

SAFETY DATA SHEET



BISTAR® 100 CE

Version	Revision Date:	SDS Number:	Date of last issue: -
1.2	03.06.2025	50002593	Date of first issue: 03.06.2025

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : BISTAR® 100 CE

Other means of identification : BRIGADE®

Manufacturer or supplier's details

Company : FMC QUÍMICA DO BRASIL LTDA.

Address : AVENIDA DR. JOSÉ BONIFÁCIO
COUTINHO NOGUEIRA 150 - 1º
ANDAR - JARDIM MADALENA,
CAMPINAS SP BRASIL
TELEFONE: (19) 2042.4500

Emergency telephone : Brazil: 0800 34 35 450 (24 hours)
+55-2139581449 (CHEMTREC)

Medical Emergency Number : 0800 7010 450

Recommended use of the chemical and restrictions on use

Recommended use : Insecticide

Restrictions on use : Use as recommended by the label.

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with ABNT NBR 14725 Standard

Flammable liquids : Category 3

Acute toxicity (Oral) : Category 4

Acute toxicity (Inhalation) : Category 4

Acute toxicity (Dermal) : Category 5

Skin corrosion/irritation : Category 2

Carcinogenicity : Category 1B

Specific target organ toxicity -
single exposure : Category 2

Specific target organ toxicity -
single exposure : Category 3 (Respiratory system, Central nervous system)

Specific target organ toxicity -
repeated exposure : Category 2 (Central nervous system)

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Aspiration hazard : Category 1

Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1

GHS label elements in accordance with ABNT NBR 14725 Standard

Hazard pictograms :    

Signal Word : DANGER

Hazard Statements : H226 Flammable liquid and vapor.
H302 + H332 Harmful if swallowed or if inhaled.
H304 May be fatal if swallowed and enters airways.
H313 May be harmful in contact with skin.
H315 Causes skin irritation.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.
H350 May cause cancer.
H371 May cause damage to organs.
H373 May cause damage to organs (Central nervous system) through prolonged or repeated exposure.
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.
P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe mist or vapors.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediate-

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ly all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P308 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor.
P331 Do NOT induce vomiting.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391 Collect spillage.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal:

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

Other hazards which do not result in classification

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Classification	Concentration (% w/w)
Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified	64742-95-6	Flam. Liq., 3 Acute Tox. (Oral), 5 Acute Tox. (Inhalation), 4 Acute Tox. (Dermal), 5 Skin corrosion/irritation, 2 Serious eye damage/eye irritation, 2A Carc., 2 STOT SE, (Respiratory system, Central nervous system) , 3 Asp. Tox., 1 Aquatic Acute, 2 Aquatic Chronic, 2	>= 70 -< 90
Bifenthrin	82657-04-3	Acute Tox. (Oral), 3 Acute Tox. (Inhalation), 3	>= 10 -< 20

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		Acute Tox. (Dermal), 5 Skin Sens., 1 STOT SE, (Central nervous system) , 1 STOT RE, (Central nervous system) , 1 Aquatic Acute, 1 Aquatic Chronic, 1	
Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched	68412-54-4	Acute Tox. (Oral), 4 Skin corrosion/irritation, 2 Serious eye damage/eye irritation, 1 Aquatic Acute, 2 Aquatic Chronic, 2	≥ 3 -< 5
nonylphenol, branched and linear, ethoxylated (with average molecular weight $\leq 1\,540$ g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]	127087-87-0	Acute Tox. (Oral), 4 Acute Tox. (Dermal), 4 Skin corrosion/irritation, 2 Serious eye damage/eye irritation, 1 Aquatic Chronic, 2	≥ 1 -< 2,5
methanol	67-56-1	Flam. Liq., 2 Acute Tox. (Oral), 3 Acute Tox. (Inhalation), 3 Acute Tox. (Dermal), 3 STOT SE, (Central nervous system, Eyes) , 1	$\geq 0,1$ -< 1

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Show this material safety data sheet to the doctor in attendance.
Symptoms of poisoning may appear several hours later.
Do not leave the victim unattended.
- If inhaled : Consult a physician after significant exposure.
If unconscious, place in recovery position and seek medical advice.
- In case of skin contact : Wash off with soap and water.
If on clothes, remove clothes.
Wash contaminated clothing before re-use.
If skin irritation persists, call a physician.
- In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.

