

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

SECTION 1. IDENTIFICATION

Product name : Fluazuron / Citronellal Formulation
Other means of identification : No data available

Manufacturer or supplier's details

Company name of supplier : Merck & Co., Inc
Address : 37 McCarville Street
Charlottetown, PE C1E 2A7
Telephone : 908-740-4000
Emergency telephone : 1-908-423-6000
E-mail address : EHSDATASTEWARD@merck.com

Recommended use of the chemical and restrictions on use

Recommended use : Veterinary product
Restrictions on use : Not applicable

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the Hazardous Products Regulations

Flammable liquids : Category 3
Skin irritation : Category 2
Eye irritation : Category 2A
Skin sensitization : Category 1
Reproductive toxicity : Category 1B
Specific target organ toxicity : Category 3
- single exposure

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H226 Flammable liquid and vapor.
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.

Precautionary Statements : **Prevention:**

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version: 4.0 Revision Date: 04/14/2025 SDS Number: 4624620-00015 Date of last issue: 09/28/2024
Date of first issue: 07/09/2019

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261 Avoid breathing mist or vapors.
P264 Wash skin thoroughly after handling.
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 and face protection.

Response:

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a 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 attention.
P333 + P313 If skin irritation or rash occurs: Get medical attention.
P337 + P313 If eye irritation persists: Get medical attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

P405 Store locked up.

Disposal:

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

Other hazards

Vapors may form explosive mixture with air.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	Common Name/Synonym	CAS-No.	Concentration (% w/w)
N-Methyl-2-pyrrolidone	1-Methylpyrrolidinone	872-50-4	$\geq 30 - < 60$ *
Propan-2-ol	Isopropyl alcohol	67-63-0	$\geq 5 - < 10$ *
Butanone	Ethyl methyl ketone	78-93-3	$\geq 5 - < 10$ *
6-Octenal, 3,7-	Citronellal	106-23-0	$\geq 1 - < 5$ *

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version 4.0 Revision Date: 04/14/2025 SDS Number: 4624620-00015 Date of last issue: 09/28/2024
Date of first issue: 07/09/2019

dimethyl-			
Fluazuron	No data available	86811-58-7	$\geq 1 - < 5$ *

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

SECTION 4. FIRST AID MEASURES

- General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.
- If inhaled : If inhaled, remove to fresh air.
Get medical attention.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.
- In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention.
- If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention.
Rinse mouth thoroughly with water.
- Most important symptoms and effects, both acute and delayed : Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
May cause respiratory irritation.
May damage the unborn child.
- Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).
- Notes to physician : Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during fire fighting : Do not use a solid water stream as it may scatter and spread fire.
Flash back possible over considerable distance.
Vapors may form explosive mixtures with air.
Exposure to combustion products may be a hazard to health.
- Hazardous combustion prod- : Carbon oxides

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

ucts	Nitrogen oxides (NOx) Chlorine compounds Fluorine compounds
Specific extinguishing methods	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.
Special protective equipment for fire-fighters	: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Remove all sources of ignition. Use personal protective equipment. Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).
Environmental precautions	: Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g., by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	: Non-sparking tools should be used. Soak up with inert absorbent material. Suppress (knock down) gases/vapors/mists with a water spray jet. For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

SECTION 7. HANDLING AND STORAGE

Technical measures	: See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
Local/Total ventilation	: If sufficient ventilation is unavailable, use with local exhaust

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version 4.0 Revision Date: 04/14/2025 SDS Number: 4624620-00015 Date of last issue: 09/28/2024
Date of first issue: 07/09/2019

- ventilation.
Use explosion-proof electrical, ventilating and lighting equipment.
- Advice on safe handling : Do not get on skin or clothing.
Avoid breathing mist or vapors.
Do not swallow.
Do not get in eyes.
Wash skin thoroughly after handling.
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
Non-sparking tools should be used.
Keep container tightly closed.
Already sensitized individuals, and those susceptible to asthma, allergies, chronic or recurrent respiratory disease, should consult their physician regarding working with respiratory irritants or sensitizers.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Take precautionary measures against static discharges.
Take care to prevent spills, waste and minimize release to the environment.
- Conditions for safe storage : Keep in properly labeled containers.
Store locked up.
Keep tightly closed.
Keep in a cool, well-ventilated place.
Store in accordance with the particular national regulations.
Keep away from heat and sources of ignition.
- Materials to avoid : Do not store with the following product types:
Strong oxidizing agents
Self-reactive substances and mixtures
Organic peroxides
Flammable solids
Pyrophoric liquids
Pyrophoric solids
Self-heating substances and mixtures
Substances and mixtures which in contact with water emit flammable gases
Explosives
Gases
Very acutely toxic substances and mixtures

