

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

Section 1: Identification

Product name : Tulathromycin Formulation

Other means of identification : AROVYN INJECTABLE SOLUTION (90779)

Manufacturer or supplier's details

Company : MSD

Address : 33 Whakatiki Street - Private Bag 908
Upper Hutt - New Zealand

Telephone : 0800 800 543

Emergency telephone number : 0800 764 766 (0800 POISON) 0800 243 622 (0800
CHEMCALL)

E-mail address : EHSDATASTEWARD@msd.com

Recommended use of the chemical and restrictions on use

Recommended use : Veterinary product

Restrictions on use : Not applicable

Section 2: Hazard identification**GHS Classification**

Skin corrosion/irritation : Category 2

Serious eye damage/eye irritation : Category 1

Skin sensitisation : Category 1

Reproductive toxicity : Category 2

Specific target organ toxicity - repeated exposure (Oral) : Category 1 (Liver, Eye)

Hazardous to the aquatic environment - acute hazard : Category 1

Hazardous to the aquatic environment - chronic hazard : Category 1

GHS label elements

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue:
10.0	14.04.2025	5297466-00014	04.12.2024
			Date of first issue: 13.11.2019

Hazard pictograms



Signal word

: Danger

Hazard statements

: H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H361 Suspected of damaging fertility or the unborn child.
H372 Causes damage to organs (Liver, Eye) through prolonged or repeated exposure if swallowed.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements

: **Prevention:**

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P391 Collect spillage.

Storage:

P405 Store locked up.

Disposal:

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

Other hazards which do not result in classification

None known.

Section 3: Composition/information on ingredients

Tulathromycin Formulation

Version 10.0 Revision Date: 14.04.2025 SDS Number: 5297466-00014 Date of last issue: 04.12.2024
 Date of first issue: 13.11.2019

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Propylene glycol	57-55-6	≥ 50 -< 70
Tulathromycin	217500-96-4	≥ 10 -< 20
Hydrochloric acid	7647-01-0	≥ 3 -< 5
Citric acid	77-92-9	≥ 1 -< 10
Sodium hydroxide	1310-73-2	≥ 1 -< 2
3-Mercaptopropane-1,2-diol	96-27-5	≥ 0.1 -< 1

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 immediately.
- 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 damage.
 Suspected of damaging fertility or the unborn child.
 Causes damage to organs through prolonged or repeated exposure if swallowed.
- 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 : None known.

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

media

Specific hazards during fire-fighting : Exposure to combustion products may be a hazard to health.

Hazardous combustion products : Carbon oxides
Chlorine compounds
Metal 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 firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Hazchem Code : 3Z

Section 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures : 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 : Soak up with inert absorbent material.
For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked 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

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue:
10.0	14.04.2025	5297466-00014	04.12.2024
			Date of first issue: 13.11.2019

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Local/Total ventilation : Use only with adequate ventilation.
- Advice on safe handling : Do not get on skin or clothing.
Do not breathe mist or vapours.
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
Keep container tightly closed.
Do not eat, drink or smoke when using this product.
Take care to prevent spills, waste and minimize release to the environment.
- 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.
- Conditions for safe storage : Keep in properly labelled containers.
Store locked up.
Keep tightly closed.
Store in accordance with the particular national regulations.
- Materials to avoid : Do not store with the following product types:
Strong oxidizing agents

Section 8: Exposure controls/personal protection

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Propylene glycol	57-55-6	WES-TWA (particulate)	10 mg/m ³	NZ OEL
		WES-TWA (Vapour and particulates)	150 ppm 474 mg/m ³	NZ OEL
Tulathromycin	217500-96-4	TWA	300 µg/m ³ (OEB 2)	Internal
Further information: DSEN				
		Wipe limit	100 µg/100 cm ²	Internal
Hydrochloric acid	7647-01-0	WES-Ceiling	5 ppm	NZ OEL

Tulathromycin Formulation

Version 10.0 Revision Date: 14.04.2025 SDS Number: 5297466-00014 Date of last issue: 04.12.2024
 Date of first issue: 13.11.2019

			7.5 mg/m ³	
		C	2 ppm	ACGIH
Sodium hydroxide	1310-73-2	WES-Ceiling	2 mg/m ³	NZ OEL
		C	2 mg/m ³	ACGIH

Engineering measures : The information below is intended for larger pilot/commercial-scale operations and manufacturing. For smaller scale, clinical, or pharmacy settings, site-specific internal risk assessment practices should be conducted to determine appropriate exposure control measures. The health hazard risks of handling this material are dependent on multiple factors, including but not limited to physical form and quantity handled. If applicable, use process enclosures, local exhaust ventilation (e.g., Biosafety Cabinet, Ventilated Balance Enclosures), or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels as low as reasonably achievable.

