

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0      Revision Date: 14.04.2025      SDS Number: 11504920-00003      Date of last issue: 31.01.2025  
Date of first issue: 22.01.2025

### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Butafosfan (<1%) Formulation  
Product code : Prevensa Megabic,Megabic,Prevensa Megabic Parent

#### Manufacturer or supplier's details

Company name of supplier : MSD  
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@msd.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

Acute toxicity (Oral) : Category 5  
Skin corrosion/irritation : Category 2  
Serious eye damage/eye irritation : Category 1

#### GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H303 May be harmful if swallowed.  
H315 Causes skin irritation.  
H318 Causes serious eye damage.

Precautionary Statements : **Prevention:**  
P264 Wash skin thoroughly after handling.  
P280 Wear protective gloves/ 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 or doctor/ physician.  
P312 Call a POISON CENTER or doctor/ physician if you feel unwell.  
P332 + P313 If skin irritation occurs: Get medical advice/ atten-

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version  
3.0

Revision Date:  
14.04.2025

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11504920-00003

Date of last issue: 31.01.2025  
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tion.

P362 + P364 Take off contaminated clothing and wash it before reuse.

### Other hazards

May form explosive dust-air mixture during processing, handling or other means.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Components

Chemical name	CAS-No.	Concentration (% w/w)
Calcium diformate	544-17-2	>= 30 -< 50
Phosphoric acid	7664-38-2	>= 10 -< 20
Citric acid	77-92-9	>= 5 -< 10
L-Malic acid	97-67-6	>= 5 -< 10
Fumaric acid	110-17-8	>= 5 -< 10
Formic acid	64-18-6	>= 2 -< 3
Butafosfan	17316-67-5	>= 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 if symptoms occur.

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 if symptoms occur.  
Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and delayed : May be harmful if swallowed.  
Causes skin irritation.  
Causes serious eye damage.

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

# SAFETY DATA SHEET



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11504920-00003

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Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical

Unsuitable extinguishing media : None known.

Specific hazards during fire fighting : Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.  
Exposure to combustion products may be a hazard to health.

Hazardous combustion products : Carbon oxides  
Metal oxides  
Oxides of phosphorus

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 : 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.  
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 : Sweep up or vacuum up spillage and collect in suitable container for disposal.  
Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).  
Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.  
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.

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0 Revision Date: 14.04.2025 SDS Number: 11504920-00003 Date of last issue: 31.01.2025 Date of first issue: 22.01.2025

### SECTION 7. HANDLING AND STORAGE

Technical measures : Static electricity may accumulate and ignite suspended dust causing an explosion.  
Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

Local/Total ventilation : Use only with adequate ventilation.

Advice on safe handling : Do not get on skin or clothing.  
Do not breathe dust.  
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.  
Minimize dust generation and accumulation.  
Keep container closed when not in use.  
Keep away from heat and sources of ignition.  
Take precautionary measures against static discharges.  
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.  
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 labeled containers.  
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

#### Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Phosphoric acid	7664-38-2	VLE-PPT	1 mg/m <sup>3</sup>	NOM-010-STPS-2014
		VLE-CT	3 mg/m <sup>3</sup>	NOM-010-STPS-2014
		TWA	1 mg/m <sup>3</sup>	ACGIH
		STEL	3 mg/m <sup>3</sup>	ACGIH
Formic acid	64-18-6	VLE-PPT	5 ppm	NOM-010-STPS-2014

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0 Revision Date: 14.04.2025 SDS Number: 11504920-00003 Date of last issue: 31.01.2025 Date of first issue: 22.01.2025

		VLE-CT	10 ppm	NOM-010-STPS-2014
		TWA	5 ppm	ACGIH

**Engineering measures** : 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.

### 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, acidic, inorganic gas/vapor and organic vapor 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

Appearance : powder

Color : white

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 : Not applicable

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0      Revision Date: 14.04.2025      SDS Number: 11504920-00003      Date of last issue: 31.01.2025  
Date of first issue: 22.01.2025

---

Evaporation rate	: Not applicable
Flammability (solid, gas)	: May form explosive dust-air mixture during processing, handling or other means.
Flammability (liquids)	: Not applicable
Upper explosion limit / Upper flammability limit	: No data available
Lower explosion limit / Lower flammability limit	: No data available
Vapor pressure	: Not applicable
Relative vapor density	: Not applicable
Relative density	: No data available
Density	: No data available
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	: Not applicable
Explosive properties	: Not explosive
Oxidizing properties	: The substance or mixture is not classified as oxidizing.
Molecular weight	: No data available
Particle characteristics	
Particle size	: No data available

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## SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Not classified as a reactivity hazard.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: May form explosive dust-air mixture during processing, handling or other means. Can react with strong oxidizing agents.
Conditions to avoid	: Heat, flames and sparks.

