

Before using this product, read and understand the entire label.

TO CAUSE A HAZARD IN THE USE, STORAGE OR DISPOSAL OF THIS SUBSTANCE IS AN OFFENCE

**SC Formulation:** Soluble Concentrate

**Non-flammable**

A soil applied, soluble concentrate (SC) nematicide for the broad-spectrum control of nematodes on tobacco (field).

**TRB Certificate No.:**

**PRECAUTIONS**

- Handle with care; avoid splashing / contact; poisonous by swallowing inhalation and contact with the skin.
- WEAR suitable personal protective equipment (PPE) such as boots, gloves and face protection when mixing and boots and overalls, hat, and solid footwear when spraying.
- **DO NOT** eat, drink or smoke while mixing and applying this product.
- DANGEROUS TO LIVESTOCK, PETS, FISH, BIRDS AND BEES.
- **DO NOT** CONTAMINATE DRINKING POOLS, DAMS, RIVERS, WATERWAYS AND OTHER WATER SUPPLIES.
- Store in original container, in a cool, dry place UNDER LOCK and KEY.
- KEEP OUT OF REACH OF CHILDREN and uninformed persons.
- KEEP APART FROM FOOD, FOODSTUFFS, seeds, and fertilizers.
- Use only on the crops for which the product is registered.
- Avoid drift onto adjacent crops or soil.

**Shelf Life:** 2 years from date of manufacture if kept in the original unopened container under constant cool and dry conditions.

**Date of manufacture/Batch No:** See inkjet print on the neck of the bottle.

**Manufacturer:** Syngenta Crop Protection AG, Basel, Switzerland  
® = Registered Trademark of a Syngenta Group Company

L1102794 ZIMB/04B PPE 4181976



syngenta.

Reg. No.  
23-E-20-1



450 ml

**Composition (mass/volume)**

Cyclobutrifluram.....450 g/litre  
inert ingredients.....up to 1 litre

**Chemical groups:**

Cyclobutrifluram.....Phenethyl Pyridineamides

GROUP N-3 NEMATICIDE

450 ml

Product names marked ® or ™, the ALLIANCE FRAME, the SYNGENTA Logo and the PUPPOSE ICON are Trademarks of a Syngenta Group Company

**PRODUCT INFORMATION**

**Mode of Action**

As a nematicide, cyclobutrifluram is from the chemical class phenethyl pyridine amide. It shows the Mode of Action from SDHI group N-3, (Complex II: succinate-dehydrogenase, Mitochondrial complex II electron transport inhibitors. Succinate-coenzyme Q reductase).

**Dosage rates**

Crop	PEST	DOSAGE (LITRES/HA)	REMARKS
TOBACCO (Field) TRB Certificate No.:	Nematodes: Root knot nematode ( <i>Meloidogyne</i> spp.) Lesion nematode ( <i>Pratylenchus</i> spp)	444 ml/ha	Apply one application only at transplanting, as a soil drench in the planting hole. If 15,000 seedlings per hectare are transplanted, then mix 445 ml Vaniva with 450 L water and apply 30 ml solution to the planting hole of each seedling at the time of transplanting.

**Registered by:** Syngenta Agro AG, 32 Sandringham Drive, Alexandra Park, Harare.

Tel.: 08677005432 / 08677005434

**Distributed by:**

**Emergency Call Numbers:**

Swiss Toxicological Information Centre (24 hrs) +41 44 251 51 51

**Zimbabwe Drugs and Toxicology Information Services (DATIS)** on

+263242307148 / +263786100098



CAUTION



## PRECAUTIONS

- Handle with care; avoid splashing / contact; poisonous by swallowing inhalation and contact with the skin.
- WEAR suitable personal protective equipment (PPE) such as boots, gloves and face protection when mixing and boots and overalls, hat, and solid footwear when spraying.
- **DO NOT** eat, drink or smoke while mixing and applying this product.
- DANGEROUS TO LIVESTOCK, PETS, FISH, BIRDS AND BEES.
- **DO NOT CONTAMINATE DRINKING POOLS, DAMS, RIVERS, WATERWAYS AND OTHER WATER SUPPLIES.**
- Store in original container, in a cool, dry place UNDER LOCK and KEY.
- **KEEP OUT OF REACH OF CHILDREN** and

uninformed persons.