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- Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : Contact with skin may cause tingling, itching, burning, or numbness at the site of contact. Inhalation may irritate the nose, throat, and lungs. Swallowing large quantities may result in throat irritation, nausea, abdominal pain, and vomiting. Exposure may result in neurotoxicity with symptoms including tremors, impaired gait, and excessive salivation. Tremors may disappear with continued exposure. Swallowing or inhaling may result in sudden shortness of breath, coughing, nausea and or abdominal pain. Harmful if swallowed or if inhaled. May be fatal if swallowed and enters airways. May be harmful in contact with skin. Causes skin irritation. May cause respiratory irritation. May cause drowsiness or dizziness. May cause cancer. May cause damage to organs. May cause damage to organs through prolonged or repeated exposure.
- Protection of first-aiders : Avoid inhalation, ingestion and contact with skin and eyes.
- Notes to physician : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Dry chemical, CO₂, water spray or regular foam.
- Unsuitable extinguishing media : Do not spread spilled material with high-pressure water streams.
- Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : Fire may produce irritating, corrosive and/or toxic gases.
Carbon oxides
Fluorinated compounds
Chlorinated compounds
Hydrogen chloride
Hydrogen fluoride
- Specific extinguishing methods : Remove undamaged containers from fire area if it is safe to do so.

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Use a water spray to cool fully closed containers.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment : Firefighters should wear protective clothing and self-contained for fire-fighters breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Evacuate personnel to safe areas.
Do not touch or walk through the spilled material.
If it can be safely done, stop the leak.
Use personal protective equipment.

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Never return spills in original containers for re-use.
Collect as much of the spill as possible with a suitable absorbent material.
Pick up and transfer to properly labeled containers.
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material.
Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors).
Keep away from open flames, hot surfaces and sources of ignition.

Advice on safe handling : Avoid formation of aerosol.
Do not breathe vapors/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Take precautionary measures against static discharges.
Provide sufficient air exchange and/or exhaust in work rooms.
Open drum carefully as content may be under pressure.
Dispose of rinse water in accordance with local and national regulations.

Hygiene measures : Avoid contact with skin, eyes and clothing.
Do not inhale aerosol.

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Provide adequate ventilation.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

Conditions for safe storage : No smoking.
Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.

Further information on storage stability : No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified	64742-95-6	TWA	200 mg/m ³ (total hydrocarbon vapor)	ACGIH
methanol	67-56-1	LT	156 ppm 200 mg/m ³	BR OEL
		Further information: Absorption through the skin, Degree of harmfulness: maximum		
		TWA STEL	200 ppm 250 ppm	ACGIH ACGIH

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
methanol	67-56-1	Methanol	Urine	End of workday	15 mg/l	BR BEI
		Methanol	Urine	End of shift (As soon as possible after exposure ceases)	15 mg/l	ACGIH BEI

Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Hand protection
Material : Protective gloves

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Remarks	: The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Eye protection	: Eye wash bottle with pure water Tightly fitting safety goggles
Skin and body protection	: Impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Protective measures	: Plan first aid action before beginning work with this product.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid
Form	: viscous liquid
Color	: light yellow
Odor	: aromatic, hydrocarbon-like
Odor Threshold	: No data available
pH	: 5,4 Concentration: 5 g/l
Melting point/ range	: No data available
Boiling point/boiling range	: No data available
Flash point	: 46 °C
Evaporation rate	: No data available
Flammability (liquids)	: Sustains combustion
Self-ignition	: No data available
Upper explosion limit / Upper flammability limit	: No data available
Lower explosion limit / Lower flammability limit	: No data available
Vapor pressure	: No data available

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Relative vapor density	:	No data available
Relative density	:	0,896 - 0,913 (20 °C)
Density	:	No data available
Solubility(ies)		
Water solubility	:	Miscible
Solubility in other solvents	:	Solvent: Methanol Description: completely miscible Solvent: Toluene Description: completely miscible
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	Non-oxidizing
Molecular weight	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	:	Vapors may form explosive mixture with air. No decomposition if stored and applied as directed.
Conditions to avoid	:	Avoid extreme temperatures. Avoid formation of aerosol. Heat, flames and sparks.
Incompatible materials	:	Avoid strong acids, bases, and oxidizers.