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
N-Methyl-2-pyrrolidone	872-50-4	TWA	400 mg/m ³	CA ON OEL
Propan-2-ol	67-63-0	STEL	400 ppm 984 mg/m ³	CA AB OEL
		TWA	200 ppm	CA AB OEL

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version 4.0 Revision Date: 04/14/2025 SDS Number: 4624620-00015 Date of last issue: 09/28/2024
Date of first issue: 07/09/2019

			492 mg/m ³	
		TWA	200 ppm	CA BC OEL
		STEL	400 ppm	CA BC OEL
		TWAEV	200 ppm	CA QC OEL
		STEV	400 ppm	CA QC OEL
		TWA	200 ppm	ACGIH
		STEL	400 ppm	ACGIH
Butanone	78-93-3	TWA	200 ppm 590 mg/m ³	CA AB OEL
		STEL	300 ppm 885 mg/m ³	CA AB OEL
		TWA	50 ppm	CA BC OEL
		STEL	100 ppm	CA BC OEL
		TWAEV	50 ppm 150 mg/m ³	CA QC OEL
		STEV	100 ppm 300 mg/m ³	CA QC OEL
		TWA	75 ppm	ACGIH
		STEL	150 ppm	ACGIH
Fluazuron	86811-58-7	TWA	60 µg/m ³ (OEB 3)	Internal
		Wipe limit	600 µg/ 100cm ²	Internal

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sam-pling time	Permissible concentra-tion	Basis
N-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
Propan-2-ol	67-63-0	Acetone	Urine	End of shift at end of work-week	40 mg/l	ACGIH BEI
Butanone	78-93-3	methyl ethyl ketone	Urine	End of shift (As soon as possible after exposure ceases)	2 mg/l	ACGIH BEI

Engineering measures

: Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip-less quick connections).
All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

Containment technologies suitable for controlling compounds are required to control at source and to prevent migration of the compound to uncontrolled areas (e.g., open-face containment devices).
Minimize open handling.

Use explosion-proof electrical, ventilating and lighting equipment.

Personal protective equipment

- | | | |
|--------------------------|---|--|
| Respiratory protection | : | If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection. |
| Filter type | : | Organic vapor Type |
| Hand protection | : | |
| Material | : | Chemical-resistant gloves |
| Remarks | : | Consider double gloving. Take note that the product is flammable, which may impact the selection of hand protection. |
| Eye protection | : | Wear safety glasses with side shields or goggles.
If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.
Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols. |
| Skin and body protection | : | Work uniform or laboratory coat.
Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces.
Use appropriate degowning techniques to remove potentially contaminated clothing. |
| Hygiene measures | : | If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.
When using do not eat, drink or smoke.
Contaminated work clothing should not be allowed out of the workplace.
Wash contaminated clothing before re-use.
The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls. |

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- | | | |
|------------|---|-------------------|
| Appearance | : | Aqueous solution |
| Color | : | yellow |
| Odor | : | No data available |

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

Odor Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	-4 °C
Initial boiling point and boiling range	:	78 °C
Flash point	:	52 °C
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Flammability (liquids)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	No data available
Relative density	:	0.94 - 0.96
Density	:	No data available
Solubility(ies)		
Water solubility	:	practically insoluble
Solubility in other solvents	:	soluble Solvent: Ethanol
Partition coefficient: n-octanol/water	:	log Pow: -0.54
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, kinematic	:	5.3 - 5.7 mm ² /s (25 °C)
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Molecular weight	:	No data available

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

Particle characteristics
Particle size : Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Flammable liquid and vapor. Vapors may form explosive mixture with air. Can react with strong oxidizing agents.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity	:	Acute toxicity estimate: > 2,000 mg/kg Method: Calculation method
Acute dermal toxicity	:	Acute toxicity estimate: > 2,000 mg/kg Method: Calculation method

Components:

N-Methyl-2-pyrrolidone:

Acute oral toxicity	:	LD50 (Rat): 4,150 mg/kg Method: OECD Test Guideline 401 Remarks: The test was conducted equivalent or similar to guideline
Acute inhalation toxicity	:	LC50 (Rat): > 5.1 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Remarks: The test was conducted according to guideline
Acute dermal toxicity	:	LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 402 Remarks: The test was conducted equivalent or similar to