- **KEEP APART FROM FOOD, FOODSTUFFS**, seeds, and fertilizers.
- Use only on the crops for which the product is registered.
- Avoid drift onto adjacent crops or soil.

## ENVIRONMENT AND WILDLIFE:

- **DO NOT** contaminate dams, rivers or streams with the product or empty container.
- In case of spilling on a hard surface, cover with non-combustible absorbent material (e.g., sand, earth, diatomaceous earth, vermiculite). In the field, remove the contaminated layer. Then collect and place the contaminated material in a container for disposal according to local / national regulations.

## **SYMPTOMS OF POISONING**

- Non-specific. No information available.

## **FIRST AID**

**General advice:** Have the product container, label with you when calling the Syngenta emergency number, or Drugs and Toxicology Information Services (DATIS)

- **Eye splashes:** Immediately hold eyelids apart and pour in a gentle stream of water for 10-15 minutes. Go to a doctor.
- **Skin contact:** Immediately remove contaminated clothing; wash affected skin with plenty of water. Wash contaminated clothing before re-use.
- If product is **SWALLOWED DO NOT** make the person vomit. Take the person and this container to a doctor at once.
- **If inhaled:** Move victim to fresh air.

## **NOTE TO PHYSICIAN**

- No specific antidote is known, treat symptomatically
- Never give anything to an unconscious patient and never induce vomiting.

## **DISPOSAL OF EMPTY CONTAINER**

- Rinse the container 3 times with a volume of water equal to at least 25% of that of the container. Add the rinsate to the contents of the spray tank. Destroy the empty container by perforation and flattening. Place it in a secure disposal area and offer it for recycling. **DO NOT** use it for any other purpose.

## **DECONTAMINATION OF SPRAYER**

After use, clean the sprayer thoroughly and ensure that all traces of **VANIVA® 450 SC** are removed. Make use of the following method: (a) Drain tank and then rinse tank, sprayer boom and hoses with clean

water for at least 10 minutes. (b) Fill tank with clean water and add to it 1,0 litre household bleach (5%) or 1,5 litres household bleach (3,5%) per 200 litres of water. Rinse hoses and sprayer boom and leave in the tank for 15 minutes whilst agitating. Drain through the nozzle outlets. (c) Repeat step (b) and thereafter, rinse thoroughly with clean water and dispose of the wash water at a site designated for the disposal of pesticides.

## **WARRANTY**

The user bears the risk for damage resulting from factors beyond the manufacturer's control. All recommendations for use of the Nematicide are based on the current state of the manufacturer's knowledge. Since the manufacturer cannot control the farmer's choice of Nematicide, its application, use, or storage of the product, or other agronomic practices, the

manufacturer cannot accept responsibility.

## **PRODUCT INFORMATION**

### **Mode of Action**

As a nematicide, cyclobutrifluram is from the chemical class phenethyl pyridine amide. It shows the Mode of Action from SDHI group N-3, (Complex II: succinate-dehydrogenase, Mitochondrial complex II electron transport inhibitors. Succinate-coenzyme Q reductase).

### **Activity on target pests**

**VANIVA® 450 SC** is a soluble concentrate, soil-applied nematicide which provides protection from all major plant-parasitic nematodes. It targets all root nematodes through contact and feeding activity and potentially above ground nematodes through systemic feeding activity.

## **DIRECTIONS FOR USE**

### **For safety when mixing:**

- Wear adequate protective clothing, such as overalls with long sleeves, impermeable gloves, rubber boots, as well as eye / face protection (face shield).

### **For safety when spraying:**

- As with all chemicals avoid contact with the spray and do not inhale the spray mist.
- Wear adequate personal protective equipment (PPE), such as overalls with long sleeves, impermeable gloves and rubber boots.
- **DO NOT** apply against the wind, or under strong windy conditions.
- **DO NOT** unclog nozzles, orifices or valves with your mouth.
- Ensure that there are no leakages or other defects in the spraying system.

### **For safety after spraying:**

- Dispose of unwanted spray solution by spraying off on waste ground, far away from any source of water.
- Keep unused product in its original container, tightly closed.
- Wash thoroughly all protective equipment.

### **Application**

Off target drift should be avoided.

Nozzle size and type is determined by required application volume (influenced by required flow rate, speed, and pressure) and spray quality required. Refer to nozzle manufacturers guidelines for recommended working pressures and droplet sizes.

