

**STOREN**

Version 0.0      Revision Date: 06/07/2023      SDS Number: S00059835414      This version replaces all previous versions.

**SECTION 1. IDENTIFICATION**

Product name : STOREN  
Design code : A23980B

Product Registration number : 100-1735

**Manufacturer or supplier's details**

Company name of supplier : Syngenta Crop Protection, LLC  
Address : Post Office Box 18300  
Greensboro NC 27419  
United States of America (USA)

Telephone : 1 800 334 9481  
Telefax : 1 336 632 2192

E-mail address : sds.requests@syngenta.com  
Emergency telephone : 1 800 888 8372

**Recommended use of the chemical and restrictions on use**

Recommended use : Herbicide

Restrictions on use : General Use Pesticide

**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Skin sensitization : Sub-category 1B

Reproductive toxicity : Category 1B

Specific target organ toxicity - repeated exposure : Category 2 (Kidney, Liver, Urinary system, Heart, Nervous system)

**GHS label elements**

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H317 May cause an allergic skin reaction.  
H360D May damage the unborn child.  
H373 May cause damage to organs (Kidney, Liver, Urinary system, Heart, Nervous system) through prolonged or repeated exposure.

Precautionary Statements : **Prevention:**

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P201 Obtain special instructions before use.  
 P202 Do not handle until all safety precautions have been read and understood.  
 P260 Do not breathe mist or vapors.  
 P272 Contaminated work clothing must not be allowed out of the workplace.  
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

### Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
 P363 Wash contaminated clothing before reuse.

### Storage:

P405 Store locked up.

### Disposal:

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

### Other hazards

None known.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Components

Chemical name	CAS-No.	Concentration (% w/w)
S-metolachlor	87392-12-9	29.3136
propane-1,2-diol	57-55-6	>= 5 - < 10
mesotrione	104206-82-8	3.3373
nitric acid ammonium salt	6484-52-2	>= 1 - < 5
pyroxasulfone	447399-55-5	1.6282
benoxacor	98730-04-2	>= 1 - < 5
amines, coco alkyl, ethoxylated	61791-14-8	>= 1 - < 5
poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, phosphate	9046-01-9	>= 1 - < 5
bicyclopyrone	352010-68-5	0.814
copper(II) hydroxide	20427-59-2	>= 0.1 - < 1
5-chloro-2-methyl-1,2-thiazol-3-one; 2-methyl-1,2-thiazol-3-one	55965-84-9	>= 0.0015 - < 0.1

Actual concentration is withheld as a trade secret

## SECTION 4. 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.

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If inhaled	:	Take the victim into fresh air. If breathing is irregular or stopped, administer artificial respiration. Keep patient warm and at rest. Call a physician or poison control center 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.
Most important symptoms and effects, both acute and delayed	:	Nonspecific No symptoms known or expected.
Notes to physician	:	There is no specific antidote available. Treat symptomatically.

### SECTION 5. FIRE-FIGHTING MEASURES

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 media	:	Do not use a solid water stream as it may scatter and spread fire.
Specific hazards during fire fighting	:	As the product contains combustible organic ingredients, fire will produce dense black smoke containing hazardous products of combustion (see section 10). Exposure to decomposition products may be a hazard to health.
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.
Special protective equipment for fire-fighters	:	Wear full protective clothing and self-contained breathing apparatus.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Refer to protective measures listed in sections 7 and 8.
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.

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

### SECTION 7. HANDLING AND STORAGE

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.

