

SAFETY DATA SHEET



MARSHAL® 25EC INSECTICIDE

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	21.12.2022	50000889	Date of first issue: 21.12.2022

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : MARSHAL® 25EC INSECTICIDE

Other means of identification : CARBOSULFAN 25 WT% EC

Manufacturer or supplier's details

Company : FMC India Private Ltd

Address : TCG Financial Centre, 2 Floor,
C-53, , Bandra Kurla Complex,
Bandra (East), Mumbai, Bandra Suburban
Maharashtra-400098
India

E-mail address : SDS-Info@fmc.com

Emergency telephone : 022 6704 5504/5404
000-800-100-7141 (CHEMTREC)

Medical Emergency Number : 022 6704 5504/5404

Recommended use of the chemical and restrictions on use

Recommended use : Can be used as insecticide only.

Restrictions on use : Use as recommended by the label.

2. HAZARDS IDENTIFICATION

Manufacture, Storage and Import of Hazardous Chemicals Rules 1989

Classification

Highly Toxic, Highly flammable liquids

GHS Classification

Flammable liquids : Category 3

Acute toxicity (Oral) : Category 3

Acute toxicity (Inhalation) : Category 2

Acute toxicity (Dermal) : Category 4

Skin corrosion/irritation : Category 3

Serious eye damage/eye irritation : Category 2B

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Skin sensitization	:	Category 1
Carcinogenicity	:	Category 2
Specific target organ toxicity - single exposure	:	Category 1 (Nervous system)
Specific target organ toxicity - single exposure	:	Category 3 (Respiratory system, Central nervous system)
Specific target organ toxicity - repeated exposure	:	Category 1 (Nervous system)
Aspiration hazard	:	Category 1
Short-term (acute) aquatic hazard	:	Category 1
Long-term (chronic) aquatic hazard	:	Category 1

GHS label elements

Hazard pictograms	:	
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Signal Word	:	Danger
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Hazard Statements	:	H226 Flammable liquid and vapor. H301 Toxic if swallowed. H304 May be fatal if swallowed and enters airways. H312 Harmful in contact with skin. H316 Causes mild skin irritation. H317 May cause an allergic skin reaction. H320 Causes eye irritation. H330 Fatal if inhaled. H335 May cause respiratory irritation. H336 May cause drowsiness or dizziness. H351 Suspected of causing cancer. H370 Causes damage to organs (Nervous system). H372 Causes damage to organs (Nervous system) through prolonged or repeated exposure. H410 Very toxic to aquatic life with long lasting effects.
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Precautionary Statements	:	Prevention: P203 Obtain, read and follow all safety instructions before use. P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 Keep container tightly closed. P240 Ground and bond container and receiving equipment. P241 Use explosion-proof electrical/ ventilating/ lighting/
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equipment.
P242 Use non-sparking tools.
P243 Take action to prevent static discharges.
P260 Do not breathe mist or vapors.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
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/ hearing protection.
P284 Wear respiratory protection.

Response:

P301 + P316 + P330 IF SWALLOWED: Get emergency medical help immediately. Rinse mouth.
P303 + P361 + P353 + P317 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Get medical help.
P304 + P340 + P316 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get emergency medical help immediately.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P316 IF exposed or concerned: Get emergency medical help immediately.
P331 Do NOT induce vomiting.
P333 + P317 If skin irritation or rash occurs: Get medical help.
P337 + P317 If eye irritation persists: Get medical help.
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.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

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Chemical name	CAS-No.	Concentration (% w/w)
carbosulfan (ISO)	55285-14-8	$\geq 20 - < 25$
Solvent naphtha (petroleum), light arom.	64742-95-6	$\geq 50 - < 70$
calcium dodecylbenzenesulphonate	26264-06-2	$\geq 3 - < 10$
Solvent naphtha (petroleum), heavy arom.	64742-94-5	$\geq 1 - < 2.5$
carbofuran	1563-66-2	$\geq 0.25 - < 1$

4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Symptoms of poisoning may appear several hours later.
Do not leave the victim unattended.
- If inhaled : Call a physician or poison control center immediately.
If unconscious, place in recovery position and seek medical advice.
- In case of skin contact : Take victim immediately to hospital.
If on skin, rinse well with water.
If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.
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 : Toxic if swallowed.
May be fatal if swallowed and enters airways.
Harmful in contact with skin.
Causes mild skin irritation.
May cause an allergic skin reaction.
Causes eye irritation.
Fatal if inhaled.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Suspected of causing cancer.
Causes damage to organs.
Causes damage to organs through prolonged or repeated exposure.
- Notes to physician : Treat symptomatically.