Do not overdose by overlapping applications or by exceeding the recommended r

### Compatibility

**VANIVA® 450 SC** is not compatible with formulations based on organic solvents. Before using in mixture with other products, perform a small-scale test to assess the physical and biological compatibility of components and possible phytotoxicity to crops.

### WITHHOLDING PERIODS

Complying with the correct application timing for each relevant crop (as indicated in the application rates table) will ensure that residues do not exceed local Maximum Residue Limits at the normal time of harvest.

**NOTE:** Import tolerances of other countries might possibly be exceeded. If the crop to be treated is intended for export, consult the relevant importer or exporting body regarding the use of this product, Maximum Residue Limits and recommended withholding periods.

### RESISTANCE MANAGEMENT

GROUP	N-3	NEMATOCIDE
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**VANIVA® 450 SC** contains TYMRIUM® technology (the active ingredient Cyclobutrifluram and is a Group NRAC N-3 nematicide. The repeated use of **VANIVA® 450 SC** and nematicides belonging to Group NRAC N-3 against successive generations of the target nematodes may result in the selection of nematicides which are resistant to the nematicide. As a result, there may be partial or total loss of control of the nematode population. All Group IRAC N-3 insecticides share the same biological site of action, and it is assumed that resistance which has evolved to one nematicide within a group will also affect other nematicides within the same group.

In order to avoid or delay the selection of resistant nematodes, Group NRAC N-3 insecticides should be

used as part of a nematicide resistance management strategy which incorporates the following:

- Nematicides from the same mode of action group should not be used to treat successive generations of the target pest.
- Multiple applications of **VANIVA® 450 SC** and other nematicide containing group NRAC N-3 nematicides may be applied successively but only when targeting a single generation of the target nematode.
- If more than one application of a nematode control agent is required to control successive generations of the target pest, then an alternative nematicide with

different modes of action should be utilized in rotation with **VANIVA® 450 SC**.

- Where possible incorporate alternative methods of pest control as part of an integrated pest management (IPM) approach. These can include scouting, historical information related to pesticide use and crop rotation and considers host plant resistance, impact of environmental conditions on disease development, nematode thresholds, as well as cultural, biological and other chemical control practices.

## Dosage rates

Crop	PEST	DOSAGE (LITRES/HA)	REMARKS
TOBACCO (Field) TRB Certificate No.:	Nematodes: Root knot nematode ( <i>Meloidogyne</i> spp.) Lesion nematode ( <i>Pratylenchus</i> spp)	444 ml/ha	Apply one application only at transplanting, as a soil drench in the planting hole. If 15,000 seedlings per hectare are transplanted, then mix 445 ml Vaniva with 450 L water and apply 30 ml solution to the planting hole of each seedling at the time of transplanting.



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TEXT AREA

**VANIVA**

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Trade name : VANIVA

Design code : A22011B

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Use of the Substance/Mixture : Nematicide

**1.3 Details of the supplier of the safety data sheet**

Company : Syngenta SA (Pty) Ltd  
P.O. Box 1044, No. 4 Krokodil drift Avenue  
Brits 0250  
South Africa

Telephone : +27 (0)12 2506 300

Telefax : -

E-mail address of person responsible for the SDS : sds.ame@syngenta.com

**1.4 Emergency telephone number**

Emergency telephone number : +27 (0) 82 446 8946 (Griffon)

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**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

Long-term (chronic) aquatic hazard, Category 2      H411: Toxic to aquatic life with long lasting effects.

**2.2 Label elements****Labelling (REGULATION (EC) No 1272/2008)**

Hazard pictograms :



Hazard statements : H411 Toxic to aquatic life with long lasting effects.

Precautionary statements :

**Response:**

P391 Collect spillage.

**Disposal:**

P501 Dispose of contents/ container to an approved waste

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disposal plant.