Conditions for safe storage : 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.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
S-metolachlor	87392-12-9	TWA	5 mg/m <sup>3</sup>	Syngenta
propane-1,2-diol	57-55-6	TWA	10 mg/m <sup>3</sup>	US WEEL
mesotrione	104206-82-8	TWA	5 mg/m <sup>3</sup>	Syngenta
benoxacor	98730-04-2	TWA	1 mg/m <sup>3</sup>	Syngenta
bicyclopyrone	352010-68-5	TWA	0.7 mg/m <sup>3</sup>	Syngenta
copper(II) hydroxide	20427-59-2	TWA	1 mg/m <sup>3</sup> (Copper)	NIOSH REL

**Engineering measures** : THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THE PRODUCT. FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

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

Respiratory protection : No personal respiratory protective equipment normally required.  
When workers are facing concentrations above the exposure

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Hand protection	limit they must use appropriate certified respirators.
Remarks	: Wear protective gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. The breakthrough time depends amongst other things from the material, the thickness and the type of glove and therefore has to be measured for each case. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Eye protection	: Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded. Tightly fitting safety goggles Face-shield
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Remove and wash contaminated clothing before re-use. Wear as appropriate: Impervious clothing
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.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Color	: green grey
Odor	: No data available
Odor Threshold	: No data available
pH	: 4.9 Concentration: 1 %w/v
Melting point/range	: No data available
Boiling point/boiling range	: No data available
Flash point	: Method: Seta closed cup does not flash
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available

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Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	No data available
Density	:	1.1 g/cm <sup>3</sup>
Solubility(ies)	:	
Water solubility	:	No data available
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	756 °F / 402 °C
Decomposition temperature	:	No data available
Viscosity	:	
Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle size	:	No data available

**SECTION 10. STABILITY AND REACTIVITY**

Reactivity	:	None reasonably foreseeable.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	No decomposition if used as directed.
Incompatible materials	:	None known.
Hazardous decomposition products	:	No hazardous decomposition products are known.

**SECTION 11. TOXICOLOGICAL INFORMATION****Information on likely routes of exposure**

Ingestion  
Inhalation  
Skin contact  
Eye contact

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

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- Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg  
Assessment: The component/mixture is minimally toxic after single ingestion.
- Acute inhalation toxicity : LC50 (Rat, male and female): > 5.27 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The substance or mixture has no acute inhalation toxicity
- Acute dermal toxicity : LD50: > 2,000 mg/kg  
Assessment: The component/mixture is minimally toxic after single contact with skin.  
Remarks: Expert judgment

### Components:

#### **S-metolachlor:**

- Acute oral toxicity : LD50 (Rat, male and female): 2,672 mg/kg
- Acute inhalation toxicity : LC50 (Rat, male and female): > 2.91 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The substance or mixture has no acute inhalation toxicity
- Acute dermal toxicity : LD50 (Rabbit, male and female): > 2,000 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

#### **mesotrione:**

- Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
- Acute inhalation toxicity : LC50 (Rat, male and female): > 4.75 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, male and female): > 2,000 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

#### **nitric acid ammonium salt:**

- Acute oral toxicity : LD50 (Rat): 2,462 mg/kg

#### **pyroxasulfone:**

- Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Assessment: The substance or mixture has no acute oral toxicity
- Acute inhalation toxicity : LC50 (Rat): > 6.56 mg/l  
Exposure time: 4 h

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Acute dermal toxicity : Test atmosphere: dust/mist  
Assessment: The substance or mixture has no acute inhalation toxicity

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

### **benoxacor:**

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

Acute inhalation toxicity : LC50 (Rat, male and female): > 2 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit, male and female): > 2,010 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

### **amines, coco alkyl, ethoxylated:**

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

### **bicyclopyrone:**

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

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.21 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, male and female): > 5,000 mg/kg

### **copper(II) hydroxide:**

Acute oral toxicity : LD50 (Rat): 489 mg/kg

Acute inhalation toxicity : LC50 (Rat): 0.47 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

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

### **5-chloro-2-methyl-1,2-thiazol-3-one; 2-methyl-1,2-thiazol-3-one:**

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

Acute inhalation toxicity : Assessment: The component/mixture is highly toxic after short



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term inhalation.

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

### Skin corrosion/irritation

#### Product:

Species : Rabbit  
Result : No skin irritation

#### Components:

##### **S-metolachlor:**

Species : Rabbit  
Result : No skin irritation

##### **mesotrione:**

Species : Rabbit  
Result : No skin irritation

##### **pyroxasulfone:**

Species : Rabbit  
Result : No skin irritation

##### **benoxacor:**

Species : Rabbit  
Result : No skin irritation

##### **amines, coco alkyl, ethoxylated:**

Result : Corrosive after 3 minutes to 1 hour of exposure

##### **poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, phosphate:**

Result : Irritating to skin.