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5. FIRE-FIGHTING MEASURES

- | | | |
|--|---|---|
| Suitable extinguishing media | : | Alcohol-resistant foam
Carbon dioxide (CO ₂)
Dry chemical |
| Unsuitable extinguishing media | : | High volume water jet |
| Specific hazards during fire fighting | : | Do not allow run-off from fire fighting to enter drains or water courses. |
| Hazardous combustion products | : | Hazardous combustion products
Carbon oxides
Sulfur oxides
Nitrogen oxides (NO _x)
Hydrogen cyanide |
| Specific extinguishing methods | : | 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.
For safety reasons in case of fire, cans should be stored separately in closed containments.
Use a water spray to cool fully closed containers. |
| Special protective equipment for fire-fighters | : | Wear self-contained breathing apparatus for firefighting if necessary. |

6. ACCIDENTAL RELEASE MEASURES

- | | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Use personal protective equipment.
Ensure adequate ventilation.
Remove all sources of ignition.
Evacuate personnel to safe areas.
Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. |
| 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 | : | Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). |

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). |
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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.
Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Conditions for safe storage : Prevent unauthorized access.
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.

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.	64742-95-6	TWA	300 ppm 900 mg/m ³	IN OEL
		STEL	500 ppm 1,500 mg/m ³	IN OEL
		TWA	200 mg/m ³ (total hydrocarbon vapor)	ACGIH
Solvent naphtha (petroleum), heavy arom.	64742-94-5	TWA	200 mg/m ³ (total hydrocarbon vapor)	ACGIH
carbofuran	1563-66-2	TWA	0.1 mg/m ³	IN OEL
		TWA (Inhalable fraction and vapor)	0.1 mg/m ³	ACGIH

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Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
carbofuran	1563-66-2	Acetylcholinesterase activity	In red blood cells	End of shift	70 % of an individual's baseline	ACGIH BEI
		Butyrylcholinesterase activity	In serum or plasma	End of shift	60 % of an individual's baseline	ACGIH BEI

Personal protective equipment

- Respiratory protection : In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.
- Hand protection
Material : Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber.
- 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.
- Hygiene measures : Avoid contact with skin, eyes and clothing.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Color : dark amber
- Odor : hydrocarbon-like
- pH : 7.26 (23.1 °C)
(1% solution in water)
- Melting point/freezing point : No data available
- Boiling point/boiling range : No data available

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Flash point	: 42.5 °C
Flammability (liquids)	: Sustains combustion
Self-ignition	: No data available
Density	: 7.74 lb/gal (24.2 °C)
Solubility(ies) Water solubility	: emulsifiable
Partition coefficient: n-octanol/water	: Not applicable
Explosive properties	: Not explosive
Oxidizing properties	: The substance or mixture is not classified as oxidizing.

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	: No decomposition if stored and applied as directed. Vapors may form explosive mixture with air.
Conditions to avoid	: Heat, flames and sparks.
Incompatible materials	: Strong acids and strong bases Strong oxidizing agents
Hazardous decomposition products	: Nitrogen oxides (NOx) Carbon oxides Sulfur oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Toxic if swallowed.
Harmful in contact with skin.
Fatal if inhaled.