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SECTION 11. TOXICOLOGICAL INFORMATION**Acute toxicity**

Harmful if swallowed or if inhaled.
May be harmful in contact with skin.

Product:

- | | | |
|---------------------------|---|---|
| Acute oral toxicity | : | LD50 (Rat, female): 462 - 557 mg/kg
Symptoms: clonic convulsions, Tremors |
| Acute inhalation toxicity | : | LC50 (Rat): > 4,6 - 5,31 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Symptoms: Convulsions, Tremors, Diarrhea
Assessment: The component/mixture is moderately toxic after short term inhalation. |
| Acute dermal toxicity | : | LD50 (Rabbit, male and female): > 2.000 mg/kg
Symptoms: Irritation
Assessment: The component/mixture is minimally toxic after single contact with skin. |

Components:**Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:**

- | | | |
|---------------------------|---|---|
| Acute oral toxicity | : | LD50 (Rat, female): 3.492 mg/kg
Method: OECD Test Guideline 401

LD50 (Rat, male): 6.984 mg/kg
Method: OECD Test Guideline 401 |
| Acute inhalation toxicity | : | LC50 (Rat, male and female): > 6,193 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: no mortality

Assessment: The component/mixture is moderately toxic after short term inhalation. |
| Acute dermal toxicity | : | LD50 (Rabbit, male and female): > 3.160 mg/kg
Assessment: The component/mixture is minimally toxic after single contact with skin. |

Bifenthrin:

- | | | |
|---------------------|---|--|
| Acute oral toxicity | : | LD50 (Rat, female): 50 - 300 mg/kg
Method: OECD Test Guideline 423
Symptoms: Convulsions, ataxia
Assessment: The component/mixture is toxic after single ingestion. |
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Acute inhalation toxicity : LC50 (Rat, female): 0,6 - 1,2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Symptoms: Tremors, Convulsions

LC50 (Rat, male): 1,10 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Symptoms: Tremors, Fatality

Acute dermal toxicity : LD50 (Rat, male and female): > 4.000 mg/kg
Method: OECD Test Guideline 402
Symptoms: Irritation
GLP: yes
Remarks: no mortality

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

Acute oral toxicity : LD50 (Rat, male and female): 1.980 mg/kg

nonylphenol, branched and linear, ethoxylated (with average molecular weight $\leq 1\,540$ g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]:

Acute oral toxicity : Assessment: The component/mixture is moderately toxic after single ingestion.

Acute dermal toxicity : Assessment: The component/mixture is moderately toxic after single contact with skin.

methanol:

Acute oral toxicity : LD50 (Rat): 1.187 mg/kg

Acute toxicity estimate (Humans): 100 mg/kg
Method: Expert judgment

Acute inhalation toxicity : LC50 (Rat, female): 82,1 mg/l
Exposure time: 4 h
Test atmosphere: vapor

LC50 (Rat, male): 92,6 mg/l
Exposure time: 4 h
Test atmosphere: vapor

Acute toxicity estimate: 5 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: Expert judgment

Acute dermal toxicity : LD50 (Rabbit): 17.100 mg/kg

Acute toxicity estimate: 300 mg/kg
Method: Expert judgment

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Skin corrosion/irritation

Causes skin irritation.

Product:

Species	: Rabbit
Assessment	: Irritating to skin.