##### **bicyclopyrone:**

Species : Rabbit  
Result : No skin irritation

##### **copper(II) hydroxide:**

Species : Rabbit  
Result : No skin irritation

##### **5-chloro-2-methyl-1,2-thiazol-3-one; 2-methyl-1,2-thiazol-3-one:**

Result : Corrosive after 1 to 4 hours of exposure

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

Species : Rabbit  
Result : No eye irritation

**Components:****S-metolachlor:**

Species : Rabbit  
Result : No eye irritation

**mesotrione:**

Species : Rabbit  
Result : No eye irritation

**nitric acid ammonium salt:**

Result : Eye irritation

**pyoxasulfone:**

Species : Rabbit  
Result : No eye irritation

**benoxacor:**

Species : Rabbit  
Result : No eye irritation

**amines, coco alkyl, ethoxylated:**

Result : Irreversible effects on the eye

**poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, phosphate:**

Result : Risk of serious damage to eyes.

**bicyclopyrone:**

Species : Rabbit  
Result : No eye irritation

**copper(II) hydroxide:**

Species : Rabbit  
Result : Irreversible effects on the eye

**Respiratory or skin sensitization****Product:**

Test Type : Local lymph node assay (LLNA)  
Species : Mouse  
Result : The product is a skin sensitizer, sub-category 1B.

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### Components:

#### **S-metolachlor:**

Species : Guinea pig  
Result : The product is a skin sensitizer, sub-category 1B.

#### **mesotrione:**

Species : Guinea pig  
Result : Does not cause skin sensitization.

#### **pyroxasulfone:**

Test Type : Local lymph node assay (LLNA)  
Species : Mouse  
Result : Did not cause sensitization on laboratory animals.

#### **benoxacor:**

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

#### **bicyclopyrone:**

Test Type : mouse lymphoma cells  
Species : Mouse  
Result : Did not cause sensitization on laboratory animals.

#### **copper(II) hydroxide:**

Species : Guinea pig  
Result : Did not cause sensitization on laboratory animals.

#### **5-chloro-2-methyl-1,2-thiazol-3-one; 2-methyl-1,2-thiazol-3-one:**

Result : The product is a skin sensitizer, sub-category 1A.

### **Germ cell mutagenicity**

#### Components:

#### **S-metolachlor:**

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

#### **mesotrione:**

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

#### **pyroxasulfone:**

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

#### **benoxacor:**

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

#### **bicyclopyrone:**

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Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

**copper(II) hydroxide:**

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects., Information given is based on data obtained from similar substances.

### Carcinogenicity

**Components:**

**S-metolachlor:**

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

**mesotrione:**

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

**pyroxasulfone:**

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

**benoxacor:**

Carcinogenicity - Assessment : No evidence of carcinogenicity in animal studies.

**bicyclopyrone:**

Carcinogenicity - Assessment : This substance has been reported to cause tumors in certain animal species., There is no evidence that these findings are relevant to humans., Weight of evidence does not support classification as a carcinogen

**copper(II) hydroxide:**

Carcinogenicity - Assessment : No evidence of carcinogenicity in animal studies., Information given is based on data obtained from similar substances.

### Reproductive toxicity

**Components:**

**S-metolachlor:**

Reproductive toxicity - Assessment : Animal testing did not show any effects on fertility.

**mesotrione:**

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

**pyroxasulfone:**

Reproductive toxicity - Assessment : No toxicity to reproduction

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### benoxacor:

Reproductive toxicity - Assessment : No toxicity to reproduction

### bicyclopyrone:

Reproductive toxicity - Assessment : Animal testing did not show any effects on fertility., These concentrations exceed relevant human dose levels., Clear evidence of adverse effects on development, based on animal experiments.

### copper(II) hydroxide:

Reproductive toxicity - Assessment : No toxicity to reproduction, Information given is based on data obtained from similar substances.