Product:

Acute oral toxicity	: LD50(Rabbit, male and female): 60.2 mg/kg
Acute inhalation toxicity	: LC50(Rat, female): 0.265 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	: LD50(Rabbit): 1,520 mg/kg

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Components:**carbosulfan (ISO):**

Acute oral toxicity : LD50 (Rat, female): 185 mg/kg

Acute inhalation toxicity : LC50 (Rat, female): 0.15 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

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

Solvent naphtha (petroleum), light arom.:Acute oral toxicity : LD50 (Rat, female): 3,492 mg/kg
Method: OECD Test Guideline 401LD50 (Rat, male): 6,984 mg/kg
Method: OECD Test Guideline 401Acute 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 mortalityAcute dermal toxicity : LD50 (Rabbit, male and female): > 3,160 mg/kg
Assessment: The component/mixture is minimally toxic after single contact with skin.**calcium dodecylbenzenesulphonate:**Acute oral toxicity : LD50 (Rat, male and female): 1,300 mg/kg
Remarks: Based on data from similar materials

Acute inhalation toxicity : Remarks: Not classified

Acute dermal toxicity : LD50 (Rat, male and female): > 2000 milligram per kilogram
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: Based on data from similar materials**Solvent naphtha (petroleum), heavy arom.:**Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401
Remarks: Based on data from similar materialsAcute inhalation toxicity : LC50 (Rat): > 4.688 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Assessment: The substance or mixture has no acute inhalation toxicity

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

carbofuran:

Acute oral toxicity : LD50 (Rat): 5.3 mg/kg

Acute inhalation toxicity : LC50 (Rat): 0.10 mg/l
Exposure time: 1 h
Test atmosphere: dust/mist

LC50 (Rat): 0.025 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

Skin corrosion/irritation

Causes mild skin irritation.

Product:

Species : Rabbit
Result : Moderate skin irritation

Remarks : May cause skin irritation and/or dermatitis.

Components:

carbosulfan (ISO):

Species : Rabbit
Result : slight irritation

Solvent naphtha (petroleum), light arom.:

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

calcium dodecylbenzenesulphonate:

Species : Rabbit
Method : OECD Test Guideline 404
Result : Skin irritation

Solvent naphtha (petroleum), heavy arom.:

Species : Rabbit
Assessment : Repeated exposure may cause skin dryness or cracking.

Result : No skin irritation
Remarks : Minimal effects that do not meet the threshold for classification.

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Based on data from similar materials

carbofuran:

Result : No skin irritation

Serious eye damage/eye irritation

Causes eye irritation.

Product:

Species : Rabbit
Result : Mild eye irritation

Remarks : Vapors may cause irritation to the eyes, respiratory system and the skin.

Components:

carbosulfan (ISO):

Species : Rabbit
Result : slight irritation

Solvent naphtha (petroleum), light arom.:

Species : Rabbit
Result : No eye irritation

calcium dodecylbenzenesulphonate:

Species : Rabbit
Method : OECD Test Guideline 405
Result : Irreversible effects on the eye
Remarks : Based on data from similar materials

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

Solvent naphtha (petroleum), heavy arom.:

Species : Rabbit
Assessment : No eye irritation
Remarks : Minimal effects that do not meet the threshold for classification.
Based on data from similar materials

carbofuran:

Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

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Respiratory sensitization

Not classified based on available information.

Product:

Species	:	Guinea pig
Result	:	May cause sensitization by skin contact.

Remarks	:	Causes sensitization.
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Components:

carbosulfan (ISO):

Test Type	:	Buehler Test
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	Not a skin sensitizer.

Solvent naphtha (petroleum), light arom.:

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

calcium dodecylbenzenesulphonate:

Test Type	:	Maximization Type
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	Not a skin sensitizer.
Remarks	:	Based on data from similar materials

Solvent naphtha (petroleum), heavy arom.:

Test Type	:	Maximization Test
Species	:	Guinea pig
Result	:	Not a skin sensitizer.
Remarks	:	Based on data from similar materials

carbofuran:

Test Type	:	Buehler Test
Result	:	Not a skin sensitizer.

Germ cell mutagenicity

Not classified based on available information.