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

#### Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
cyclobutrifluram	1460292-16-3	Aquatic Chronic 2; H411	>= 30 - < 50
toluene	108-88-3 203-625-9 601-021-00-3 01-2119471310-51-xxxx	Flam. Liq. 2; H225 Skin Irrit. 2; H315 Repr. 2; H361d STOT SE 3; H336 (Central nervous system) STOT RE 2; H373 Asp. Tox. 1; H304	>= 0,1 - < 1
1,2-benzisothiazol-3(2H)-one	2634-33-5 220-120-9 613-088-00-6 01-2120761540-60-xxxx	Acute Tox. 4; H302 Skin Irrit. 2; H315 Eye Dam. 1; H318 Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 2; H411  M-Factor (Acute aquatic toxicity): 1	>= 0,025 - < 0,05
bronopol (INN)	52-51-7 200-143-0 603-085-00-8 01-2119980938-15-xxxx	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Irrit. 2; H315 Eye Dam. 1; H318 STOT SE 3; H335 (Respiratory system) Aquatic Acute 1; H400 Aquatic Chronic 1; H410  M-Factor (Acute aquatic toxicity): 10 M-Factor (Chronic aquatic toxicity): 1	>= 0,025 - < 0,1

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For explanation of abbreviations see section 16.

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**SECTION 4: First aid measures****4.1 Description of first aid measures**

- General advice : Have the product container, label or Safety Data Sheet with you when calling the emergency number, a poison control center or physician, or going for treatment.
- If inhaled : Move the victim to fresh air.  
If breathing is irregular or stopped, administer artificial respiration.  
Keep patient warm and at rest.  
Call a physician or poison control centre immediately.
- In case of skin contact : Take off all contaminated clothing immediately.  
Wash off immediately with plenty of water.  
If skin irritation persists, call a physician.  
Wash contaminated clothing before re-use.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Remove contact lenses.  
Immediate medical attention is required.
- If swallowed : If swallowed, seek medical advice immediately and show this container or label.  
Do NOT induce vomiting.

**4.2 Most important symptoms and effects, both acute and delayed**

- Symptoms : Nonspecific  
No symptoms known or expected.

**4.3 Indication of any immediate medical attention and special treatment needed**

- Treatment : There is no specific antidote available.  
Treat symptomatically.

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**SECTION 5: Firefighting measures****5.1 Extinguishing media**

- Suitable extinguishing media : Extinguishing media - small fires  
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.  
Extinguishing media - large fires  
Alcohol-resistant foam  
or  
Water spray
- Unsuitable extinguishing : Do not use a solid water stream as it may scatter and spread

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media      fire.

**5.2 Special hazards arising from the substance or mixture**

Specific hazards during firefighting : As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion (see section 10). Exposure to decomposition products may be a hazard to health.

**5.3 Advice for firefighters**

Special protective equipment for firefighters : Wear full protective clothing and self-contained breathing apparatus.

Further information : Do not allow run-off from fire fighting to enter drains or water courses.  
Cool closed containers exposed to fire with water spray.

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**SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures**

Personal precautions : Refer to protective measures listed in sections 7 and 8.

**6.2 Environmental precautions**

Environmental precautions : Prevent further leakage or spillage if safe to do so.  
Do not flush into surface water or sanitary sewer system.  
If the product contaminates rivers and lakes or drains inform respective authorities.

**6.3 Methods and material for containment and cleaning up**

Methods for 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).  
Clean contaminated surface thoroughly.  
Clean with detergents. Avoid solvents.  
Retain and dispose of contaminated wash water.

**6.4 Reference to other sections**

For disposal considerations see section 13., Refer to protective measures listed in sections 7 and 8.

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**SECTION 7: Handling and storage****7.1 Precautions for safe handling**

Advice on safe handling : No special protective measures against fire required.  
Avoid contact with skin and eyes.  
When using do not eat, drink or smoke.  
For personal protection see section 8.

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### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : No special storage conditions required. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Keep away from food, drink and animal feedingstuffs.

### 7.3 Specific end use(s)

Specific use(s) : For proper and safe use of this product, please refer to the approval conditions laid down on the product label.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
cyclobutrifluram	1460292-16-3	TWA	5 mg/m <sup>3</sup>	Syngenta
toluene	108-88-3	OEL-RL	40 ppm	ZA OEL
	Further information: danger of cutaneous absorption, Occupational Exposure Limits - Restricted Limits For Hazardous Chemical Agents			
		TWA	50 ppm 192 mg/m <sup>3</sup>	2006/15/EC
		STEL	100 ppm 384 mg/m <sup>3</sup>	2006/15/EC

#### Biological occupational exposure limits

Substance name	CAS-No.	Control parameters	Sampling time	Basis
toluene	108-88-3	Toluene: 0,02 mg/l (Blood)	Prior to last shift of workweek	ZA BEI
		Toluene: 0,03 mg/l (Urine)	End of shift	ZA BEI
		o-Cresol: 0.3 mg/g Creatinine (Urine)	End of shift	ZA BEI

#### Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
propane-1,2-diol	Workers	Inhalation	Long-term systemic effects	168 mg/m <sup>3</sup>
	Consumers	Inhalation	Long-term local effects	10 mg/m <sup>3</sup>
	Consumers	Inhalation	Long-term systemic effects	30 mg/m <sup>3</sup>
	Workers	Inhalation	Long-term local effects	10 mg/m <sup>3</sup>
1,2-benzisothiazol-3(2H)-one	Workers	Inhalation	Long-term systemic effects	6,81 mg/m <sup>3</sup>
	Workers	Dermal	Long-term systemic effects	0,966 mg/kg

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	Consumers	Inhalation	Long-term systemic effects	1,2 mg/m <sup>3</sup>
	Consumers	Dermal	Long-term systemic effects	0,345 mg/kg
bronopol (INN)	Workers	Inhalation	Long-term systemic effects	3,5 mg/m <sup>3</sup>
	Workers	Inhalation	Acute systemic effects	10,5 mg/m <sup>3</sup>
	Workers	Inhalation	Long-term local effects	2,5 mg/m <sup>3</sup>
	Workers	Inhalation	Acute local effects	2,5 mg/m <sup>3</sup>
	Workers	Dermal	Long-term systemic effects	2 mg/kg
	Workers	Dermal	Acute systemic effects	6 mg/kg
	Workers	Dermal	Long-term local effects	0,008 mg/cm <sup>2</sup>
	Workers	Dermal	Acute local effects	0,008 mg/cm <sup>2</sup>
	Consumers	Inhalation	Long-term systemic effects	0,6 mg/m <sup>3</sup>
	Consumers	Inhalation	Acute systemic effects	1,8 mg/m <sup>3</sup>
	Consumers	Inhalation	Long-term local effects	0,6 mg/m <sup>3</sup>
	Consumers	Inhalation	Acute local effects	0,6 mg/m <sup>3</sup>
	Consumers	Dermal	Long-term systemic effects	0,7 mg/kg
	Consumers	Dermal	Acute systemic effects	2,1 mg/kg
	Consumers	Dermal	Long-term local effects	0,004 mg/cm <sup>2</sup>
	Consumers	Dermal	Acute local effects	0,004 mg/cm <sup>2</sup>
	Consumers	Oral	Long-term systemic effects	0,18 mg/kg
	Consumers	Oral	Acute systemic effects	0,5 mg/kg
toluene	Workers	Inhalation	Long-term systemic effects	192 mg/m <sup>3</sup>
	Workers	Dermal	Long-term systemic effects	384 mg/kg
	Workers	Inhalation	Acute local effects	384 mg/m <sup>3</sup>
	Workers	Inhalation	Acute systemic effects	384 mg/m <sup>3</sup>
	Workers	Inhalation	Long-term local effects	192 mg/m <sup>3</sup>
	Consumers	Oral	Long-term systemic effects	8,13 mg/kg
	Consumers	Dermal	Long-term systemic effects	226 mg/kg
	Consumers	Inhalation	Acute systemic effects	226 mg/m <sup>3</sup>
	Consumers	Inhalation	Acute local effects	226 mg/m <sup>3</sup>
	Consumers	Inhalation	Long-term local effects	56,5 mg/m <sup>3</sup>

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	Consumers	Inhalation	Long-term systemic effects	56,5 mg/m <sup>3</sup>
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### Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
propane-1,2-diol	Fresh water	260 mg/l
	Marine water	26 mg/l
	Intermittent use/release	183 mg/l
	Sewage treatment plant	20000 mg/l
	Marine sediment	57,2 mg/kg
	Fresh water sediment	572 mg/kg
1,2-benzisothiazol-3(2H)-one	Soil	50 mg/kg
	Fresh water	0,00403 mg/l
	Marine water	0,000403 mg/l
	Sewage treatment plant	1,03 mg/l
	Fresh water sediment	0,0499 mg/kg
	Marine sediment	0,00499 mg/kg
bronopol (INN)	Freshwater - intermittent	0,0011 mg/l
	Marine water - intermittent	0,000110 mg/l
	Soil	3 mg/kg
	Fresh water	0,01 mg/l
	Marine water	0,001 mg/l
	Freshwater - intermittent	0,003 mg/l
toluene	Sewage treatment plant	0,43 mg/l
	Fresh water sediment	0,041 mg/kg
	Marine sediment	0,003 mg/kg
	Soil	0,5 mg/kg
	Fresh water	0,68 mg/l
	Marine sediment	16,39 mg/kg
	Sewage treatment plant	13,61 mg/l
	Intermittent use/release	0,68 mg/l
	Marine water	0,68 mg/l
	Fresh water sediment	16,39 mg/kg
	Soil	2,89 mg/kg