All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment. Essentially no open handling permitted.

Use closed processing systems or containment technologies. If handled in a laboratory, use a properly designed biosafety cabinet, fume hood, or other containment device if the potential exists for aerosolization. If this potential does not exist, handle over lined trays or benchtops.

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 : Combined particulates and acidic gas/vapour type

Hand protection

Material : Chemical-resistant gloves

Remarks : Consider double gloving.

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.

Section 9: Physical and chemical properties

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

Appearance	: liquid
Colour	: Colorless to pale yellow
Odour	: slight
Odour Threshold	: No data available
pH	: 5.1 - 5.7
Melting point/freezing point	: 190 - 192 °C
Initial boiling point and boiling range	: No data available
Flash point	: No data available
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 flammability limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Relative density	: No data available
Density	: 1.07 g/cm ³
Solubility(ies)	
Water solubility	: > 1,000 mg/l
Partition coefficient: n-octanol/water	: log Pow: -1.41
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	
Viscosity, kinematic	: No data available
Explosive properties	: Not explosive

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue:
10.0	14.04.2025	5297466-00014	04.12.2024
			Date of first issue: 13.11.2019

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

Molecular weight : 806.09 g/mol

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 : Can react with strong oxidizing agents.
Conditions to avoid : None known.
Incompatible materials : Oxidizing agents
Hazardous decomposition products : No hazardous decomposition products are known.

Section 11: Toxicological information

Exposure routes : 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 inhalation toxicity : Acute toxicity estimate: > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

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

Components:**Propylene glycol:**

Acute oral toxicity : LD50 (Rat): 22,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 44.9 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

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

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue:
10.0	14.04.2025	5297466-00014	04.12.2024
			Date of first issue: 13.11.2019

toxicity

Tulathromycin:

Acute oral toxicity	: LD50 (Dog): > 1,000 mg/kg Target Organs: Gastrointestinal tract
	LD50 (Rat): > 2,000 mg/kg Target Organs: Gastrointestinal tract
Acute dermal toxicity	: LD50 (Rabbit): > 2,000 mg/kg Target Organs: Gastrointestinal tract

Hydrochloric acid:

Acute oral toxicity	: Acute toxicity estimate: 500 mg/kg Method: Expert judgement Remarks: Based on national or regional regulation.
Acute inhalation toxicity	: Acute toxicity estimate: 0.5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Expert judgement Remarks: Based on national or regional regulation.
Acute dermal toxicity	: Acute toxicity estimate: 1,100 mg/kg Method: Expert judgement Remarks: Based on national or regional regulation.

Citric acid:

Acute oral toxicity	: LD50 (Mouse): 5,400 mg/kg
Acute dermal toxicity	: LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity

Sodium hydroxide:

Acute oral toxicity	: Acute toxicity estimate: 500 mg/kg Method: Expert judgement Remarks: Based on national or regional regulation.
Acute inhalation toxicity	: Assessment: Corrosive to the respiratory tract.
Acute dermal toxicity	: Acute toxicity estimate: 1,100 mg/kg Method: Expert judgement Remarks: Based on national or regional regulation.

3-Mercaptopropane-1,2-diol:

Acute oral toxicity	: LD50 (Rat): 648 mg/kg
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Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

Acute dermal toxicity : LD50 (Rabbit): 673 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Components:**Propylene glycol:**

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

Tulathromycin:

Species : Rabbit
Result : No skin irritation

Hydrochloric acid:

Species : reconstructed human epidermis (RhE)
Method : OECD Test Guideline 431
Remarks : The test was conducted according to guideline

Result : Corrosive after 3 minutes or less of exposure

Citric acid:

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

Sodium hydroxide:

Result : Corrosive after 3 minutes or less of exposure

3-Mercaptopropane-1,2-diol:

Species : Rabbit
Result : Skin irritation

Serious eye damage/eye irritation

Causes serious eye damage.