Components:

carbosulfan (ISO):

Genotoxicity in vitro	:	Test Type: reverse mutation assay
		Test system: Salmonella typhimurium
		Result: negative

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Test Type: reverse mutation assay
Test system: Escherichia coli
Result: negative

Test Type: gene mutation test
Test system: Chinese hamster cells
Result: negative

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster cells
Result: negative

Genotoxicity in vivo : Test Type: chromosome aberration assay
Species: mice
Result: negative

Solvent naphtha (petroleum), light arom.:

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

calcium dodecylbenzenesulphonate:

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

Genotoxicity in vivo : Test Type: chromosome aberration assay
Species: Rat (male and female)
Application Route: Oral
Exposure time: 90 d
Result: negative
Remarks: Based on data from similar materials

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

Solvent naphtha (petroleum), heavy arom.:

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

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Genotoxicity in vivo : Test Type: Bone marrow chromosome aberration.
Species: Rat
Application Route: inhalation (vapor)
Result: negative

carbofuran:

Genotoxicity in vitro : Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Result: positive

Genotoxicity in vivo : Test Type: chromosome aberration assay
Species: Mouse
Result: negative

Test Type: Micronucleus test
Species: Mouse
Result: negative

Carcinogenicity

Suspected of causing cancer.

Product:

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

Components:

carbosulfan (ISO):

Species : Mouse
Exposure time : 2 Years
NOAEL : 2.5 mg/kg bw/day
Result : negative

Species : Rat
Exposure time : 2 Years
NOAEL : 1 mg/kg bw/day
Result : negative

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

Solvent naphtha (petroleum), light arom.:

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

calcium dodecylbenzenesulphonate:

Species : Rat, male and female
Application Route : Oral
Exposure time : 720 d
NOAEL : 250 mg/kg body weight
Result : negative
Remarks : Based on data from similar materials

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

Solvent naphtha (petroleum), heavy arom.:

Species	: Rat, male and female
Application Route	: inhalation (vapor)
Exposure time	: 12 month(s)
NOAEC	: 1.8 mg/l
Result	: negative
Remarks	: Based on data from similar materials

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

carbofuran:

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

Reproductive toxicity

Not classified based on available information.

Components:**carbosulfan (ISO):**

Effects on fertility : Test Type: Three-generation study
Species: Rat
Application Route: Oral
General Toxicity Parent: NOAEL: 1.2 mg/kg bw/day
Fertility: NOAEL: 1.2 mg/kg bw/day
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL: 2 mg/kg bw/day
Developmental Toxicity: NOAEL: 2
Result: negative

Test Type: Embryo-fetal development
Species: Rabbit
Application Route: Oral
General Toxicity Maternal: NOAEL: 5 mg/kg bw/day
Developmental Toxicity: NOAEL: 10
Result: negative

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

Solvent naphtha (petroleum), light arom.:

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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

Effects on fetal development : Species: Mouse
Application Route: inhalation (vapor)
General Toxicity Maternal: LOAEC: 500 part per million
Symptoms: Maternal effects.

calcium dodecylbenzenesulphonate:

Effects on fertility : Test Type: Fertility/early embryonic development
Species: Rat, male and female
Application Route: Ingestion
General Toxicity Parent: NOAEL: 400 mg/kg body weight
Method: OECD Test Guideline 422
Result: negative

Effects on fetal development : Test Type: reproductive and developmental toxicity study
Species: Rat
Application Route: Ingestion
General Toxicity Maternal: NOAEL: 300 mg/kg body weight
Developmental Toxicity: NOAEL: 600 mg/kg body weight
Method: OECD Test Guideline 422
Result: negative

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

carbofuran:

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

STOT-single exposure

May cause respiratory irritation.
May cause drowsiness or dizziness.
Causes damage to organs (Nervous system).

Product:

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

Components:**carbosulfan (ISO):**

Target Organs : Nervous system, Bladder, Gastro-intestinal system, Blood
Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.

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Solvent naphtha (petroleum), light arom.:

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

STOT-repeated exposure

Causes damage to organs (Nervous system) through prolonged or repeated exposure.

Product:

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

Components:

carbosulfan (ISO):

Target Organs : Nervous system, Bladder, Gastro-intestinal system, Blood
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Solvent naphtha (petroleum), light arom.:

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

Repeated dose toxicity

Components:

carbosulfan (ISO):

Species	: Rat
NOAEL	: 2 mg/kg bw/day
Application Route	: Oral
Exposure time	: 90 days
Species	: Dog
NOAEL	: 1.6 mg/kg bw/day
Application Route	: Oral
Exposure time	: 6 months

Solvent naphtha (petroleum), light arom.:

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

calcium dodecylbenzenesulphonate:

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Species : Rat, male and female
NOAEL : 85 mg/kg
LOAEL : 145 mg/kg
Application Route : Oral
Exposure time : 9 Months
Remarks : Based on data from similar materials

Species : Rat, male and female
NOAEL : 100 mg/kg
LOAEL : 200 mg/kg
Application Route : Oral
Exposure time : 28 Days
Method : OECD Test Guideline 422
Remarks : Based on data from similar materials

Species : Rat, male
LOAEL : 286 mg/kg
Application Route : Skin contact
Exposure time : 15 Days
Remarks : Based on data from similar materials

Solvent naphtha (petroleum), heavy arom.:

Species : Rat, male and female
NOAEC : 0.9 - 1.8 mg/l
Application Route : inhalation (vapor)
Exposure time : 12 months

Aspiration toxicity

May be fatal if swallowed and enters airways.

Product:

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

Components:

carbosulfan (ISO):

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

Solvent naphtha (petroleum), light arom.:

May be fatal if swallowed and enters airways.

Solvent naphtha (petroleum), heavy arom.:

May be fatal if swallowed and enters airways.

carbofuran:

No data available

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Experience with human exposure**Components:****Solvent naphtha (petroleum), heavy arom.:**

Skin contact : Symptoms: Repeated exposure may cause skin dryness or cracking.

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.

Components:**Solvent naphtha (petroleum), heavy arom.:**

Remarks : Vapour concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anaesthetic and may have other central nervous system effects. Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****carbosulfan (ISO):**

Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.015 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0.0015 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (microalgae)): > 20 mg/l Exposure time: 96 h
M-Factor (Acute aquatic toxicity)	:	100
Toxicity to fish (Chronic toxicity)	:	NOEC: 0.00828 mg/l Exposure time: 21 d Species: Pimephales promelas (fathead minnow)
Toxicity to daphnia and other	:	NOEC: 0.0032 mg/l

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aquatic invertebrates (Chronic toxicity)	Exposure time: 21 d Species: Daphnia magna (Water flea)
M-Factor (Chronic aquatic toxicity)	: 10
Toxicity to terrestrial organisms	: 1.035 µg/bee Species: Apis mellifera (bees) Remarks: Oral
	0.18 µg/bee Species: Apis mellifera (bees) Remarks: Contact
	LD50: 10 mg/kg Species: Anas platyrhynchos (Mallard duck)

Solvent naphtha (petroleum), light arom.:

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
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.
Toxicity to fish (Chronic toxicity)	: NOELR: 2.6 mg/l Exposure time: 14 d Species: Pimephales promelas (fathead minnow) Method: OECD Test Guideline 204 Remarks: Based on data from similar materials

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Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOELR: 2.6 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

calcium dodecylbenzenesulphonate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 10 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: Based on data from similar materials

LC50 (Pimephales promelas (fathead minnow)): 4.6 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)): 3.5 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants : NOEC (Pseudokirchneriella subcapitata (green algae)): 7.9 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

EC50 (Pseudokirchneriella subcapitata (green algae)): 65.4 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

Toxicity to microorganisms : EC50 (activated sludge): 500 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 1.65 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Remarks: Based on data from similar materials

NOEC: 1.18 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Remarks: Based on data from similar materials

Toxicity to soil dwelling organisms : LC50: 1,000 mg/kg
Exposure time: 14 d
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 207

Toxicity to terrestrial organisms : LD50: 1,356 mg/kg
Exposure time: 14 d
Species: Colinus virginianus (Bobwhite quail)

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Method: OECD Test Guideline 223

Solvent naphtha (petroleum), heavy arom.:

- Toxicity to fish : LL50 (Oncorhynchus mykiss (rainbow trout)): 2 - 5 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): 1.4 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
- Toxicity to algae/aquatic plants : EL50 (Pseudokirchneriella subcapitata (green algae)): 1 - 3 mg/l
Exposure time: 24 h
Method: OECD Test Guideline 201
- Toxicity to microorganisms : LL50 (Tetrahymena pyriformis): 677.9 mg/l
Exposure time: 72 h
Test Type: Growth inhibition
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EL50: 0.89 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

carbofuran:

- Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.18 mg/l
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.0094 mg/l
Exposure time: 48 h
- Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 19 mg/l
Exposure time: 72 h
- M-Factor (Acute aquatic toxicity) : 100
- Toxicity to fish (Chronic toxicity) : NOEC: 0.022 mg/l
Exposure time: 21 d
Species: Oncorhynchus mykiss (rainbow trout)
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.008 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
- M-Factor (Chronic aquatic toxicity) : 10

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Persistence and degradability**Components:****carbosulfan (ISO):**

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

Stability in water : Remarks: Hydrolyzes readily.