## 8.2 Exposure controls

### Engineering measures

Containment and/or segregation is the most reliable technical protection measure if exposure cannot be eliminated.

The extent of these protection measures depends on the actual risks in use.

Maintain air concentrations below occupational exposure standards.

Where necessary, seek additional occupational hygiene advice.

### Personal protective equipment

Eye/face protection : No special protective equipment required.  
Hand protection

Remarks : No special protective equipment required.  
Skin and body protection : No special protective equipment required.  
Select skin and body protection based on the physical job requirements.



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- Respiratory protection : No personal respiratory protective equipment normally required.  
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
- Protective measures : The use of technical measures should always have priority over the use of personal protective equipment.  
When selecting personal protective equipment, seek appropriate professional advice.

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**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties**

- Appearance : suspension  
Colour : beige  
Odour : No data available  
Odour Threshold : No data available
- pH : 5 - 9  
Concentration: 100 % w/v
- Melting point/range : No data available
- Boiling point/boiling range : No data available
- Flash point : Method: Pensky-Martens closed cup  
does not flash
- Evaporation rate : No data available
- Upper explosion limit / Upper flammability limit : No data available
- Lower explosion limit / Lower flammability limit : No data available
- Vapour pressure : No data available
- Relative vapour density : No data available
- Density : 1,17 g/cm<sup>3</sup> (20 °C)
- Solubility(ies)  
Water solubility : No data available  
Solubility in other solvents : No data available
- Partition coefficient: n-octanol/water : No data available
- Auto-ignition temperature : 480 °C
- Decomposition temperature : No data available

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Viscosity  
Viscosity, dynamic : No data available  
Viscosity, kinematic : No data available  
Explosive properties : Not explosive  
Oxidizing properties : The substance or mixture is not classified as oxidizing.

**9.2 Other information**

Particle size : No data available

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**SECTION 10: Stability and reactivity****10.1 Reactivity**

None reasonably foreseeable.

**10.2 Chemical stability**

Stable under normal conditions.

**10.3 Possibility of hazardous reactions**

Hazardous reactions : No dangerous reaction known under conditions of normal use.

**10.4 Conditions to avoid**

Conditions to avoid : No decomposition if used as directed.

**10.5 Incompatible materials**

Materials to avoid : None known.

**10.6 Hazardous decomposition products**

Hazardous decomposition products : No hazardous decomposition products are known.

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**SECTION 11: Toxicological information****11.1 Information on toxicological effects**

Information on likely routes of exposure : Ingestion  
Inhalation  
Skin contact  
Eye contact

**Acute toxicity****Product:**

Acute oral toxicity : LD50 (Rat, female): > 5.000 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): > 5,08 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

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Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat, male and female): > 2.000 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

**Components:****cyclobutrifluram:**

Acute oral toxicity : LD50 (Rat, female): > 5.000 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): > 4,08 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat, female): > 2.000 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

**1,2-benzisothiazol-3(2H)-one:**

Acute oral toxicity : LD50 (Rat, male): 670 mg/kg

Acute dermal toxicity : LD50 (Rat, male and female): > 2.000 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

**bronopol (INN):**

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.

**Skin corrosion/irritation****Product:**

Species : Rabbit  
Result : No skin irritation

**Components:****cyclobutrifluram:**

Species : Rabbit  
Result : No skin irritation

**toluene:**

Species : Rabbit  
Result : Irritating to skin.

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**1,2-benzisothiazol-3(2H)-one:**

Species : Rabbit  
Result : Mild skin irritation

**bronopol (INN):**

Result : Irritating to skin.

**Serious eye damage/eye irritation****Product:**

Species : Rabbit  
Result : No eye irritation

**Components:****cyclobutrifluram:**

Species : Rabbit  
Result : No eye irritation

**1,2-benzisothiazol-3(2H)-one:**

Species : Rabbit  
Result : Risk of serious damage to eyes.