Remarks	: May cause skin irritation in susceptible persons.
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Components:

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Species	: Rabbit
Method	: OECD Test Guideline 404
Result	: Mild skin irritation

Assessment	: Irritating to skin.
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Bifenthrin:

Species	: Rabbit
Method	: OECD Test Guideline 404
Result	: slight or no skin irritation.
GLP	: yes

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

Species	: Rabbit
Method	: Draize Test
Result	: Skin irritation

nonylphenol, branched and linear, ethoxylated (with average molecular weight $\leq 1\,540$ g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]:

Result	: Severe skin irritation
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methanol:

Species	: Rabbit
Result	: No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Product:

Species	: Rabbit
Result	: No eye irritation
Assessment	: No eye irritation

Remarks	: Vapors may cause irritation to the eyes, respiratory system and the skin.
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Components:**Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:**

Species	: Rabbit
Result	: No eye irritation
Assessment	: Irritating to eyes.

Bifenthrin:

Species	: Rabbit
Result	: Slight or no eye irritation
Method	: OECD Test Guideline 405
GLP	: yes

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

Species	: Rabbit
Result	: Irreversible effects on the eye
Method	: Draize Test

nonylphenol, branched and linear, ethoxylated (with average molecular weight $\leq 1\,540$ g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]:

Result	: Irreversible effects on the eye
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methanol:

Species	: Rabbit
Result	: No eye irritation

Respiratory or skin sensitization**Skin sensitization**

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Product:

Routes of exposure	: Skin contact
Species	: Guinea pig
Assessment	: Not a skin sensitizer.

Components:**Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:**

Test Type	: Maximization Test
Routes of exposure	: Skin contact
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: Not a skin sensitizer.

Bifenthrin:

Test Type	: Maximization Test
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Routes of exposure : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : May cause sensitization by skin contact.
GLP : yes

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

Test Type : Magnussen-Kligman test
Species : Guinea pig
Result : Does not cause skin sensitization.

methanol:

Test Type : Maximization Test
Species : Guinea pig
Result : Not a skin sensitizer.

Germ cell mutagenicity

Not classified based on available information.

Product:

Genotoxicity in vitro : Test Type: Ames test
Metabolic activation: with and without metabolic activation
Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse
Result: negative

Components:

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Genotoxicity in vitro : Test Type: in vitro DNA damage and/or repair study
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Result: negative

Test Type: reverse mutation assay
Metabolic activation: with and without metabolic activation
Result: negative

Genotoxicity in vivo : Test Type: Bone marrow chromosome aberration.
Species: Rat (male and female)
Application Route: Inhalation
Result: negative

Bifenthrin:

Genotoxicity in vitro : Test Type: gene mutation test
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Result: negative

Test Type: reverse mutation assay

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Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Result: negative

Genotoxicity in vivo : Test Type: Sex-linked Recessive Lethal Test
Species: Drosophila melanogaster (vinegar fly)
Result: negative

Test Type: unscheduled DNA synthesis assay
Species: Rat
Method: OECD Test Guideline 486
Result: negative

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

Genotoxicity in vitro : Test Type: reverse mutation assay
Method: OECD Test Guideline 471
Result: negative

Test Type: gene mutation test
Method: OECD Test Guideline 476
Result: negative

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

methanol:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster fibroblasts
Result: negative

Test Type: reverse mutation assay
Test system: Salmonella typhimurium
Method: OECD Test Guideline 471
Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse
Application Route: Intraperitoneal injection
Result: negative

Carcinogenicity

May cause cancer.

Components:**Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:**

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

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Bifenthrin:

Species	: Rat, female
Application Route	: Oral
Exposure time	: 2 Years
NOAEL	: 3 mg/kg bw/day
Result	: negative

Species	: Mouse, male
Application Route	: Oral
Exposure time	: 18 month(s)
NOAEL	: 7,6 mg/kg bw/day
Result	: positive
Symptoms	: malignant tumors

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

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

Species	: Mouse, male and female
Application Route	: inhalation (vapor)
Exposure time	: 18 month(s)
NOAEC	: 1,3 mg/l
Result	: negative

Species	: Rat, male and female
Application Route	: inhalation (vapor)
Exposure time	: 2 Years
NOAEC	: 1,3 mg/l
Result	: negative

Reproductive toxicity

Not classified based on available information.