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0 Revision Date: 14.04.2025 SDS Number: 11504920-00003 Date of last issue: 31.01.2025 Date of first issue: 22.01.2025

Incompatible materials : Avoid dust formation.  
Hazardous decomposition products : Oxidizing agents  
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

May be harmful if swallowed.

#### Product:

Acute oral toxicity : Acute toxicity estimate: 2,725 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: > 40 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Method: Calculation method

#### Components:

##### **Calcium diformate:**

Acute oral toxicity : LD50 (Rat): > 2,000 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  
Remarks: Based on data from similar materials

##### **Phosphoric acid:**

Acute oral toxicity : LD50 (Rat): 2,000 mg/kg  
Method: OECD Test Guideline 423

Acute inhalation toxicity : Assessment: Corrosive to the respiratory tract.

##### **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

##### **L-Malic acid:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0      Revision Date: 14.04.2025      SDS Number: 11504920-00003      Date of last issue: 31.01.2025  
Date of first issue: 22.01.2025

Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg  
Remarks: Based on data from similar materials

### Fumaric acid:

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

Acute inhalation toxicity : LC50 (Rat): > 1.306 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403

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

### Formic acid:

Acute oral toxicity : Acute toxicity estimate (Humans): 500 mg/kg  
Method: Expert judgment

Acute inhalation toxicity : LC50 (Rat): 7.4 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Assessment: Corrosive to the respiratory tract.

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
Remarks: Based on data from similar materials

### Butafosfan:

Acute oral toxicity : LD50 (Mouse): 16,000 mg/kg

### Skin corrosion/irritation

Causes skin irritation.

### Components:

#### Calcium diformate:

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

#### Phosphoric acid:

Result : Corrosive after 3 minutes to 1 hour of exposure  
Remarks : Based on national or regional regulation.

#### Citric acid:

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

#### L-Malic acid:

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0      Revision Date: 14.04.2025      SDS Number: 11504920-00003      Date of last issue: 31.01.2025  
Date of first issue: 22.01.2025

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

### Fumaric acid:

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

### Formic acid:

Result	:	Corrosive after 3 minutes or less of exposure
Remarks	:	Based on extreme pH

### Serious eye damage/eye irritation

Causes serious eye damage.

### Components:

#### Calcium diformate:

Species	:	Rabbit
Result	:	Irreversible effects on the eye
Method	:	OECD Test Guideline 405

#### Phosphoric acid:

Species	:	Rabbit
Result	:	Irreversible effects on the eye

#### Citric acid:

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

#### L-Malic acid:

Species	:	Rabbit
Result	:	Irritation to eyes, reversing within 21 days
Method	:	OECD Test Guideline 405
Remarks	:	Based on data from similar materials

#### Fumaric acid:

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

#### Formic acid:

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

**Butafosfan (<1%) Formulation**

Version 3.0      Revision Date: 14.04.2025      SDS Number: 11504920-00003      Date of last issue: 31.01.2025  
Date of first issue: 22.01.2025

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**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Components:****Calcium diformate:**

Test Type	:	Maximization Test
Routes of exposure	:	Skin contact
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	negative
Remarks	:	Based on data from similar materials

**L-Malic acid:**

Test Type	:	Maximization Test
Routes of exposure	:	Skin contact
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	negative
Remarks	:	Based on data from similar materials

**Fumaric acid:**

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

**Formic acid:**

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

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****Calcium diformate:**

Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative
Genotoxicity in vivo	:	Test Type: Sex-linked recessive lethal test in Drosophila melanogaster (in vivo) Application Route: Ingestion

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0	Revision Date: 14.04.2025	SDS Number: 11504920-00003	Date of last issue: 31.01.2025 Date of first issue: 22.01.2025
----------------	------------------------------	-------------------------------	---

Result: negative  
Remarks: Based on data from similar materials

### Phosphoric acid:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test  
Method: OECD Test Guideline 476  
Result: negative

Test Type: Bacterial reverse mutation assay (AMES)  
Method: OECD Test Guideline 471  
Result: negative

Test Type: Chromosome aberration test in vitro  
Method: OECD Test Guideline 473  
Result: negative

### 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

### L-Malic acid:

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

Test Type: Chromosome aberration test in vitro  
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

### Fumaric acid:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test  
Method: OECD Test Guideline 476  
Result: negative

Test Type: Chromosome aberration test in vitro

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0	Revision Date: 14.04.2025	SDS Number: 11504920-00003	Date of last issue: 31.01.2025 Date of first issue: 22.01.2025
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Result: negative

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

### Formic acid:

Genotoxicity in vitro	: Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative
Genotoxicity in vivo	: Test Type: Sex-linked recessive lethal test in Drosophila melanogaster (in vivo) Application Route: Ingestion Method: OECD Test Guideline 477 Result: negative

### Carcinogenicity

Not classified based on available information.