### STOT-repeated exposure

#### Components:

#### S-metolachlor:

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

#### mesotrione:

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

#### pyroxasulfone:

Target Organs : Kidney, Liver, Urinary system, Heart, Nervous system  
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

#### benoxacor:

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

#### bicyclopyrone:

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

#### copper(II) hydroxide:

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

### Further information

#### Components:

#### pyroxasulfone:

Remarks : Caution - substance not yet tested completely.

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### SECTION 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

##### Components:

##### **S-metolachlor:**

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 1.23 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Americamysis): 1.4 mg/l  
Exposure time: 96 h
- Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): 0.077 mg/l  
Exposure time: 96 h
- NOEC (Raphidocelis subcapitata (freshwater green alga)): 0.016 mg/l  
End point: Growth rate  
Exposure time: 96 h
- EC50 (Lemna gibba (gibbous duckweed)): 0.023 mg/l  
Exposure time: 14 d
- NOEC (Lemna gibba (gibbous duckweed)): 0.0076 mg/l  
Exposure time: 14 d
- M-Factor (Acute aquatic toxicity) : 10
- Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 0.03 mg/l  
Exposure time: 35 d
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Americamysis): 0.13 mg/l  
Exposure time: 28 d
- M-Factor (Chronic aquatic toxicity) : 10

##### **mesotrione:**

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 120 mg/l  
Exposure time: 96 h
- LC50 (Cyprinus carpio (Carp)): > 97.1 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 900 mg/l  
Exposure time: 48 h
- Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): 12 mg/l  
Exposure time: 96 h
- NOEC (Raphidocelis subcapitata (freshwater green alga)): 0.75 mg/l

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End point: Growth rate  
Exposure time: 96 h

ErC50 (Lemna gibba (gibbous duckweed)): 0.0301 mg/l  
Exposure time: 7 d

EC10 (Lemna gibba (gibbous duckweed)): 0.00187 mg/l  
End point: Growth rate  
Exposure time: 7 d

M-Factor (Acute aquatic toxicity) : 10

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 12.5 mg/l  
Exposure time: 36 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 180 mg/l  
Exposure time: 21 d

M-Factor (Chronic aquatic toxicity) : 10

### Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

### pyroxasulfone:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 10 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 10 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): 0.0001 mg/l  
Exposure time: 72 h

NOEC (Raphidocelis subcapitata (freshwater green alga)): 0.0001 mg/l  
End point: Growth rate  
Exposure time: 72 h

ErC50 (Lemna gibba (gibbous duckweed)): 0.0071 mg/l  
Exposure time: 7 d

NOEC (Lemna gibba (gibbous duckweed)): 0.001 mg/l  
End point: Growth rate  
Exposure time: 7 d

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 2 mg/l  
Exposure time: 28 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 1.9 mg/l  
Exposure time: 21 d

### benoxacor:

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- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 2.9 mg/l  
Exposure time: 96 h
- LC50 (Ictalurus punctatus (channel catfish)): 1.4 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 17 mg/l  
Exposure time: 48 h
- Toxicity to algae/aquatic plants : ErC50 (Desmodesmus subspicatus (green algae)): 13.5 mg/l  
Exposure time: 72 h
- EC10 (Desmodesmus subspicatus (green algae)): 0.22 mg/l  
Exposure time: 72 h
- Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 0.31 mg/l  
Exposure time: 32 d
- NOEC (Oncorhynchus mykiss (rainbow trout)): 0.016 mg/l  
Exposure time: 21 d
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.354 mg/l  
Exposure time: 21 d

### amines, coco alkyl, ethoxylated:

#### Ecotoxicology Assessment

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

### poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, phosphate:

#### Ecotoxicology Assessment

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

### bicyclopyrone:

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l  
Exposure time: 96 h
- LC50 (Pimephales promelas (fathead minnow)): > 100 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l  
Exposure time: 48 h
- Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): 5.4 mg/l  
Exposure time: 96 h
- EC10 (Raphidocelis subcapitata (freshwater green alga)): 1.9 mg/l