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

|| guideline

Propan-2-ol:

Acute oral toxicity	: LD50 (Rat): > 5,000 mg/kg
Acute inhalation toxicity	: LC50 (Rat): > 25 mg/l Exposure time: 6 h Test atmosphere: vapor
Acute dermal toxicity	: LD50 (Rabbit): > 5,000 mg/kg

Butanone:

Acute oral toxicity	: LD50 (Rat): > 2,000 - 5,000 mg/kg Remarks: Based on data from similar materials
Acute inhalation toxicity	: LC50 (Rat): > 25.5 mg/l Exposure time: 4 h Test atmosphere: vapor Method: OECD Test Guideline 436 Remarks: Based on data from similar materials
Acute dermal toxicity	: LD50 (Rabbit): > 5,000 mg/kg

6-Octenal, 3,7-dimethyl-:

Acute oral toxicity	: LD50 (Rat, female): 2,150 mg/kg
Acute dermal toxicity	: LD50 (Rabbit): > 2,500 - 5,000 mg/kg

Fluazuron:

Acute oral toxicity	: LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	: LC50 (Rat): > 6.0 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403
Acute dermal toxicity	: LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 402

Skin corrosion/irritation

Causes skin irritation.

Components:

N-Methyl-2-pyrrolidone:

Species	: Rabbit
Method	: OECD Test Guideline 404
Result	: Skin irritation
Remarks	: The test was conducted equivalent or similar to guideline

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

Propan-2-ol:

Species	: Rabbit
Result	: No skin irritation

Butanone:

Assessment	: Repeated exposure may cause skin dryness or cracking.
------------	---

Species	: Rabbit
Method	: OECD Test Guideline 404
Result	: No skin irritation
Remarks	: Based on data from similar materials

6-Octenal, 3,7-dimethyl-:

Species	: Rabbit
Result	: Skin irritation

Fluazuron:

Species	: Rabbit
Method	: OECD Test Guideline 404
Result	: No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

N-Methyl-2-pyrrolidone:

Species	: Rabbit
Result	: Irritation to eyes, reversing within 21 days
Method	: OECD Test Guideline 405
Remarks	: The test was conducted equivalent or similar to guideline

Propan-2-ol:

Species	: Rabbit
Result	: Irritation to eyes, reversing within 21 days

Butanone:

Species	: Rabbit
Result	: Irritation to eyes, reversing within 21 days
Method	: OECD Test Guideline 405

6-Octenal, 3,7-dimethyl-:

Species	: Rabbit
Result	: Irritation to eyes, reversing within 21 days

Fluazuron:

Species	: Rabbit
Result	: Mild eye irritation

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

|| Method : OECD Test Guideline 405

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

N-Methyl-2-pyrrolidone:

Test Type	: Local lymph node assay (LLNA)
Routes of exposure	: Skin contact
Species	: Mouse
Method	: OECD Test Guideline 429
Result	: negative
Remarks	: Based on data from similar materials

Propan-2-ol:

Test Type	: Buehler Test
Routes of exposure	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: negative

Butanone:

Test Type	: Buehler Test
Routes of exposure	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: negative

6-Octenal, 3,7-dimethyl-:

Test Type	: Maximization Test
Routes of exposure	: Skin contact
Species	: Guinea pig
Result	: positive

|| Assessment : Probability or evidence of skin sensitization in humans

Fluazuron:

Routes of exposure	: Skin contact
Species	: Guinea pig
Result	: negative

Germ cell mutagenicity

Not classified based on available information.

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

Components:

N-Methyl-2-pyrrolidone:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative Remarks: The test was conducted according to guideline Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative Remarks: The test was conducted according to guideline Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro) Method: OECD Test Guideline 482 Result: negative Remarks: The test was conducted equivalent or similar to guideline
Genotoxicity in vivo	: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Ingestion Method: OECD Test Guideline 474 Result: negative Remarks: The test was conducted according to guideline

Propan-2-ol:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Result: negative Test Type: In vitro mammalian cell gene mutation test Result: negative
Genotoxicity in vivo	: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Intraperitoneal injection Result: negative

Butanone:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Result: negative Test Type: In vitro mammalian cell gene mutation test Result: negative Test Type: Chromosome aberration test in vitro Result: negative Test Type: DNA damage and repair, unscheduled DNA syn-
-----------------------	---