**bronopol (INN):**

Result : Risk of serious damage to eyes.

**Respiratory or skin sensitisation****Product:**

Test Type : Local lymph node assay (LLNA)  
Species : Mouse  
Result : Not a skin sensitizer.

**Components:****cyclobutrifluram:**

Test Type : Local lymph node assay (LLNA)  
Species : Mouse  
Result : Not a skin sensitizer.

**1,2-benzisothiazol-3(2H)-one:**

Result : Probability or evidence of skin sensitisation in humans

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**Germ cell mutagenicity****Components:****cyclobutrifluram:**

Germ cell mutagenicity-Assessment : In vitro tests did not show mutagenic effects

**1,2-benzisothiazol-3(2H)-one:**

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

**Carcinogenicity****Components:****cyclobutrifluram:**

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

**Reproductive toxicity****Components:****cyclobutrifluram:**

Reproductive toxicity - Assessment : No toxicity to reproduction

**toluene:**

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

**STOT - single exposure****Components:****toluene:**

Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

**bronopol (INN):**

Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

**STOT - repeated exposure****Components:****cyclobutrifluram:**

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

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**toluene:**

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

**Aspiration toxicity****Components:****toluene:**

May be fatal if swallowed and enters airways.

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**SECTION 12: Ecological information****12.1 Toxicity****Product:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 52,1 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna Straus): 62 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): 31,7 mg/l  
Exposure time: 72 h

NOEC (Raphidocelis subcapitata (freshwater green alga)): 9,77 mg/l  
End point: Growth rate  
Exposure time: 72 h

EC10 (Raphidocelis subcapitata (freshwater green alga)): 27,9 mg/l  
End point: Growth rate  
Exposure time: 72 h

**Components:****cyclobutrifluram:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 11 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 27 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): 9,5 mg/l  
Exposure time: 72 h

NOEC (Raphidocelis subcapitata (freshwater green alga)): 3,6 mg/l

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End point: Growth rate  
Exposure time: 72 h

ErC50 (Lemna gibba (gibbous duckweed)): > 16 mg/l  
Exposure time: 7 d

EC10 (Lemna gibba (gibbous duckweed)): 5,3 mg/l  
End point: Growth rate  
Exposure time: 7 d

Toxicity to fish (Chronic toxicity) : NOEC: 0,53 mg/l  
Exposure time: 28 d  
Species: Cyprinodon variegatus (sheepshead minnow)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 2,6 mg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)

### toluene:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 5,5 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Ceriodaphnia dubia (water flea)): 3,78 mg/l  
Exposure time: 48 h

### 1,2-benzisothiazol-3(2H)-one:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 2,18 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2,94 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): 0,15 mg/l  
Exposure time: 72 h

EC10 (Raphidocelis subcapitata (freshwater green alga)): 0,04 mg/l  
End point: Growth rate  
Exposure time: 72 h

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOEC: 0,3 mg/l  
Exposure time: 28 d  
Species: Oncorhynchus mykiss (rainbow trout)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 1,7 mg/l  
Exposure time: 21 d  
Species: Daphnia (water flea)

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**bronopol (INN):**

Toxicity to algae/aquatic plants : NOEC (algae): 0,0025 mg/l  
Exposure time: 72 h

EC50 (algae): 0,068 mg/l  
Exposure time: 72 h

M-Factor (Acute aquatic toxicity) : 10

M-Factor (Chronic aquatic toxicity) : 1

**12.2 Persistence and degradability****Components:****cyclobutrifluram:**

Biodegradability : Result: Not readily biodegradable.

Stability in water : Degradation half life: 697 d  
Remarks: Persistent in water.

**toluene:**

Biodegradability : Result: Readily biodegradable.

**1,2-benzisothiazol-3(2H)-one:**

Biodegradability : Result: rapidly degradable

**bronopol (INN):**

Biodegradability : Result: Readily biodegradable.

**12.3 Bioaccumulative potential****Components:****cyclobutrifluram:**

Bioaccumulation : Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 3,2 (20 °C)

**toluene:**

Bioaccumulation : Remarks: Does not bioaccumulate.

**1,2-benzisothiazol-3(2H)-one:**

Bioaccumulation : Remarks: Bioaccumulation is unlikely.



