

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

SECTION 1. IDENTIFICATION

Product name : Flumethrin (1%) Formulation

Manufacturer or supplier's details

Company name of supplier : Merck & Co., Inc
Address : 126 E. Lincoln Avenue
Rahway, New Jersey U.S.A. 07065
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 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Hazards for the product as supplied

Flammable liquids : Category 3
Acute toxicity (Oral) : Category 4
Acute toxicity (Dermal) : Category 3
Skin irritation : Category 2
Eye irritation : Category 2A
Reproductive toxicity : Category 1B
Specific target organ toxicity : Category 1
- single exposure (Oral)
Specific target organ toxicity : Category 1
- repeated exposure (Oral)
Specific target organ toxicity : Category 2 (Auditory system)
- repeated exposure
Aspiration hazard : Category 1

Other hazards

Vapors may form explosive mixture with air.

GHS label elements

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version 6.2 Revision Date: 05/09/2026 SDS Number: 4019096-00021 Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

Hazard pictograms : 

Signal Word : Danger

Hazard Statements : H226 Flammable liquid and vapor.
H302 Harmful if swallowed.
H304 May be fatal if swallowed and enters airways.
H311 Toxic in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H360D May damage the unborn child.
H370 Causes damage to organs if swallowed.
H372 Causes damage to organs through prolonged or repeated exposure if swallowed.
H373 May cause damage to organs (Auditory system) 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 flame and hot surfaces. No smoking.
P233 Keep container tightly closed.
P241 Use explosion-proof electrical, ventilating and lighting equipment.
P242 Use non-sparking tools.
P243 Take action to prevent static discharges.
P260 Do not breathe mist or vapors.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves, protective clothing, eye protection and face protection.

Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER.
P302 + P352 + P312 IF ON SKIN: Wash with plenty of soap and water. Call a doctor if you feel unwell.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
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.
P331 Do NOT induce vomiting.
P332 + P313 If skin irritation occurs: Get medical attention.
P337 + P313 If eye irritation persists: Get medical attention.

Storage:

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version 6.2 Revision Date: 05/09/2026 SDS Number: 4019096-00021 Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal:

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
Paraffin oil	8012-95-1*	>= 60 - <= 80	TSC
Xylene	1330-20-7*	>= 7 - <= 13	TSC
Flumethrin	69770-45-2*	>= 0.5 - <= 1.5	TSC
Toluene	108-88-3*	>= 0.1 - <= 1	TSC

* Indicates that the identifier is a CAS No.

TSC- the 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.
If vomiting occurs have person lean forward.
Call a physician or poison control center immediately.
Rinse mouth thoroughly with water.
Never give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed.
May be fatal if swallowed and enters airways.
Toxic in contact with skin.

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

Causes skin irritation.
Causes serious eye irritation.
May damage the unborn child.
Causes damage to organs if swallowed.
Causes damage to organs through prolonged or repeated exposure if swallowed.
May cause damage to organs through prolonged or repeated exposure.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended 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 products : Carbon oxides

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).

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

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 ventilation.
Use explosion-proof electrical, ventilating and lighting equipment.

Advice on safe handling : Do not get on skin or clothing.
Do not breathe 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.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Take precautionary measures against static discharges.
Do not eat, drink or smoke when using this product.
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:

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version 6.2 Revision Date: 05/09/2026 SDS Number: 4019096-00021 Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

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
Paraffin oil	8012-95-1	TWA (Mist)	5 mg/m ³	OSHA Z-1
		TWA (Mist)	5 mg/m ³	NIOSH REL
		ST (Mist)	10 mg/m ³	NIOSH REL
		TWA (Inhalable particulate matter)	5 mg/m ³	ACGIH
Xylene	1330-20-7	TWA	100 ppm 435 mg/m ³	OSHA Z-1
		TWA	20 ppm	ACGIH
Flumethrin	69770-45-2	TWA	30 µg/m ³ (OEB 3)	Internal
	Further information: Skin			
		Wipe limit	300 µg/100 cm ²	Internal
Toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m ³	NIOSH REL
		ST	150 ppm 560 mg/m ³	NIOSH REL
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm (10 minutes)	OSHA Z-2