Product:

Reproductive toxicity - Assessment	: Weight of evidence does not support classification for reproductive toxicity
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Components:

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Effects on fertility	: Test Type: Three-generation study Species: Rat Application Route: inhalation (vapor) Fertility: NOAEC Mating/Fertility: 7,5 mg/l Result: negative Remarks: Based on data from similar materials
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Effects on fetal development	: Species: Mouse Application Route: inhalation (vapor) General Toxicity Maternal: LOAEC: 500 part per million
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Symptoms: Maternal effects.

Bifenthrin:

Effects on fertility : Test Type: Two-generation study
Species: Rat
Application Route: Oral
General Toxicity Parent: NOAEL: 3 mg/kg bw/day
General Toxicity F1: NOAEL: 5 mg/kg bw/day
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rabbit
Application Route: Oral
General Toxicity Maternal: NOAEL: 2,7 mg/kg bw/day
Teratogenicity: NOAEL: 2,7 mg/kg bw/day
Symptoms: Maternal effects.
Result: No teratogenic effects.

Test Type: Embryo-fetal development
Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL: 1 mg/kg bw/day
Teratogenicity: NOAEL: 2 mg/kg bw/day
Result: No teratogenic effects.

Species: Rat
Application Route: Oral
General Toxicity Maternal: LOAEL: 7,2 mg/kg bw/day
Developmental Toxicity: LOAEL: 7,2 mg/kg bw/day
Embryo-fetal toxicity.: NOEL: 9,0 mg/kg bw/day
Method: OECD Test Guideline 426
Result: Animal testing did not show any effects on fertility.,
Some evidence of adverse effects on development, based on animal experiments.

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

Effects on fetal development : Test Type: reproductive and developmental toxicity study
Species: Rat
Application Route: Oral
General Toxicity Maternal: NOEL: 50 mg/kg body weight
Developmental Toxicity: NOAEL: 50 mg/kg body weight
Symptoms: Fetal abnormalities.
Result: negative
Remarks: Based on data from similar materials

Test Type: reproductive and developmental toxicity study
Species: Rat
Application Route: Dermal
Developmental Toxicity: NOAEL: 500 mg/kg body weight
Symptoms: Fetal abnormalities.
Result: negative
Remarks: Based on data from similar materials

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methanol:

- Effects on fertility : Test Type: one-generation reproductive toxicity
Species: Monkey, female
Application Route: inhalation (vapor)
General Toxicity F1: NOAEC: 2,39 mg/l
Result: negative
- Test Type: Two-generation study
Species: Rat, male and female
Application Route: inhalation (vapor)
General Toxicity F1: LOAEC: 1,3 mg/l
General Toxicity F2: LOAEC: 1,3 mg/l
Result: negative
- Effects on fetal development : Test Type: Pre-natal
Species: Mouse
Application Route: inhalation (vapor)
Developmental Toxicity: NOAEC: 6,65 mg/L
Result: Embryotoxic effects and adverse effects on the off-spring were detected only at high maternally toxic doses
- Test Type: Pre-natal
Species: Rat
Application Route: inhalation (vapor)
Developmental Toxicity: NOAEC: 1,33 mg/L
Result: Embryotoxic effects and adverse effects on the off-spring were detected only at high maternally toxic doses

STOT-single exposure

May cause respiratory irritation.
May cause drowsiness or dizziness.
May cause damage to organs.

Product:

- Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 2.

Components:

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

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

Bifenthrin:

- Target Organs : Central nervous system
Assessment : Causes damage to organs.

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

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

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methanol:

Target Organs	: Central nervous system, Eyes
Assessment	: The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.

STOT-repeated exposure

May cause damage to organs (Central nervous system) through prolonged or repeated exposure.

Product:

Target Organs	: Central nervous system
Assessment	: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Components:

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

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

Bifenthrin:

Target Organs	: Central nervous system
Assessment	: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

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

Repeated dose toxicity

Components:

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Species	: Rat, male and female
NOAEC	: 0,8 - 0,9 mg/l
Application Route	: Inhalation
Test atmosphere	: vapor
Remarks	: Based on data from similar materials

Species	: Rat, male
NOAEL	: 600 mg/kg
Application Route	: Oral
Remarks	: Based on data from similar materials

Bifenthrin:

Species	: Rat, male and female
NOEL	: 100 ppm
Application Route	: Oral - feed
Exposure time	: 90 d
Remarks	: No toxicologically significant effects were found.

