus® Spot-On Solution with API: Fipronil, S-Methoprene

Manufacturer or supplier's details

Company name of supplier : Boehringer Ingelheim Animal Health USA Inc.

Address : 3239 Satellite Boulevard
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 3

Acute toxicity (Oral) : Category 4

Carcinogenicity : Category 1A

Specific target organ toxicity - repeated exposure : Category 1

GHS label elements

Hazard pictograms : 

Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.
H302 Harmful if swallowed.
H350 May cause cancer.
H372 Causes damage to organs through prolonged or repeated

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exposure.

Precautionary statements :

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
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.
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.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

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

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

Chemical name	CAS-No.	Concentration (% w/w)
Diethylenglykolmonoethylether	111-90-0	>= 70 - < 90
Fipronil	120068-37-3	>= 10 - < 20
Ethanol	64-17-5	>= 5 - < 10

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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 : No information available.
Harmful if swallowed.
May cause cancer.
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 fire-fighting : In case of fire and/or explosion do not breathe fumes.
Can be released in case of fire:
Carbon oxides
Nitrogen oxides (NO_x)
Sulphur oxides
Hydrogen chloride gas
- 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

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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.
Suppress vapours with waterspray.
- Environmental precautions : Do not flush into surface water or sanitary sewer system.
- Methods and materials for containment and cleaning up : Pick up and transfer to properly labelled containers.

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : No special protective measures against fire required.
The product is not flammable.
- Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms.
Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.
Breathing must be protected when large quantities are de-canted without local exhaust ventilation.
Keep container closed when not in use.
- Conditions for safe storage : Keep tightly closed in a dry and cool place.
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
Diethylenglykolmonoethylether	111-90-0	TWA	25 ppm	US WEEL
Ethanol	64-17-5	STEL	1,000 ppm	ACGIH
		TWA	1,000 ppm 1,900 mg/m ³	NIOSH REL

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		TWA	1,000 ppm 1,900 mg/m ³	OSHA Z-1
		TWA	1,000 ppm 1,900 mg/m ³	OSHA P0

Engineering measures : Local exhaust
Emergency sprinkling nozzle
Use only appropriately classified electrical equipment and powered industrial trucks.

Personal protective equipment

Respiratory protection : 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 data about break through time/strength of material are standard values! The exact break through time/strength of material has to be obtained from the producer of the protective glove.

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, viscous
Colour : amber
Odour : odourless
Odour Threshold : No data available
pH : 5.2
Melting point/range : Not applicable

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Boiling point/boiling range : 172 °F / 78 °C

Flash point : 104 °F / 40 °C
(1,013 hPa)
Method: ISO 3679

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 : 1.02

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 : No data available

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.

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Conditions to avoid : Extremes of temperature and direct sunlight.

Incompatible materials : No data available

Hazardous decomposition products : No data available

SECTION 11. TOXICOLOGICAL INFORMATION**Acute toxicity**

Harmful if swallowed.

Product:

Acute oral toxicity : LD50 (Rat): 750 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : Acute toxicity estimate: 6.8 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: 3,540 mg/kg
Method: Calculation method

Components:**Diethylenglykolmonoethylether:**

Acute oral toxicity : LD50 (Rat): 5,900 - 6,100 mg/kg

Acute dermal toxicity : LD50 (Rabbit): 8,476 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.

Ethanol:

Acute oral toxicity : LD50 (Rat): 10,470 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): 116.9 mg/l
Exposure time: 4 h

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Test atmosphere: vapour
Method: OECD Test Guideline 403

Acute dermal toxicity : Remarks: No data available

Skin corrosion/irritation

Not classified based on available information.

Product:

Species : Rabbit
Method : OECD Test Guideline 404

Components:**Fipronil:**

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

Ethanol:

Remarks : No data available

Serious eye damage/eye irritation

Not classified based on available information.

Product:

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

Components:**Fipronil:**

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

Ethanol:

Result : irritating

Respiratory or skin sensitisation**Skin sensitisation**

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Product:

Test Type : Buehler Test

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

Components:
Fipronil:

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

Ethanol:

Remarks : No data available

Germ cell mutagenicity

Not classified based on available information.

Components:
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

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

Ethanol:

Genotoxicity in vitro

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

Test Type: Bacterial reverse mutation assay
 Test system: Escherichia coli
 Metabolic activation: without metabolic activation
 Result: positive
 negative

Test Type: Cytogenetic assay
 Test system: mouse lymphoma cells
 Metabolic activation: without metabolic activation
 Method: OECD Test Guideline 476
 Result: negative

Test Type: Chromosomal aberration test
 Test system: Chinese hamster ovary cells
 Metabolic activation: without metabolic activation
 Method: OECD Test Guideline 473
 Result: negative

Genotoxicity in vivo

: Test Type: Micronucleus test
 Species: Mouse
 Method: OECD Test Guideline 475
 Result: negative

Test Type: Chromosome aberration test in vitro
 Species: Hamster
 Method: OECD Test Guideline 475
 Result: negative

Test Type: Dominant lethal assay
 Species: Mouse
 Method: OECD Test Guideline 478
 Result: positive, negative

Carcinogenicity

May cause cancer.