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Xylene	1330-20-7	Methylhippuric acids	Urine	End of shift (As soon as possible after	0.3 g/g creatinine	ACGIH BEI

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version 6.2 Revision Date: 05/09/2026 SDS Number: 4019096-00021 Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

				exposure ceases)		
Toluene	108-88-3	Toluene	In blood	Prior to last shift of work-week	0.02 mg/l	ACGIH BEI
		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI
		o-Cresol	Urine	End of shift (As soon as possible after exposure ceases)	0.3 mg/g creatinine	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.
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 : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : Chemical-resistant gloves

Remarks : Consider double gloving. Take note that the product is flammable, which may impact the selection of hand

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

- Eye protection : 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.
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 : light brown, yellow
- Odor : No data available
- Odor Threshold : No data available
- pH : No data available
- Melting point/freezing point : No data available
- Initial boiling point and boiling range : No data available
- Flash point : 129 °F / 54 °C
- Evaporation rate : No data available
- Flammability (solid, gas) : Not applicable
- Flammability (liquids) : No data available
- Upper explosion limit / Upper flammability limit : No data available
- Lower explosion limit / Lower : No data available

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

flammability limit

Vapor pressure : No data available

Relative vapor density : No data available

Relative density : No data available

Density : 0.820 - 0.900 g/cm³

Solubility(ies)

Water solubility : No data available

Partition coefficient: n-octanol/water : Not applicable

Autoignition temperature : No data available

Decomposition temperature : No data available

Viscosity

Viscosity, kinematic : No data available

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Molecular weight : No data available

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

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version 6.2 Revision Date: 05/09/2026 SDS Number: 4019096-00021 Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

Ingestion
Eye contact

Acute toxicity

Harmful if swallowed.
Toxic in contact with skin.

Product:

Acute oral toxicity : Acute toxicity estimate: 404.59 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: > 200 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: 402.36 mg/kg
Method: Calculation method

Components:

Paraffin oil:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Xylene:

Acute oral toxicity : LD50 (Rat): 3,523 mg/kg
Method: Directive 67/548/EEC, Annex V, B.1.

Acute inhalation toxicity : LC50 (Rat): 27.571 mg/l
Exposure time: 4 h
Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rabbit): > 4,200 mg/kg

Flumethrin:

Acute oral toxicity : LD50 (Rat): > 20 mg/kg
LD50 (Mouse): > 20 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 2,934 mg/l

Acute dermal toxicity : LD50 (Rat): > 5 mg/kg

Toluene:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): 28.1 mg/l
Exposure time: 4 h

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version 6.2 Revision Date: 05/09/2026 SDS Number: 4019096-00021 Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Components:

Paraffin oil:

Species : Rabbit
Result : No skin irritation

Xylene:

Species : Rabbit
Result : Skin irritation

Flumethrin:

Result : No skin irritation

Toluene:

Species : Rabbit
Method : Directive 67/548/EEC, Annex V, B.4.
Result : Skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

Paraffin oil:

Species : Rabbit
Result : No eye irritation

Xylene:

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

Flumethrin:

Result : Mild eye irritation

Toluene:

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

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Components:

Xylene:

Test Type	:	Local lymph node assay (LLNA)
Routes of exposure	:	Skin contact
Species	:	Mouse
Result	:	negative

Toluene:

Test Type	:	Maximization Test
Routes of exposure	:	Skin contact
Species	:	Guinea pig
Method	:	Directive 67/548/EEC, Annex V, B.6.
Result	:	negative

Germ cell mutagenicity

Not classified based on available information.

Components:

Xylene:

Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
-----------------------	---	--

	:	Test Type: Chromosome aberration test in vitro Result: negative
--	---	--

	:	Test Type: In vitro mammalian cell gene mutation test Result: negative
--	---	---

	:	Test Type: In vitro sister chromatid exchange assay in mammalian cells Result: negative
--	---	--

Genotoxicity in vivo	:	Test Type: Rodent dominant lethal test (germ cell) (in vivo) Species: Mouse Application Route: Skin contact Result: negative
----------------------	---	---

Flumethrin:

Genotoxicity in vitro	:	Test Type: Microbial mutagenesis assay (Ames test) Test system: Salmonella typhimurium Result: equivocal
-----------------------	---	--

	:	Test Type: Chromosomal aberration
--	---	-----------------------------------

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

Test system: Chinese hamster ovary cells
Result: positive
Remarks: Not classified due to inconclusive data.