Solvent naphtha (petroleum), light arom.:

Biodegradability : Concentration: 49.2 mg/l
Result: Inherently biodegradable.
Biodegradation: 77.05 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

calcium dodecylbenzenesulphonate:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301E

Solvent naphtha (petroleum), heavy arom.:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 58.6 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
Remarks: Based on data from similar materials

carbofuran:

Biodegradability : Result: Not readily biodegradable.

Stability in water : Remarks: Does not readily hydrolyze

Bioaccumulative potential**Components:****carbosulfan (ISO):**

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 990
Remarks: Can accumulate in aquatic organisms.

Partition coefficient: n-octanol/water : log Pow: 7.42

calcium dodecylbenzenesulphonate:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 70.79
Method: QSAR

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Partition coefficient: n-octanol/water : log Pow: 4.77 (25 °C)

Solvent naphtha (petroleum), heavy arom.:

Bioaccumulation : Remarks: The product/substance has a potential to bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 3.72
Method: QSAR

carbofuran:

Bioaccumulation : Bioconcentration factor (BCF): 11

Partition coefficient: n-octanol/water : Remarks: No data available

Mobility in soil

Components:

carbosulfan (ISO):

Distribution among environmental compartments : Remarks: Slightly mobile in soils

Solvent naphtha (petroleum), heavy arom.:

Distribution among environmental compartments : Remarks: Expected to partition to sediment and wastewater solids. Moderately volatile.

carbofuran:

Distribution among environmental compartments : Koc: 17 - 28 ml/g, log Koc: < 1.44
Remarks: Highly mobile in soils

Other adverse effects

Product:

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.

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 : Empty remaining contents.

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Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	: UN 2991
Proper shipping name	: CARBAMATE PESTICIDE, LIQUID, TOXIC, FLAMMABLE (Carbosulfan)
Class	: 6.1
Subsidiary risk	: 3
Packing group	: II
Labels	: 6.1 (3)

IATA-DGR

UN/ID No.	: UN 2991
Proper shipping name	: Carbamate pesticide, liquid, toxic, flammable (Carbosulfan)
Class	: 6.1
Subsidiary risk	: 3
Packing group	: II
Labels	: Toxic, Flammable Liquids
Packing instruction (cargo aircraft)	: 662
Packing instruction (passenger aircraft)	: 654
Environmentally hazardous	: yes

IMDG-Code

UN number	: UN 2991
Proper shipping name	: CARBAMATE PESTICIDE, LIQUID, TOXIC, FLAMMABLE (Carbosulfan)
Class	: 6.1
Subsidiary risk	: 3
Packing group	: II
Labels	: 6.1 (3)
EmS Code	: F-E, S-D
Marine pollutant	: yes

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

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.

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15. REGULATORY INFORMATION**Safety, health and environmental regulations/legislation specific for the substance or mixture**

Rotterdam Convention (Prior Informed Consent) : carbofuran

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

TCSI	: On the inventory, or in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory
AIIC	: Not in compliance with the inventory
DSL	: This product contains the following components listed on the Canadian NDSL. All other components are on the Canadian DSL. 2,3-DIHYDRO-2,2-DIMETHYLBENZOFURAN-7-YL (DIBUTYLAMINTHIO)METHYLCARBAMATE
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	: On the inventory, or 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

16. OTHER INFORMATION

Revision Date	: 21.12.2022
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Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	: ACGIH - Biological Exposure Indices (BEI)
IN OEL	: India. Permissible levels of certain chemical substances in work environment.
ACGIH / TWA	: 8-hour, time-weighted average
IN OEL / TWA	: Time-Weighted Average Concentration (TWA) (8 hrs.)
IN OEL / STEL	: Short-term exposure Limit STEL (15 min)

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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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