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End point: Growth rate  
Exposure time: 96 h

NOEC (Raphidocelis subcapitata (freshwater green alga)): 1 mg/l

End point: Growth rate  
Exposure time: 96 h

ErC50 (Lemna gibba (gibbous duckweed)): 0.055 mg/l  
Exposure time: 7 d

NOEC (Lemna gibba (gibbous duckweed)): 0.0032 mg/l  
End point: Growth rate  
Exposure time: 7 d

M-Factor (Acute aquatic toxicity) : 10  
Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 10 mg/l  
Exposure time: 33 d  
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 100 mg/l  
Exposure time: 21 d  
M-Factor (Chronic aquatic toxicity) : 10  
Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l  
Exposure time: 3 h

### Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

### copper(II) hydroxide:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.012 mg/l  
Exposure time: 96 h  
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.041 mg/l  
Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): 0.034 mg/l  
Exposure time: 72 h  
M-Factor (Acute aquatic toxicity) : 10  
Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 0.023 mg/l  
Exposure time: 92 d  
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.046 mg/l  
Exposure time: 21 d  
M-Factor (Chronic aquatic toxicity) : 10  
**5-chloro-2-methyl-1,2-thiazol-3-one; 2-methyl-1,2-thiazol-3-one:**  
Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.22 mg/l

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	Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia): 0.1 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	: ErC50 (Raphidocelis subcapitata (freshwater green alga)): 0.048 mg/l Exposure time: 72 h
	NOEC (Raphidocelis subcapitata (freshwater green alga)): 0.0012 mg/l End point: Growth rate Exposure time: 72 h
	ErC50 (Skeletonema costatum (marine diatom)): 0.0052 mg/l Exposure time: 48 h
	NOEC (Skeletonema costatum (marine diatom)): 0.00064 mg/l End point: Growth rate Exposure time: 48 h
Toxicity to fish (Chronic toxicity)	: NOEC (Oncorhynchus mykiss (rainbow trout)): 0.098 mg/l Exposure time: 28 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia): 0.004 mg/l Exposure time: 21 d

### Persistence and degradability

#### Components:

##### **S-metolachlor:**

Biodegradability	: Result: Not readily biodegradable.
Stability in water	: Degradation half life: 53 - 147 d Remarks: Product is not persistent.

##### **mesotrione:**

Stability in water	: Degradation half life: > 30 d (25 °C) Remarks: Persistent in water.
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##### **benoxacor:**

Biodegradability	: Result: Not readily biodegradable.
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##### **bicyclopyrone:**

Biodegradability	: Result: Not readily biodegradable.
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##### **5-chloro-2-methyl-1,2-thiazol-3-one; 2-methyl-1,2-thiazol-3-one:**

Biodegradability	: Result: Readily biodegradable.
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### Bioaccumulative potential

#### Components:

##### **S-metolachlor:**

Bioaccumulation : Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 3.05 (77 °F / 25 °C)

##### **mesotrione:**

Bioaccumulation : Remarks: Low bioaccumulation potential.

##### **pyroxasulfone:**

Bioaccumulation : Remarks: Low bioaccumulation potential.

Partition coefficient: n-octanol/water : log Pow: 2.39

##### **benoxacor:**

Bioaccumulation : Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 2.6 (77 °F / 25 °C)

##### **bicyclopyrone:**

Bioaccumulation : Remarks: No data available

Partition coefficient: n-octanol/water : log Pow: -1.9 (77 °F / 25 °C)

### Mobility in soil

#### Components:

##### **S-metolachlor:**

Distribution among environmental compartments : Remarks: Moderately mobile in soils

Stability in soil : Dissipation time: 12 - 46 d  
Percentage dissipation: 50 % (DT50)  
Remarks: Product is not persistent.

##### **mesotrione:**

Distribution among environmental compartments : Remarks: Highly mobile in soils

Stability in soil : Dissipation time: 6 - 105 d  
Percentage dissipation: 50 % (DT50)  
Remarks: Product is not persistent.