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**12.4 Mobility in soil****Components:****cyclobutrifluram:**

Distribution among environmental compartments : Remarks: Moderately mobile in soils  
Stability in soil : Dissipation time: 538 d  
Percentage dissipation: 50 % (DT50)  
Remarks: Persistent in soil.

**12.5 Results of PBT and vPvB assessment****Product:**

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**Components:****cyclobutrifluram:**

Assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).. This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**toluene:**

Assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).. This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**1,2-benzisothiazol-3(2H)-one:**

Assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).. This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**12.6 Other adverse effects****Product:**

Endocrine disrupting potential : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

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**SECTION 13: Disposal considerations****13.1 Waste treatment methods**

- Product : Do not contaminate ponds, waterways or ditches with chemical or used container.  
Do not dispose of waste into sewer.  
Where possible recycling is preferred to disposal or incineration.  
If recycling is not practicable, dispose of in compliance with local regulations.
- Contaminated packaging : Empty remaining contents.  
Triple rinse containers.  
Empty containers should be taken to an approved waste handling site for recycling or disposal.  
Do not re-use empty containers.

**SECTION 14: Transport information****14.1 UN number**

- UNRTDG : UN 3082  
IMDG : UN 3082  
IATA : UN 3082

**14.2 UN proper shipping name**

- UNRTDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CYCLOBUTRIFLURAM)  
IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (CYCLOBUTRIFLURAM)  
IATA : Environmentally hazardous substance, liquid, n.o.s. (CYCLOBUTRIFLURAM)

**14.3 Transport hazard class(es)**

- UNRTDG : 9  
IMDG : 9  
IATA : 9

**14.4 Packing group**

- UNRTDG  
Packing group : III  
Labels : 9
- IMDG  
Packing group : III  
Labels : 9  
EmS Code : F-A, S-F

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### IATA (Cargo)

Packing instruction (cargo aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

### IATA (Passenger)

Packing instruction (passenger aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

## 14.5 Environmental hazards

### IMDG

Marine pollutant	:	yes
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### IATA (Passenger)

Environmentally hazardous	:	yes
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### IATA (Cargo)

Environmentally hazardous	:	yes
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## 14.6 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.

## 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

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## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### Other regulations:

None known.

### 15.2 Chemical safety assessment

A Chemical Safety Assessment is not required for this substance when it is used in the specified applications.

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## SECTION 16: Other information

### Full text of H-Statements

H225	:	Highly flammable liquid and vapour.
H302	:	Harmful if swallowed.
H304	:	May be fatal if swallowed and enters airways.
H312	:	Harmful in contact with skin.
H315	:	Causes skin irritation.
H317	:	May cause an allergic skin reaction.

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H318	:	Causes serious eye damage.
H335	:	May cause respiratory irritation.
H336	:	May cause drowsiness or dizziness.
H361d	:	Suspected of damaging the unborn child.
H373	:	May cause damage to organs through prolonged or repeated exposure.
H400	:	Very toxic to aquatic life.
H410	:	Very toxic to aquatic life with long lasting effects.
H411	:	Toxic to aquatic life with long lasting effects.

### Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Acute	:	Short-term (acute) aquatic hazard
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Asp. Tox.	:	Aspiration hazard
Eye Dam.	:	Serious eye damage
Flam. Liq.	:	Flammable liquids
Repr.	:	Reproductive toxicity
Skin Irrit.	:	Skin irritation
Skin Sens.	:	Skin sensitisation
STOT RE	:	Specific target organ toxicity - repeated exposure
STOT SE	:	Specific target organ toxicity - single exposure
2006/15/EC	:	Europe. Indicative occupational exposure limit values
ZA BEI	:	South Africa. The Regulations for Hazardous Chemical Agents, Biological Exposure Indices
ZA OEL	:	South Africa. The Regulations for Hazardous Chemical Agents, Occupational Exposure Limits
2006/15/EC / TWA	:	Limit Value - eight hours
2006/15/EC / STEL	:	Short term exposure limit
ZA OEL / OEL-RL	:	Occupational Exposure Limit Restricted limit - 8- hour exposure or equivalent (12 hour shifts)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; 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; 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; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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

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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; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

**Further information****Classification of the mixture:**

Aquatic Chronic 2                      H411

**Classification procedure:**

Calculation method

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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