Test Type: Chromosomal aberration
Test system: Human lymphocytes
Result: negative

Test Type: in vitro micronucleus test
Test system: Mouse
Result: negative

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

Toluene:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Result: negative

Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
Species: Rat
Application Route: Intraperitoneal injection
Result: negative

Test Type: Rodent dominant lethal test (germ cell) (in vivo)
Species: Mouse
Application Route: inhalation (vapor)
Method: OECD Test Guideline 478
Result: negative

Carcinogenicity

Not classified based on available information.

Components:

Xylene:

Species : Rat
Application Route : Ingestion
Exposure time : 103 weeks
Result : negative

Flumethrin:

Species : Rat
Application Route : Oral
Exposure time : 2 Years
NOAEL : 0.5 mg/kg body weight
Result : negative

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version 6.2 Revision Date: 05/09/2026 SDS Number: 4019096-00021 Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen

Toluene:

Species : Rat
Application Route : inhalation (vapor)
Exposure time : 103 weeks
Result : negative

Species : Mouse
Application Route : Skin contact
Exposure time : 24 Months
Result : negative

IARC No ingredient 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 ingredient 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:

Xylene:

Effects on fertility : Test Type: One-generation reproduction toxicity study
Species: Rat
Application Route: inhalation (vapor)
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: inhalation (vapor)
Result: negative

Flumethrin:

Effects on fetal development : Test Type: Development
Species: Rat
Application Route: Oral
Developmental Toxicity: NOAEL: 0.36 mg/kg body weight
Result: Maternal toxicity observed., Reduced offspring weight gain., Fetal abnormalities.

Test Type: Development
Species: Rat
Application Route: Oral
Developmental Toxicity: NOAEL: 0.5 mg/kg body weight
Result: Maternal toxicity observed., Skeletal malformations.,

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version 6.2 Revision Date: 05/09/2026 SDS Number: 4019096-00021 Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

Reduced fetal weight.

Test Type: Development
Species: Rabbit
Application Route: Oral
Developmental Toxicity: NOAEL: 1.7 mg/kg body weight
Result: No teratogenic potential.

Reproductive toxicity - Assessment : May damage the unborn child.

Toluene:

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: inhalation (vapor)
Method: OECD Test Guideline 416
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: inhalation (vapor)
Result: positive

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

STOT-single exposure

Causes damage to organs if swallowed.

Components:

Xylene:

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

Flumethrin:

Routes of exposure : Oral
Assessment : Causes damage to organs.

Toluene:

Assessment : May cause drowsiness or dizziness.

STOT-repeated exposure

Causes damage to organs through prolonged or repeated exposure if swallowed.
May cause damage to organs (Auditory system) through prolonged or repeated exposure.

Components:

Xylene:

Routes of exposure : inhalation (vapor)
Target Organs : Auditory system
Assessment : Shown to produce significant health effects in animals at con-

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version 6.2 Revision Date: 05/09/2026 SDS Number: 4019096-00021 Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

centrations of >0.2 to 1 mg/l/6h/d.

Flumethrin:

Routes of exposure : Oral
Assessment : Causes damage to organs through prolonged or repeated exposure.