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

	thesis in mammalian cells (in vitro) Result: negative
	Test Type: Saccharomyces cerevisiae, gene mutation assay (in vitro) Result: negative
Genotoxicity in vivo	: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Intraperitoneal injection Result: negative

6-Octenal, 3,7-dimethyl-:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Result: negative
	Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative
	Test Type: in vitro micronucleus test Method: OECD Test Guideline 487 Result: negative
Genotoxicity in vivo	: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Ingestion Result: negative Remarks: Based on data from similar materials

Fluazuron:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Result: negative
	Test Type: DNA Repair Result: negative
	Test Type: In vitro mammalian cell gene mutation test Result: negative
Genotoxicity in vivo	: Test Type: Cytogenetic assay Species: Hamster Result: equivocal

Carcinogenicity

Not classified based on available information.

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

Components:

N-Methyl-2-pyrrolidone:

Species	: Rat
Application Route	: Ingestion
Exposure time	: 2 Years
Method	: OECD Test Guideline 451
Result	: negative
Remarks	: The test was conducted according to guideline

Species	: Rat
Application Route	: Inhalation
Exposure time	: 2 Years
Method	: OECD Test Guideline 453
Result	: negative
Remarks	: The test was conducted equivalent or similar to guideline

Propan-2-ol:

Species	: Rat
Application Route	: inhalation (vapor)
Exposure time	: 104 weeks
Method	: OECD Test Guideline 451
Result	: negative

6-Octenal, 3,7-dimethyl-:

Species	: Rat
Application Route	: Ingestion
Exposure time	: 104 - 105 weeks
Result	: negative
Remarks	: Based on data from similar materials

Species	: Mouse
Application Route	: Ingestion
Exposure time	: 104 - 105 weeks
Result	: negative
Remarks	: Based on data from similar materials

Fluazuron:

Species	: Rat
Application Route	: Ingestion
Exposure time	: 2 Years
Method	: OECD Test Guideline 453
Result	: negative

Species	: Mouse
Application Route	: Ingestion
Exposure time	: 2 Years
Result	: negative

Reproductive toxicity

May damage the unborn child.

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

Components:

N-Methyl-2-pyrrolidone:

- | | | |
|------------------------------------|---|--|
| Effects on fertility | : | Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 416
Result: negative
Remarks: The test was conducted according to guideline |
| Effects on fetal development | : | Test Type: Embryo-fetal development
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: positive
Remarks: The test was conducted according to guideline |
| | | Test Type: Fertility/early embryonic development
Species: Rat
Application Route: inhalation (vapor)
Method: OECD Test Guideline 414
Result: positive
Remarks: The test was conducted equivalent or similar to guideline |
| | | Test Type: Embryo-fetal development
Species: Rabbit
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: positive
Remarks: The test was conducted equivalent or similar to guideline |
| Reproductive toxicity - Assessment | : | Clear evidence of adverse effects on development, based on animal experiments. |

Propan-2-ol:

- | | | |
|------------------------------|---|---|
| Effects on fertility | : | Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Result: negative |
| Effects on fetal development | : | Test Type: Embryo-fetal development
Species: Rat
Application Route: Ingestion
Result: negative |

Butanone:

- | | | |
|----------------------|---|---|
| Effects on fertility | : | Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Result: negative |
|----------------------|---|---|

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

	Remarks: Based on data from similar materials
Effects on fetal development	: Test Type: Embryo-fetal development Species: Rat Application Route: Inhalation Method: OECD Test Guideline 414 Result: negative

6-Octenal, 3,7-dimethyl-:

Effects on fertility	: Test Type: One-generation reproduction toxicity study Species: Rat Application Route: Ingestion Method: OECD Test Guideline 443 Result: negative Remarks: Based on data from similar materials
----------------------	---

Effects on fetal development	: Test Type: One-generation reproduction toxicity study Species: Rat Application Route: Ingestion Method: OECD Test Guideline 443 Result: negative Remarks: Based on data from similar materials
------------------------------	---

Fluazuron:

Effects on fertility	: Test Type: Two-generation reproduction toxicity study Species: Rat Application Route: Ingestion Result: negative
----------------------	---

Effects on fetal development	: Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Result: negative
------------------------------	---

	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Method: OECD Test Guideline 414 Result: negative
--	---

STOT-single exposure

May cause respiratory irritation.