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Species	: Dog, male and female
NOEL	: 2,5 mg/kg bw/day
Application Route	: Oral - feed
Exposure time	: 13 w
Symptoms	: Tremors

methanol:

Species	: Monkey
LOAEL	: 2.340 mg/kg
Application Route	: Ingestion
Exposure time	: 3 days

Species	: Rat
NOEC	: 0,13 mg/l
LOAEL	: 1,3 mg/l
Application Route	: inhalation (vapor)
Exposure time	: 12 months
Remarks	: No toxicologically significant effects were found.

Aspiration toxicity

May be fatal if swallowed and enters airways.

Components:

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

May be fatal if swallowed and enters airways.

Bifenthrin:

The substance does not have properties associated with aspiration hazard potential.

Experience with human exposure

Components:

methanol:

Ingestion	: Target Organs: Eyes
	Remarks: Based on Human Evidence

Further information

Product:

Remarks	: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic effects. Solvents may degrease the skin.
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SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

- | | | |
|---|---|---|
| Toxicity to fish | : | LC50 (Danio rerio (zebra fish)): 0,5078 mg/l
Exposure time: 96 h |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia similis (Water flea)): 0,01842 mg/l
Exposure time: 48 h |
| Toxicity to algae/aquatic plants | : | EC50 (Pseudokirchneriella subcapitata (green algae)): 53,05 mg/l
Exposure time: 96 h |
| Toxicity to soil dwelling organisms | : | LC50 (Eisenia fetida (earthworms)): > 2.388,89 mg/kg
Exposure time: 14 d |
| Toxicity to terrestrial organisms | : | LD50 (Coturnix japonica (Japanese quail)): > 2.000 mg/kg

LD50 (Apis mellifera (bees)): 0.84
Exposure time: 24 h |

Ecotoxicology Assessment

- | | | |
|--------------------------|---|---|
| Chronic aquatic toxicity | : | Very toxic to aquatic life with long lasting effects. |
|--------------------------|---|---|

Components:**Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:**

- | | | |
|---|---|--|
| Toxicity to fish | : | NOEC (Oncorhynchus mykiss (rainbow trout)): 4,5 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
Remarks: Based on data from similar materials

LL50 (Pimephales promelas (fathead minnow)): 8,2 mg/l
Exposure time: 96 h
Test Type: semi-static test
Remarks: Based on data from similar materials |
| Toxicity to daphnia and other aquatic invertebrates | : | EL50 (Daphnia magna (Water flea)): 4,5 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
Remarks: Based on data from similar materials |
| Toxicity to algae/aquatic plants | : | EL50 (Pseudokirchneriella subcapitata (microalgae)): 3,1 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials |

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- Toxicity to fish (Chronic toxicity) : NOELR (Pimephales promelas (fathead minnow)): 2,6 mg/l
Exposure time: 14 d
Method: OECD Test Guideline 204
Remarks: Based on data from similar materials
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOELR (Daphnia magna (Water flea)): 2,6 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211
- Toxicity to microorganisms : EC50 (Tetrahymena pyriformis): 15,41 mg/l
Exposure time: 40 h
Test Type: Growth inhibition
Remarks: The value is given based on a SAR/AAR approach using OECD Toolbox, DEREK, VEGA QSAR models (CAESAR models), etc.