Components:
Fipronil:

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

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Ethanol:

Remarks : No data available

Repeated dose toxicity**Components:****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:**Fipronil:**

No data available

Ethanol:

No data available

Further information**Components:****Fipronil:**

Remarks : No data available

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****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

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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

Ethanol:

Toxicity to fish : LC50 (Oncorhynchus mykiss): 11,200 mg/l

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia (water flea)): 12,340 mg/l

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- Toxicity to algae : EC50 (Chlorella vulgaris): 275 mg/l
EC50 (Lemna gibba (gibbous duckweed)): 4,432 mg/l
EC50 (Selenastrum capricornutum): 440 mg/l
NOEC (Lemna gibba (gibbous duckweed)): 280 mg/l
- Toxicity to fish (Chronic toxicity) : NOEC (fish): 0.04 mg/l
Exposure time: 30 d
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC50 ('Ceriodaphnia dubia'): 1,806 mg/l
Exposure time: 10 d
Test Type: semi-static test
NOEC ('Ceriodaphnia dubia'): 9.6 mg/l
Exposure time: 10 d
Test Type: semi-static test
- Toxicity to microorganisms : EC50 (protozoa): 5,800 mg/l
Exposure time: 4 h
EC5 (protozoa): 65 mg/l
Exposure time: 72 h
Method: Test on inhibition of cell reproduction, B+K

Persistence and degradability

Components:

Fipronil:

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

Ethanol:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 97 %
Exposure time: 28 d
Method: OECD Test Guideline 301E

Bioaccumulative potential

Components:

Diethylenglykolmonoethylether:

Partition coefficient: n-octanol/water : log Pow: -1.19

Fipronil:

Bioaccumulation : Bioconcentration factor (BCF): 321
Exposure time: 14 d
Remarks: No bioaccumulation is to be expected (log Pow <=

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Partition coefficient: n-octanol/water : log Pow: 3.5 - 4.0 (68 °F / 20 °C)

Ethanol:

Bioaccumulation : Bioconcentration factor (BCF): 3.2
Remarks: No bioaccumulation is to be expected (log P(o/w)<1).

Partition coefficient: n-octanol/water : log Pow: -0.35

Mobility in soil

Components:

Fipronil:

Distribution among environmental compartments : Remarks: No data available

Ethanol:

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:

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.

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SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No. : UN 1170
Proper shipping name : Ethyl alcohol solution
Class : 3
Packing group : III
Labels : Flammable Liquids
Packing instruction (cargo aircraft) : 366
Packing instruction (passenger aircraft) : 355
Environmentally hazardous : yes

IMDG-Code

UN number : UN 1170
Proper shipping name : ETHYL ALCOHOL SOLUTION

Class : 3
Packing group : III
Labels : 3
EmS Code : F-E, S-D
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 1170
Proper shipping name : Ethyl alcohol solutions

Class : 3
Packing group : III
Labels : FLAMMABLE LIQUID
ERG Code : 127
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)
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SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)

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SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

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).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

Diethylenglykolmonoethylether	111-90-0	>= 70 - < 90 %
Ethanol	64-17-5	>= 5 - < 10 %

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

S-Methoprene	65733-16-6
Fipronil	120068-37-3
Ethanol	64-17-5

Pennsylvania Right To Know

Diethylenglykolmonoethylether	111-90-0
S-Methoprene	65733-16-6
Fipronil	120068-37-3
Ethanol	64-17-5

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including Ethanol, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances

Ethanol	64-17-5
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California Permissible Exposure Limits for Chemical Contaminants

Ethanol

64-17-5

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.

Fipronil

S-Methoprene

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.

No substances are subject to TSCA 12(b) export notification requirements.

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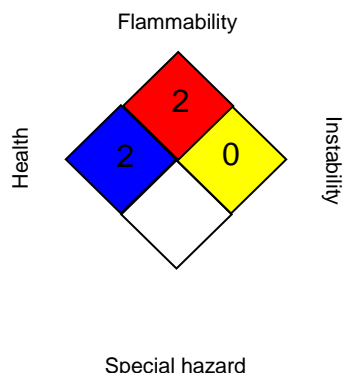
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SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH	*	2
FLAMMABILITY		2
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
US WEEL	:	USA. Workplace Environmental Exposure Levels (WEEL)
ACGIH / STEL	:	Short-term exposure limit
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
OSHA Z-1 / TWA	:	8-hour time weighted average
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 Admin-

SAFETY DATA SHEET



Frontline® Plus for Cats, liquid (finished product)

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istration; 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 : 07/24/2019

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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