Components:**Propylene glycol:**

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

Tulathromycin:

Species : Rabbit

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

|| Result : Irreversible effects on the eye

Hydrochloric acid:

|| Species : Bovine cornea
|| Method : OECD Test Guideline 437
|| Remarks : The test was conducted according to guideline

|| Result : Irreversible effects on the eye

Citric acid:

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

Sodium hydroxide:

|| Result : Irreversible effects on the eye
|| Remarks : Based on skin corrosivity.

3-Mercaptopropane-1,2-diol:

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

Respiratory or skin sensitisation**Skin sensitisation**

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified based on available information.

Components:**Propylene glycol:**

|| Test Type : Maximisation Test
|| Exposure routes : Skin contact
|| Species : Guinea pig
|| Result : negative

Tulathromycin:

|| Test Type : Maximisation Test
|| Exposure routes : Skin contact
|| Species : Guinea pig
|| Assessment : May cause sensitisation by skin contact.
|| Result : Causes sensitisation.

Hydrochloric acid:

|| Test Type : Human repeat insult patch test (HRIPT)
|| Exposure routes : Skin contact

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

Species	: Humans
Result	: negative

Sodium hydroxide:

Test Type	: Human repeat insult patch test (HRIPT)
Exposure routes	: Skin contact
Result	: negative

3-Mercaptopropane-1,2-diol:

Test Type	: Local lymph node assay (LLNA)
Exposure routes	: Skin contact
Species	: Mouse
Method	: OECD Test Guideline 429
Result	: positive

Assessment	: Probability or evidence of low to moderate skin sensitisation rate in humans
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Chronic toxicity**Germ cell mutagenicity**

Not classified based on available information.

Components:**Propylene glycol:**

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Result: negative Test Type: Chromosome aberration test in vitro Method: OECD Test Guideline 473 Result: negative
Genotoxicity in vivo	: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Intraperitoneal injection Result: negative

Tulathromycin:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Result: negative Test Type: Chromosome aberration test in vitro Result: negative
Genotoxicity in vivo	: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Rat Result: negative

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

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

Hydrochloric acid:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Remarks: No test guideline followed

Citric acid:

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

Test Type: in vitro micronucleus test
Result: positive

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: Ingestion
Result: negative

3-Mercaptopropane-1,2-diol:

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

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative
Remarks: Based on data from similar materials

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative
Remarks: Based on data from similar materials

Carcinogenicity

Not classified based on available information.

Components:**Propylene glycol:**

Species : Rat

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

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

Tulathromycin:

Carcinogenicity - Assessment	: No data available
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Hydrochloric acid:

Species	: Rat, male
Application Route	: inhalation (gas)
Exposure time	: 128 weeks
Result	: negative
Remarks	: No test guideline followed

Reproductive toxicity

Suspected of damaging fertility or the unborn child.

Components:**Propylene glycol:**

Effects on fertility	: Test Type: Two-generation reproduction toxicity study Species: Mouse Application Route: Ingestion Result: negative
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Effects on foetal development	: Test Type: Embryo-foetal development Species: Mouse Application Route: Ingestion Result: negative
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Tulathromycin:

Effects on fertility	: Test Type: Fertility/early embryonic development Species: Rat Application Route: Oral Fertility: NOAEL: 100 mg/kg body weight Result: No significant adverse effects were reported
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Effects on foetal development	: Test Type: Embryo-foetal development Species: Rat Application Route: Oral General Toxicity Maternal: NOAEL: 15 mg/kg body weight Teratogenicity: NOAEL: 15 mg/kg body weight Result: Postimplantation loss.
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	: Test Type: Embryo-foetal development Application Route: Oral General Toxicity Maternal: NOAEL: 15 mg/kg body weight Teratogenicity: NOAEL: 15 mg/kg body weight Result: Maternal toxicity observed.
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Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue:
10.0	14.04.2025	5297466-00014	04.12.2024
			Date of first issue: 13.11.2019

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

Citric acid:

Effects on foetal development : Test Type: One-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Result: negative

3-Mercaptopropane-1,2-diol:

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 416
Result: negative
Remarks: Based on data from similar materials

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

STOT - single exposure

Not classified based on available information.

Components:**Tulathromycin:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

Citric acid:

Assessment : May cause respiratory irritation.

STOT - repeated exposure

Causes damage to organs (Liver, Eye) through prolonged or repeated exposure if swallowed.

Components:**Tulathromycin:**

Exposure routes : Oral
Target Organs : Liver, Eye
Assessment : Shown to produce significant health effects in animals at concentrations of 10 mg/kg bw or less.