Toluene:

Routes of exposure : Inhalation
Target Organs : Central nervous system
Assessment : May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

Paraffin oil:

Species : Rat, female
LOAEL : 161 mg/kg
Application Route : Ingestion
Exposure time : 90 Days

Xylene:

Species : Rat
LOAEL : > 0.2 - 1 mg/l
Application Route : inhalation (vapor)
Exposure time : 13 Weeks
Remarks : Based on data from similar materials

Species : Rat
LOAEL : 150 mg/kg
Application Route : Ingestion
Exposure time : 90 Days

Flumethrin:

Species : Rat
NOAEL : 0.7 mg/kg
Application Route : Oral
Exposure time : 13 Weeks
Target Organs : digestive system, Skin
Symptoms : decrease in appetite, Skin disorders

Species : Dog
NOAEL : 0.88 mg/kg
Application Route : Oral
Exposure time : 13 Weeks
Target Organs : digestive system, Hair, Skin
Symptoms : decrease in appetite, Skin disorders

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

Toluene:

Species : Rat
LOAEL : 1.875 mg/l
Application Route : inhalation (vapor)
Exposure time : 6 Months

Species : Rat
NOAEL : 625 mg/kg
Application Route : Ingestion
Exposure time : 13 Weeks

Aspiration toxicity

May be fatal if swallowed and enters airways.

Components:

Paraffin oil:

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

Xylene:

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

Toluene:

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

Experience with human exposure

Components:

Toluene:

Inhalation : Target Organs: Central nervous system
Symptoms: Neurological disorders

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Paraffin oil:

Toxicity to fish : LL50 (Scophthalmus maximus (turbot)): > 100 mg/l
Exposure time: 96 h
Test substance: Water Accommodated Fraction
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EL50 (Acartia tonsa (Calanoid copepod)): > 100 mg/l
Exposure time: 48 h
Test substance: Water Accommodated Fraction

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version 6.2 Revision Date: 05/09/2026 SDS Number: 4019096-00021 Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : EL50 (Skeletonema costatum (marine diatom)): > 100 mg/l
Exposure time: 72 h
Test substance: Water Accommodated Fraction
Remarks: Based on data from similar materials

NOELR (Skeletonema costatum (marine diatom)): > 1 mg/l
Exposure time: 72 h
Test substance: Water Accommodated Fraction
Remarks: Based on data from similar materials

Xylene:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 13.5 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1 - 10 mg/l
Exposure time: 24 h
Method: OECD Test Guideline 202
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : EC50 (Skeletonema costatum (marine diatom)): 10 mg/l
Exposure time: 72 h

Toxicity to fish (Chronic toxicity) : NOEC (Danio rerio (zebra fish)): > 0.1 - < 1 mg/l
Exposure time: 35 d
Method: OECD Test Guideline 210
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EL10 (Daphnia magna (Water flea)): > 1 - 10 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211
Remarks: Based on data from similar materials

Toxicity to microorganisms : NOEC: > 100 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209
Remarks: Based on data from similar materials

Flumethrin:

Toxicity to fish (Chronic toxicity) : NOEC (Danio rerio (zebra fish)): 0.046 mg/l
Exposure time: 144 h

Toluene:

Toxicity to fish : LC50 (Oncorhynchus kisutch (coho salmon)): 5.5 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Ceriodaphnia dubia (water flea)): 3.78 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : NOEC (Skeletonema costatum (marine diatom)): 10 mg/l
Exposure time: 72 h

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus kisutch (coho salmon)): 1.39 mg/l
Exposure time: 40 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Ceriodaphnia dubia (water flea)): 0.74 mg/l
Exposure time: 7 d

Toxicity to microorganisms : EC50 (Nitrosomonas sp.): 84 mg/l
Exposure time: 24 h

Persistence and degradability

Components:

Xylene:

Biodegradability : Result: Readily biodegradable.
Biodegradation: > 70 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
Remarks: Based on data from similar materials

Toluene:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 80 %
Exposure time: 20 d

Bioaccumulative potential

Components:

Paraffin oil:

Partition coefficient: n-octanol/water : log Pow: > 4
Remarks: Calculation

Xylene:

Partition coefficient: n-octanol/water : log Pow: 3.16
Remarks: Calculation

Flumethrin:

Partition coefficient: n-octanol/water : log Pow: 6.2

Toluene:

Bioaccumulation : Species: Leuciscus idus (Golden orfe)
Bioconcentration factor (BCF): 90