### Components:

#### Formic acid:

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

#### Reproductive toxicity

Not classified based on available information.

### Components:

#### Calcium diformate:

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

#### Phosphoric acid:

Effects on fertility	: Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test Species: Rat Application Route: Ingestion
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# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0 Revision Date: 14.04.2025 SDS Number: 11504920-00003 Date of last issue: 31.01.2025 Date of first issue: 22.01.2025

Method: OECD Test Guideline 422  
Result: negative

Effects on fetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: Ingestion  
Method: OECD Test Guideline 422  
Result: negative

### Citric acid:

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

### L-Malic acid:

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

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: Ingestion  
Result: negative  
Remarks: Based on data from similar materials

### Formic acid:

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 fetal development : Test Type: Embryo-fetal development  
Species: Rabbit  
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:

#### Citric acid:

Assessment : May cause respiratory irritation.

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0 Revision Date: 14.04.2025 SDS Number: 11504920-00003 Date of last issue: 31.01.2025 Date of first issue: 22.01.2025

### STOT-repeated exposure

Not classified based on available information.

### Repeated dose toxicity

#### Components:

##### **Calcium diformate:**

Species	:	Rat
NOAEL	:	3,000 mg/kg
Application Route	:	Ingestion
Exposure time	:	13 Weeks
Method	:	OECD Test Guideline 408
Remarks	:	Based on data from similar materials

##### **Phosphoric acid:**

Species	:	Rat
NOAEL	:	250 mg/kg
Application Route	:	Ingestion
Exposure time	:	40 - 52 Days
Method	:	OECD Test Guideline 422

##### **Citric acid:**

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

##### **L-Malic acid:**

Species	:	Rat
NOAEL	:	> 100 mg/kg
Application Route	:	Ingestion
Exposure time	:	104 Weeks
Remarks	:	Based on data from similar materials

##### **Fumaric acid:**

Species	:	Rat
NOAEL	:	600 mg/kg
Application Route	:	Ingestion
Exposure time	:	2 y

##### **Formic acid:**

Species	:	Rat
NOAEL	:	400 mg/kg
Application Route	:	Ingestion
Exposure time	:	52 Weeks
Remarks	:	Based on data from similar materials

### Aspiration toxicity

Not classified based on available information.

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0 Revision Date: 14.04.2025 SDS Number: 11504920-00003 Date of last issue: 31.01.2025 Date of first issue: 22.01.2025

### SECTION 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

##### Components:

###### **Calcium diformate:**

Toxicity to fish	: LC0 (Danio rerio (zebra fish)): >= 1,000 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 48 h Method: EPA-660/3-75-009 Remarks: Based on data from similar materials
Toxicity to algae/aquatic plants	: ErC50 (Pseudokirchneriella subcapitata (green algae)): > 1,000 mg/l Exposure time: 72 h Remarks: Based on data from similar materials
	NOEC (Pseudokirchneriella subcapitata (green algae)): 500 mg/l Exposure time: 72 h Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): >= 100 mg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: Based on data from similar materials
Toxicity to microorganisms	: NOEC: >= 22.1 mg/l Exposure time: 28 d Remarks: Based on data from similar materials

###### **Phosphoric acid:**

Toxicity to fish	: LC50 (Oryzias latipes (Japanese medaka)): > 100 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	: ErC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
	NOEC (Desmodesmus subspicatus (green algae)): > 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to microorganisms	: EC50: > 100 mg/l Exposure time: 3 h Method: OECD Test Guideline 209

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0 Revision Date: 14.04.2025 SDS Number: 11504920-00003 Date of last issue: 31.01.2025 Date of first issue: 22.01.2025

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

### L-Malic acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 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)): > 100 mg/l  
Exposure time: 48 h  
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l  
Exposure time: 72 h  
Test substance: Neutralized product  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

NOEC (Pseudokirchneriella subcapitata (green algae)): > 1 mg/l  
Exposure time: 72 h  
Test substance: Neutralized product  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