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

Repeated dose toxicity**Components:****Propylene glycol:**

Species	: Rat, male
NOAEL	: $\geq 1,700$ mg/kg
Application Route	: Ingestion
Exposure time	: 2 yr

Tulathromycin:

Species	: Rat
NOAEL	: 5 mg/kg
Application Route	: Oral
Exposure time	: 3 Months
Target Organs	: Liver
Symptoms	: Liver disorders

Species	: Dog
NOAEL	: 5 mg/kg
Application Route	: Oral
Exposure time	: 3 Months
Target Organs	: Liver, Eye
Symptoms	: Liver disorders, Eye disease

Hydrochloric acid:

Species	: Rat, male
LOAEL	: > 12.5 mg/kg
Application Route	: Ingestion
Exposure time	: 2 yr
Method	: OECD Test Guideline 453
Remarks	: The test was conducted equivalent or similar to guideline Based on data from similar materials

Citric acid:

Species	: Rat
NOAEL	: 4,000 mg/kg
LOAEL	: 8,000 mg/kg
Application Route	: Ingestion
Exposure time	: 10 Days

3-Mercaptopropane-1,2-diol:

Species	: Rat
LOAEL	: > 100 mg/kg
Application Route	: Ingestion
Exposure time	: 55 Days
Method	: OECD Test Guideline 422
Remarks	: Based on data from similar materials

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue:
10.0	14.04.2025	5297466-00014	04.12.2024
			Date of first issue: 13.11.2019

Aspiration toxicity

Not classified based on available information.

Experience with human exposure**Components:****Tulathromycin:**

Ingestion	:	Symptoms: Diarrhoea, Nausea, Abdominal pain, Vomiting
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Section 12: Ecological information**Ecotoxicity****Components:****Propylene glycol:**

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 40,613 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Ceriodaphnia dubia (water flea)): 18,340 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	ErC50 (Skeletonema costatum (marine diatom)): 19,300 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Ceriodaphnia dubia (water flea)): 13,020 mg/l Exposure time: 7 d
Toxicity to microorganisms	:	NOEC (Pseudomonas putida): > 20,000 mg/l Exposure time: 18 h

Tulathromycin:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 4 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 0.044 mg/l End point: Growth Exposure time: 72 h Method: OECD Test Guideline 201
		EC10 (Pseudokirchneriella subcapitata (green algae)): 0.014 mg/l

Tulathromycin Formulation

Version 10.0	Revision Date: 14.04.2025	SDS Number: 5297466-00014	Date of last issue: 04.12.2024 Date of first issue: 13.11.2019
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	End point: Growth Exposure time: 72 h Method: OECD Test Guideline 201
	EC50 (Anabaena flos-aquae): 0.0023 mg/l End point: Growth Exposure time: 72 h Method: OECD Test Guideline 201
	EC10 (Anabaena flos-aquae): 0.00035 mg/l End point: Growth Exposure time: 72 h Method: OECD Test Guideline 201
	EC50 (Synechococcus leopoliensis (blue-green algae)): 0.0028 mg/l End point: Growth Exposure time: 72 h Method: OECD Test Guideline 201
	EC10 (Synechococcus leopoliensis (blue-green algae)): 0.0012 mg/l End point: Growth Exposure time: 72 h Method: OECD Test Guideline 201
M-Factor (Acute aquatic toxicity)	: 100
M-Factor (Chronic aquatic toxicity)	: 100
Toxicity to microorganisms	: EC50: 41.1 mg/l Exposure time: 3 h Test Type: Respiration inhibition of activated sludge Method: OECD Test Guideline 209
	EC10: 0.667 mg/l Exposure time: 3 h Test Type: Respiration inhibition of activated sludge Method: OECD Test Guideline 209
Hydrochloric acid:	
Toxicity to fish	: LC50 (Lepomis macrochirus (Bluegill sunfish)): > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 Remarks: The test was conducted according to guideline Based on data from similar materials
Toxicity to algae/aquatic	: ErC50 (Raphidocelis subcapitata (freshwater green alga)): >