Components:

N-Methyl-2-pyrrolidone:

Assessment	: May cause respiratory irritation.
------------	-------------------------------------

Propan-2-ol:

Assessment	: May cause drowsiness or dizziness.
------------	--------------------------------------

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

Butanone:

Assessment : May cause drowsiness or dizziness.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

N-Methyl-2-pyrrolidone:

Species	: Rat, male
NOAEL	: 169 mg/kg
LOAEL	: 433 mg/kg
Application Route	: Ingestion
Exposure time	: 90 Days
Method	: OECD Test Guideline 408
Remarks	: The test was conducted according to guideline

Species	: Rat
NOAEL	: 0.5 mg/l
LOAEL	: 1 mg/l
Application Route	: inhalation (dust/mist/fume)
Exposure time	: 96 Days
Method	: OECD Test Guideline 413
Remarks	: The test was conducted according to guideline

Species	: Rabbit, male
NOAEL	: 826 mg/kg
LOAEL	: 1,653 mg/kg
Application Route	: Skin contact
Exposure time	: 20 Days
Method	: OECD Test Guideline 410
Remarks	: The test was conducted equivalent or similar to guideline

Propan-2-ol:

Species	: Rat
NOAEL	: 12.5 mg/l
Application Route	: inhalation (vapor)
Exposure time	: 104 Weeks

Butanone:

Species	: Rat
NOAEL	: 14.84 mg/l
Application Route	: inhalation (vapor)
Exposure time	: 90 Days
Method	: OECD Test Guideline 413

6-Octenal, 3,7-dimethyl-:

Species	: Rat
LOAEL	: > 100 mg/kg

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

Application Route	: Ingestion
Exposure time	: 14 Weeks
Remarks	: Based on data from similar materials

Fluazuron:

Species	: Rat
LOAEL	: 240 mg/kg
Application Route	: Ingestion
Exposure time	: 13 Weeks
Target Organs	: Liver, Thyroid, Pituitary gland

Species	: Rat
NOAEL	: 10 mg/kg
LOAEL	: 100 mg/kg
Application Route	: Skin contact
Exposure time	: 3 Weeks

Species	: Dog
NOAEL	: 7.5 mg/kg
LOAEL	: 110 mg/kg
Application Route	: Ingestion
Exposure time	: 52 Weeks
Target Organs	: Liver

Aspiration toxicity

Not classified based on available information.

Components:

Butanone:

The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.

Experience with human exposure

Components:

N-Methyl-2-pyrrolidone:

Skin contact	: Symptoms: Skin irritation
--------------	-----------------------------

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

N-Methyl-2-pyrrolidone:

Toxicity to fish	: LC50 (Oncorhynchus mykiss (rainbow trout)): > 500 mg/l Exposure time: 96 h
------------------	---

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 24 h Method: DIN 38412 Remarks: The test was conducted according to guideline
Toxicity to algae/aquatic plants	: ErC50 (Desmodesmus subspicatus (green algae)): 600.5 mg/l Exposure time: 72 h EC10 (Desmodesmus subspicatus (green algae)): 92.6 mg/l Exposure time: 72 h
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): 12.5 mg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: The test was conducted according to guideline
Toxicity to microorganisms	: EC50 (activated sludge): > 600 mg/l Exposure time: 30 min Method: ISO 8192 Remarks: The test was conducted according to guideline

Propan-2-ol:

Toxicity to fish	: LC50 (Pimephales promelas (fathead minnow)): 9,640 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): > 10,000 mg/l Exposure time: 24 h
Toxicity to microorganisms	: EC50 (Pseudomonas putida): > 1,050 mg/l Exposure time: 16 h

Butanone:

Toxicity to fish	: LC50 (Pimephales promelas (fathead minnow)): 2,993 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 308 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	: ErC50 (Pseudokirchneriella subcapitata (green algae)): 2,029 mg/l Exposure time: 96 h Method: OECD Test Guideline 201 NOEC (Pseudokirchneriella subcapitata (green algae)): 1,240 mg/l Exposure time: 96 h Method: OECD Test Guideline 201

6-Octenal, 3,7-dimethyl-:

Toxicity to fish	: LC50 (Leuciscus idus (Golden orfe)): 22 mg/l
------------------	--

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version 4.0 Revision Date: 04/14/2025 SDS Number: 4624620-00015 Date of last issue: 09/28/2024
Date of first issue: 07/09/2019

	Exposure time: 96 h Method: DIN 38412
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 8.7 mg/l Exposure time: 48 h Method: Directive 67/548/EEC, Annex V, C.2.
Toxicity to algae/aquatic plants	: ErC50 (Desmodesmus subspicatus (green algae)): 13.33 mg/l Exposure time: 72 h EC10 (Desmodesmus subspicatus (green algae)): 4.52 mg/l Exposure time: 72 h
Toxicity to microorganisms	: EC10 (Pseudomonas putida): 650 mg/l Exposure time: 30 min