Ecotoxicology Assessment

- Acute aquatic toxicity : Toxic to aquatic life.
- Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Bifenthrin:

- Toxicity to fish : LC50 (Salmo gairdneri): 0,00015 mg/l
Exposure time: 96 h
Test Type: flow-through test
- LC50 (Lepomis macrochirus (Bluegill sunfish)): 0,00035 mg/l
Exposure time: 96 h
Test Type: flow-through test
- LC50 (Oncorhynchus mykiss (rainbow trout)): 0,000256 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
GLP: yes
- LC50 (Pimephales promelas (fathead minnow)): 0,000234 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
GLP: yes
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia): 0,00011 mg/l
Exposure time: 48 h
- LC50 (Daphnia): 0,0016 mg/l
Exposure time: 48 h
- Toxicity to algae/aquatic plants : EC50 (algae): 0,822 mg/l
Exposure time: 72 h
- M-Factor (Acute aquatic toxicity) : 1.000

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Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 0,00012 mg/l
Exposure time: 21 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0,0013 µg/l
Exposure time: 21 d

NOEC (Daphnia magna (Water flea)): 0,00095 µg/l
Exposure time: 21 d

M-Factor (Chronic aquatic toxicity) : 100.000

Toxicity to soil dwelling organisms : LD50 (Eisenia fetida (earthworms)): > 16 mg/kg
Exposure time: 14 d

Method: OECD Test Guideline 216
Remarks: No significant adverse effect on Nitrogen mineralization.

Toxicity to terrestrial organisms : LD50 (Colinus virginianus (Bobwhite quail)): 1.800 mg/kg

LD50 (Anas platyrhynchos (Mallard duck)): > 2.150 mg/kg

LD50 (Apis mellifera (bees)): 0,1 - 0,35 µg/bee
Exposure time: 24 h
End point: Acute oral toxicity
Method: OECD Test Guideline 213

LD50 (Apis mellifera (bees)): 0,1 - 0,3 µg/bee
Exposure time: 24 h
End point: Acute contact toxicity
Method: OECD Test Guideline 214

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 7,9 mg/l
Exposure time: 96 h

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]:

Ecotoxicology Assessment

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

methanol:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 15.400 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 18.260 mg/l
Exposure time: 96 h

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Toxicity to algae/aquatic plants	:	EC50 (Selenastrum capricornutum (green algae)): ca. 22.000 mg/l Exposure time: 96 h
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 450 mg/l Exposure time: 28 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 208 mg/l Exposure time: 21 d
Toxicity to microorganisms	:	EC50 (activated sludge): 19.800 mg/l Exposure time: 96 h

Persistence and degradability

Product:

Biodegradability : Result: Not biodegradable

Components:

Solvent naphtha (petroleum), light arom.; Low boiling point naphtha -unspecified:

Biodegradability : Concentration: 49,2 mg/l
Result: Inherently biodegradable.
Biodegradation: 77,05 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Bifenthrin:

Biodegradability : Result: Not readily biodegradable.

Stability in water : Degradation half life (DT50): 2,2 d
Hydrolysis: at 60 °C

Degradation half life (DT50): 15,6 d
Hydrolysis: at 40 °C

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

Biodegradability : Result: Not readily biodegradable.
Remarks: Based on data from similar materials

nonylphenol, branched and linear, ethoxylated (with average molecular weight $\leq 1\,540$ g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: < 60 %
Exposure time: 28 d

methanol:

Biodegradability : Result: Readily biodegradable.

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Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Product contains substances which are very persistent and very bioaccumulative (vPvB).

Components:

Bifenthrin:

Bioaccumulation : Species: *Lepomis macrochirus* (Bluegill sunfish)
Bioconcentration factor (BCF): 1.709
Remarks: Due to the distribution coefficient n-octanol/water, accumulation in organisms is possible.
See section 9 for octanol-water partition coefficient.

Partition coefficient: n-octanol/water : log Pow: 6,6

Poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy-, branched:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.
Based on data from similar materials

Partition coefficient: n-octanol/water : log Pow: 5,39 (20 °C)

methanol:

Partition coefficient: n-octanol/water : log Pow: -0,77 (20 °C)

Mobility in soil

Components:

Bifenthrin:

Distribution among environmental compartments : Koc: 236610 ml/g, log Koc: 5,37
Remarks: immobile

Stability in soil :

Other adverse effects

Product:

Results of PBT and vPvB assessment : Product contains substances which are very persistent and very bioaccumulative (vPvB).

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

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SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : It is prohibited to reuse, bury, burn or sell packaging.