Partition coefficient: n-octanol/water : log Pow: 2.73

Mobility in soil

No data available

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

Other adverse effects

No data available

Endocrine disrupting properties

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

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

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

- UN number : UN 1992
Proper shipping name : FLAMMABLE LIQUID, TOXIC, N.O.S.
(Xylene, Flumethrin)
Class : 3
Subsidiary risk : 6.1
Packing group : III
Labels : 3 (6.1)
Environmentally hazardous : no

IATA-DGR

- UN/ID No. : UN 1992
Proper shipping name : Flammable liquid, toxic, n.o.s.
(Xylene, Flumethrin)
Class : 3
Subsidiary risk : 6.1
Packing group : III
Labels : Flammable Liquids, Toxic
Packing instruction (cargo aircraft) : 366
Packing instruction (passenger aircraft) : 355

IMDG-Code

- UN number : UN 1992
Proper shipping name : FLAMMABLE LIQUID, TOXIC, N.O.S.
(Xylene, Flumethrin)
Class : 3
Subsidiary risk : 6.1
Packing group : III

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version 6.2 Revision Date: 05/09/2026 SDS Number: 4019096-00021 Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

Labels : 3 (6.1)
EmS Code : F-E, S-D
Marine pollutant : no

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number : UN 1992
Proper shipping name : Flammable liquids, toxic, n.o.s.
(Xylene, Flumethrin)
Class : 3
Subsidiary risk : 6.1
Packing group : III
Labels : FLAMMABLE LIQUID, TOXIC
ERG Code : 131
Marine pollutant : no

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

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Xylene	1330-20-7	100	863
Toluene	108-88-3	1000	163988

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)
Aspiration hazard
Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Xylene 1330-20-7 >= 10 - < 20 %

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

US State Regulations

Pennsylvania Right To Know

Paraffin oil	8012-95-1
Glycerides, mixed decanoyl and octanoyl	73398-61-5
Xylene	1330-20-7
Toluene	108-88-3

California Prop. 65

WARNING: This product can expose you to chemicals including Toluene, 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 List of Hazardous Substances

Paraffin oil	8012-95-1
Xylene	1330-20-7

California Permissible Exposure Limits for Chemical Contaminants

Paraffin oil	8012-95-1
Xylene	1330-20-7

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

AICS	: not determined
CA. DSL	: not determined
CN IECSC	: not determined

SECTION 16. OTHER INFORMATION

Further information

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

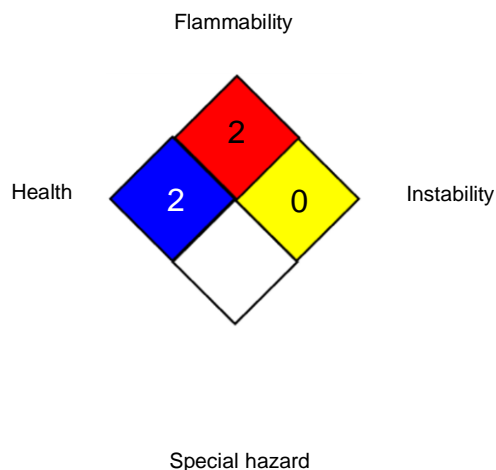
Version
6.2

Revision Date:
05/09/2026

SDS Number:
4019096-00021

Date of last issue: 12/06/2025
Date of first issue: 02/25/2019

NFPA 704:



HMIS® IV / CED:

HEALTH	*	4
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)
ACGIH BEI	:	ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-2	:	USA. Occupational Exposure Limits (OSHA) - Table Z-2
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
NIOSH REL / ST	:	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA Z-1 / TWA	:	8-hour time weighted average
OSHA Z-2 / TWA	:	8-hour time weighted average
OSHA Z-2 / CEIL	:	Acceptable ceiling concentration
OSHA Z-2 / Peak	:	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift

AIIC - Australian Inventory of Industrial Chemicals; 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 Standardization; 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 Organization for Standardization; KECI - Korea Existing Chemi-

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Flumethrin (1%) Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 12/06/2025
6.2	05/09/2026	4019096-00021	Date of first issue: 02/25/2019

icals 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, Authorization 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; 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

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 : 05/09/2026

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.

US / Z8