Toxicity to microorganisms : EC50 (activated sludge): > 100 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209  
Remarks: Based on data from similar materials

### Fumaric acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 100 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 : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 100

**Butafosfan (<1%) Formulation**Version  
3.0Revision Date:  
14.04.2025SDS Number:  
11504920-00003Date of last issue: 31.01.2025  
Date of first issue: 22.01.2025

mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50: > 300 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

**Formic acid:**

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 130 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)): 365 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 1,240 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

EC10 (Pseudokirchneriella subcapitata (green algae)): 295 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): > 100 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

Toxicity to microorganisms : NOEC: 72 mg/l  
Exposure time: 13 d

**Butafosfan:****Ecotoxicology Assessment**

Acute aquatic toxicity : Toxic effects cannot be excluded

Chronic aquatic toxicity : Toxic effects cannot be excluded

**Persistence and degradability****Components:****Calcium diformate:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 86 %  
Exposure time: 28 d

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version  
3.0

Revision Date:  
14.04.2025

SDS Number:  
11504920-00003

Date of last issue: 31.01.2025  
Date of first issue: 22.01.2025

Method: OECD Test Guideline 306  
Remarks: Based on data from similar materials

### Citric acid:

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

### Fumaric acid:

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 67.5 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B

### Formic acid:

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 100 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301C

### Bioaccumulative potential

#### Components:

##### Calcium diformate:

Partition coefficient: n-octanol/water : log Pow: -2.3 - -1.9  
Remarks: Based on data from similar materials

##### Citric acid:

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

##### L-Malic acid:

Partition coefficient: n-octanol/water : log Pow: -1.68  
Remarks: Calculation

##### Fumaric acid:

Partition coefficient: n-octanol/water : log Pow: 0.46

##### Formic acid:

Partition coefficient: n-octanol/water : log Pow: -2.1

### Mobility in soil

No data available

### Other adverse effects

No data available

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0 Revision Date: 14.04.2025 SDS Number: 11504920-00003 Date of last issue: 31.01.2025 Date of first issue: 22.01.2025

### 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 3453  
Proper shipping name : PHOSPHORIC ACID, SOLID MIXTURE  
Class : 8  
Packing group : III  
Labels : 8  
Environmentally hazardous : no

##### IATA-DGR

UN/ID No. : UN 3453  
Proper shipping name : Phosphoric acid, solid Mixture  
Class : 8  
Packing group : III  
Labels : Corrosive  
Packing instruction (cargo aircraft) : 864  
Packing instruction (passenger aircraft) : 860

##### IMDG-Code

UN number : UN 3453  
Proper shipping name : PHOSPHORIC ACID, SOLID MIXTURE  
Class : 8  
Packing group : III  
Labels : 8  
EmS Code : F-A, S-B  
Marine pollutant : no

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

Not applicable for product as supplied.

#### Domestic regulation

##### NOM-002-SCT

UN number : UN 3453  
Proper shipping name : PHOSPHORIC ACID, SOLID, MIXTURE  
Class : 8  
Packing group : III  
Labels : 8

#### 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

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version 3.0 Revision Date: 14.04.2025 SDS Number: 11504920-00003 Date of last issue: 31.01.2025 Date of first issue: 22.01.2025

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

Federal Law for the control of chemical precursors, essential chemical products and machinery for producing capsules, tablets and pills. : Not applicable

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

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

### SECTION 16. OTHER INFORMATION

Revision Date : 14.04.2025  
Date format : dd.mm.yyyy

#### Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)  
NOM-010-STPS-2014 : Mexico. Norm NOM-010-STPS-2014 on Chemicals Polluting the Work Environment - Identification, Assessment and Control - Appendix 1 Occupational Exposure Limits  
ACGIH / TWA : 8-hour, time-weighted average  
ACGIH / STEL : Short-term exposure limit  
NOM-010-STPS-2014 / VLE- : Time weighted average limit value  
PPT  
NOM-010-STPS-2014 / VLE- : Short term exposure limit value  
CT

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

# SAFETY DATA SHEET



## Butafosfan (<1%) Formulation

Version  
3.0

Revision Date:  
14.04.2025

SDS Number:  
11504920-00003

Date of last issue: 31.01.2025  
Date of first issue: 22.01.2025

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; (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/>

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

The information is considered as correct, but not exhaustive, and will be used only as a guide, which is based in the current knowledge of the substance or mixture, and is applicable to proper safety precautions for the product.

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