##### **pyroxasulfone:**

Distribution among environmental compartments : Remarks: Highly mobile in soils

Stability in soil : Dissipation time: 16 - 26 d

##### **benoxacor:**

Distribution among environmental compartments : Remarks: Moderately mobile in soils

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Stability in soil : Dissipation time: 0.9 - 5.3 d  
Percentage dissipation: 50 % (DT50)  
Remarks: Product is not persistent.

### bicyclopyrone:

Distribution among environmental compartments : Remarks: Very highly mobile in soil.

Stability in soil : Remarks: Product is not persistent.

### Other adverse effects

#### Components:

#### mesotrione:

Results of PBT and vPvB 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).

#### benoxacor:

Results of PBT and vPvB 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).

#### bicyclopyrone:

Results of PBT and vPvB 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).

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : 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

### International Regulations

#### UNRTDG

UN number : UN 3082  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
(PYROXASULFONE, S-METOLACHLOR)

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Class : 9  
 Packing group : III  
 Labels : 9  
 Remarks : This product can be subject to exemptions when packaged in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less for liquids, or having a net mass of 5 kg or less for solids.

### IATA-DGR

UN/ID No. : UN 3082  
 Proper shipping name : Environmentally hazardous substance, liquid, n.o.s. (PYROXASULFONE, S-METOLACHLOR)  
 Class : 9  
 Packing group : III  
 Labels : Miscellaneous  
 Packing instruction (cargo aircraft) : 964  
 Packing instruction (passenger aircraft) : 964  
 Environmentally hazardous : yes  
 Remarks : This product can be subject to exemptions when packaged in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less for liquids, or having a net mass of 5 kg or less for solids.

### IMDG-Code

UN number : UN 3082  
 Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PYROXASULFONE, S-METOLACHLOR)  
 Class : 9  
 Packing group : III  
 Labels : 9  
 EmS Code : F-A, S-F  
 Marine pollutant : yes  
 Remarks : This product can be subject to exemptions when packaged in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less for liquids, or having a net mass of 5 kg or less for solids.

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

Not applicable for product as supplied.

### Domestic regulation

#### 49 CFR

Not regulated as a dangerous good

Remarks : Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

### 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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**SECTION 15. REGULATORY INFORMATION**

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Caution

Harmful if swallowed.

Harmful if absorbed through skin.

Causes moderate eye irritation.

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Avoid contact with skin, eyes or clothing.

Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

Remove and wash contaminated clothing before re-use.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

Listed substances in the product are at low enough levels to not be expected to exceed the RQ

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : Respiratory or skin sensitization  
Reproductive toxicity  
Specific target organ toxicity (single or repeated exposure)

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

nitric acid am-	6484-52-2	>= 1 - < 5 %
monium salt		

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

TSCA : On or in compliance with the active portion of the TSCA inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

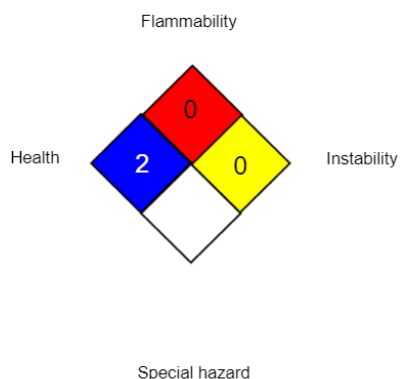
No substances are subject to TSCA 12(b) export notification requirements.

**SECTION 16. OTHER INFORMATION****Further information**

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### NFPA 704:



### HMIS® IV:

<b>HEALTH</b>	*	<b>2</b>
<b>FLAMMABILITY</b>		<b>0</b>
<b>PHYSICAL HAZARD</b>		<b>0</b>

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

### Full text of other abbreviations

NIOSH REL : USA. NIOSH Recommended Exposure Limits  
 Syngenta : Syngenta Occupational Exposure Limits  
 US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)  
 NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek  
 Syngenta / TWA : Time weighted average  
 US WEEL / TWA : 8-hr TWA

AIIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; IECS - 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concern-

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ing the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; 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

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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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