Fluazuron:

Toxicity to fish	: LC50 (Cyprinus carpio (Carp)): > 9.1 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia sp. (Water flea)): 0.0006 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	: NOEC (Raphidocelis subcapitata (freshwater green alga)): 27.9 mg/l Exposure time: 72 h

Persistence and degradability

Components:

N-Methyl-2-pyrrolidone:

Biodegradability	: Result: Readily biodegradable. Biodegradation: 73 % Exposure time: 28 d Method: OECD Test Guideline 301C Remarks: The test was conducted according to guideline
------------------	---

Propan-2-ol:

Biodegradability	: Result: rapidly degradable
BOD/COD	: BOD: 1,19 (BOD5) COD: 2,23 BOD/COD: 53 %

Butanone:

Biodegradability	: Result: Readily biodegradable. Biodegradation: 98 % Exposure time: 28 d Method: OECD Test Guideline 301D
------------------	---

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

6-Octenal, 3,7-dimethyl-:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 83 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Bioaccumulative potential

Components:

N-Methyl-2-pyrrolidone:

Partition coefficient: n-octanol/water : log Pow: -0.46
Method: OECD Test Guideline 107
Remarks: The test was conducted according to guideline

Propan-2-ol:

Partition coefficient: n-octanol/water : log Pow: 0.05

Butanone:

Partition coefficient: n-octanol/water : log Pow: 0.3

6-Octenal, 3,7-dimethyl-:

Partition coefficient: n-octanol/water : log Pow: 3.62

Fluazuron:

Partition coefficient: n-octanol/water : log Pow: 5.1

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Do not dispose of waste into sewer.
Dispose of in accordance with local regulations.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
Empty containers retain residue and can be dangerous.
Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death.
If not otherwise specified: Dispose of as unused product.

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	: UN 1993
Proper shipping name	: FLAMMABLE LIQUID, N.O.S. (Propan-2-ol, Butanone)
Class	: 3
Packing group	: III
Labels	: 3
Environmentally hazardous	: no

IATA-DGR

UN/ID No.	: UN 1993
Proper shipping name	: Flammable liquid, n.o.s. (Propan-2-ol, Butanone)
Class	: 3
Packing group	: III
Labels	: Flammable Liquids
Packing instruction (cargo aircraft)	: 366
Packing instruction (passenger aircraft)	: 355

IMDG-Code

UN number	: UN 1993
Proper shipping name	: FLAMMABLE LIQUID, N.O.S. (Propan-2-ol, Butanone, Fluazuron, 2,6-Di-tert-butyl-p-cresol)
Class	: 3
Packing group	: III
Labels	: 3
EmS Code	: F-E, <u>S-E</u>
Marine pollutant	: yes

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

Not applicable for product as supplied.

Domestic regulation

TDG

UN number	: UN 1993
Proper shipping name	: FLAMMABLE LIQUID, N.O.S. (Propan-2-ol, Butanone)
Class	: 3
Packing group	: III
Labels	: 3
ERG Code	: 128
Marine pollutant	: yes(Fluazuron, 2,6-Di-tert-butyl-p-cresol)

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.

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

SECTION 15. REGULATORY INFORMATION

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

AICS	:	not determined
DSL	:	not determined
IECSC	:	not determined

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	:	ACGIH - Biological Exposure Indices (BEI)
CA AB OEL	:	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
CA BC OEL	:	Canada. British Columbia OEL
CA ON OEL	:	Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act.
CA QC OEL	:	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
CA AB OEL / TWA	:	8-hour Occupational exposure limit
CA AB OEL / STEL	:	15-minute occupational exposure limit
CA BC OEL / TWA	:	8-hour time weighted average
CA BC OEL / STEL	:	short-term exposure limit
CA ON OEL / TWA	:	Time-Weighted Average Limit (TWA)
CA QC OEL / TWAEV	:	Time-weighted average exposure value
CA QC OEL / STEV	:	Short-term exposure value

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect

SAFETY DATA SHEET

according to the Hazardous Products Regulations



Fluazuron / Citronellal Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 09/28/2024
4.0	04/14/2025	4624620-00015	Date of first issue: 07/09/2019

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

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Revision Date : 04/14/2025
Date format : mm/dd/yyyy

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

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 is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

CA / Z8