Washable packaging: Triple wash packs of less than 20 liters and pressure wash packs of 20 liters or more. Triple Wash (Manual Wash): Completely empty the contents of the package into the sprayer tank, keeping it in an upright position for 30 seconds; Add clean water to the package up to ¼ of its volume; Cover the package well and shake it for 30 seconds; Pour the wash water into the spray tank; Do this operation three times; Make the plastic or metal packaging unusable by perforating the bottom.

Pressure wash: Fit the empty package in the appropriate place of the funnel installed on the sprayer; Activate the mechanism to release the water jet; Direct the water jet to all the inside walls of the package, for 30 seconds; Wash water must be transferred to the sprayer tank; Make the plastic or metal packaging unusable by perforating the bottom. In both procedures, puncture the container at its base without damaging the label. Within a period of up to one year from the date of purchase, the user must return the empty packaging, with lid, to the establishment where the product was purchased or to the place indicated on the invoice, issued at the time of purchase. Activate the mechanism to release the water jet. Direct the water jet to all the inside walls of the package, for 30 seconds. Wash water must be transferred to the sprayer tank. Make the plastic or metal packaging unusable by perforating the bottom.

SECTION 14. TRANSPORT INFORMATION**International Regulations****UNRTDG**

UN number : UN 1993
Proper shipping name : FLAMMABLE LIQUID, N.O.S.
(Aromatic hydrocarbons, Bifenthrin)

Class : 3
Packing group : III
Labels : 3
Environmentally hazardous : no

IATA-DGR

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UN/ID No. : UN 1993
Proper shipping name : Flammable liquid, n.o.s.
(Aromatic hydrocarbons, Bifenthrin)

Class : 3
Packing group : III
Labels : Flammable Liquids
Packing instruction (cargo aircraft) : 366
Packing instruction (passenger aircraft) : 355

IMDG-Code

UN number : UN 1993
Proper shipping name : FLAMMABLE LIQUID, N.O.S.
(Aromatic hydrocarbons, Bifenthrin)

Class : 3
Packing group : III
Labels : 3
EmS Code : F-E, S-E
Marine pollutant : yes

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

Not applicable for product as supplied.

Domestic regulation

ANTT

UN number : UN 1993
Proper shipping name : FLAMMABLE LIQUID, N.O.S.
(Aromatic hydrocarbons, Bifenthrin)

Class : 3
Packing group : III
Labels : 3
Hazard Identification Number : 30

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

Law No. 14,785 of December 27, 2023. Decree 4,074 of January 4, 2002 and its regulatory standards. ANTT Resolution No. 5,998/22 of November 3, 2022. This MSDS was prepared in accordance with the criteria of ABNT NBR 14725. The user is recommended to pay attention to local regulations.

National List of Carcinogenic Agents for Humans - (LINACH)

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Brazil. List of chemicals controlled by the Federal Police : Solvent naphtha (petroleum), light arom.; Low boiling point naphtha - unspecified

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

TCSI	: On the inventory, or in compliance with the inventory
TSCA	: Product contains substance(s) not listed on TSCA inventory.
AIIC	: Not in compliance with the inventory
DSL	: This product contains the following components that are not on the Canadian DSL nor NDSL. 2-METHYLBIPHENYL-3-YLMETHYL (Z)-(1RS,3RS)-3-(2-CHLORO-3,3,3-TRIFLUOROPROP-1-ENYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLATE
ENCS	: Not in compliance with the inventory
ISHL	: Not in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: Not in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
NZIoC	: Not in compliance with the inventory
TECI	: Not in compliance with the inventory

SECTION 16. OTHER INFORMATION

Revision Date	: 03.06.2025
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Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	: ACGIH - Biological Exposure Indices (BEI)
BR BEI	: Brazil. NR7. Parameters for Biological Control of Occupational Exposure to Some Chemical Agents
BR OEL	: Brazil. NR 15 - Unhealthy activities and operations
ACGIH / TWA	: 8-hour, time-weighted average
ACGIH / STEL	: Short-term exposure limit
BR OEL / LT	: Up to 48 hours /week

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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; (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

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