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue:
10.0	14.04.2025	5297466-00014	04.12.2024
			Date of first issue: 13.11.2019

plants		100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: The test was conducted according to guideline Based on data from similar materials
		EC10 (Raphidocelis subcapitata (freshwater green alga)): > 1 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: The test was conducted according to guideline Based on data from similar materials
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): > 1 mg/l Exposure time: 33 d Method: OECD Test Guideline 210 Remarks: The test was conducted equivalent or similar to guideline Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia pulex (Water flea)): > 1 mg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: The test was conducted equivalent or similar to guideline Based on data from similar materials
Toxicity to microorganisms	:	EC10 (activated sludge): > 1 mg/l Exposure time: 3 h Remarks: Based on data from similar materials

Citric acid:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): > 100 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1,535 mg/l Exposure time: 24 h

3-Mercaptopropane-1,2-diol:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 10 - 100 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 10 - 100 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 Remarks: Based on data from similar materials
Toxicity to algae/aquatic plants	:	ErC50 (Raphidocelis subcapitata (freshwater green alga)): > 10 - 100 mg/l

Tulathromycin Formulation

Version 10.0	Revision Date: 14.04.2025	SDS Number: 5297466-00014	Date of last issue: 04.12.2024 Date of first issue: 13.11.2019
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	Exposure time: 72 h
	Method: OECD Test Guideline 201
	Remarks: Based on data from similar materials
	EC10 (Raphidocelis subcapitata (freshwater green alga)): > 1 mg/l
	Exposure time: 72 h
	Method: OECD Test Guideline 201
	Remarks: Based on data from similar materials
	Toxicity to microorganisms : EC10 (activated sludge): > 1 mg/l
	Exposure time: 3 h
	Method: OECD Test Guideline 209
	Remarks: Based on data from similar materials

Persistence and degradability**Components:****Propylene glycol:**

Biodegradability	: Result: Readily biodegradable.
	Biodegradation: 98.3 %
	Exposure time: 28 d
	Method: OECD Test Guideline 301F

Tulathromycin:

Biodegradability	: Result: Not readily biodegradable.
	Exposure time: 29 d
	Method: OECD Test Guideline 301B

Citric acid:

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

3-Mercaptopropane-1,2-diol:

Biodegradability	: Result: Readily biodegradable.
	Remarks: Based on data from similar materials

Bioaccumulative potential**Components:****Propylene glycol:**

Partition coefficient: n-octanol/water	: log Pow: -1.07
	Method: Regulation (EC) No. 440/2008, Annex, A.8

Tulathromycin:

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

Partition coefficient: n-octanol/water : log Pow: -1.41
pH: 7

Citric acid:

Partition coefficient: n-octanol/water : log Pow: -1.72

3-Mercaptopropane-1,2-diol:

Partition coefficient: n-octanol/water : log Pow: -0.84
Method: OECD Test Guideline 117

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.
If not otherwise specified: Dispose of as unused product.

Section 14: Transport information**International Regulations****UNRTDG**

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Tulathromycin)

Class : 9

Packing group : III

Labels : 9

Environmentally hazardous : yes

IATA-DGR

UN/ID No. : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.
(Tulathromycin)

Class : 9

Packing group : III

Labels : Miscellaneous

Packing instruction (cargo aircraft) : 964

Packing instruction (passenger aircraft) : 964

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

Environmentally hazardous : yes

IMDG-Code

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

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

Not applicable for product as supplied.

National Regulations**NZS 5433**

UN number : UN 3082
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Tulathromycin)
Class : 9
Packing group : III
Labels : 9
Hazchem Code : 3Z
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**Safety, health and environmental regulations/legislation specific for the substance or mixture****HSNO Approval Number**

HSR100759 Veterinary Medicines Non dispersive Open System Application Group Standard

Tolerable Exposure Limits (TEL)

Not applicable

Environmental Exposure Limits (EEL)

Not applicable

HSW Controls

Certified handler certificate not required.

Tracking hazardous substance not required.

Refer to the Health and Safety at Work (Hazardous Substances) Regulations 2017, for further information.

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

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

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

Section 16: Other information

Revision Date : 14.04.2025

Further information

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

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

Date format : dd.mm.yyyy

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NZ OEL : New Zealand. Workplace Exposure Standards for Atmospheric Contaminants

ACGIH / C : Ceiling limit
NZ OEL / WES-TWA : Workplace Exposure Standard - Time Weighted average
NZ OEL / WES-Ceiling : Workplace Exposure Standard - Ceiling

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

Tulathromycin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04.12.2024
10.0	14.04.2025	5297466-00014	Date of first issue: 13.11.2019

es; (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

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.

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