STOREN

Version	Revision Date:	SDS Number:	Date of last issue: 06/21/2023
2.0	09/28/2026	S00059835414	Date of first issue: 04/06/2023

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)

Hazards for the product as supplied

Skin sensitization : Sub-category 1B

Reproductive toxicity : Category 1B

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

Other hazards

None known.

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:

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 and face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of water.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

P405 Store locked up.

Disposal:

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
S-metolachlor (ISO)	87392-12-9*	29.3136	-
propane-1,2-diol	57-55-6*	>= 3 - <= 7	TSC
mesotrione (ISO)	104206-82-8*	3.3373	-
nitric acid ammonium salt (1:1)	6484-52-2*	>= 1 - <= 5	TSC
pyroxasulfone	447399-55-5*	1.6282	-
benoxacor	98730-04-2*	>= 0.5 - <= 1.5	TSC
amines, coco alkyl, ethoxylated	61791-14-8*	>= 0.5 - <= 1.5	TSC
poly(oxy-1,2-ethanediyl),	9046-01-9*	>= 0.5 - <= 1.5	TSC

alpha-tridecyl-omega-hydroxy-, phosphate			
bicyclopyrone	352010-68-5*	0.814	-
copper dihydroxide	20427-59-2*	>= 0.1 - <= 1	TSC
quartz (SiO2)	14808-60-7*	>= 0.1 - <= 1	TSC

* Indicates that the identifier is a CAS No.
TSC- the actual concentration or concentration range 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.
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. May cause an allergic skin reaction. May damage the unborn child. May cause damage to organs through prolonged or repeated exposure.
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	:	Do not use a solid water stream as it may scatter and spread

media		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.
Hazardous combustion products	:	Carbon oxides Nitrogen oxides (NOx) Chlorine compounds Sulfur oxides Fluorine compounds Oxides of phosphorus
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.
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 (ISO)	87392-12-9	TWA	5 mg/m3	Syngenta
propane-1,2-diol	57-55-6	TWA	10 mg/m3	US WEEL
mesotrione (ISO)	104206-82-8	TWA	5 mg/m3	Syngenta
benoxacor	98730-04-2	TWA	1 mg/m3	Syngenta
bicyclopyrone	352010-68-5	TWA	0.7 mg/m3	Syngenta
copper dihydroxide	20427-59-2	TWA	1 mg/m3 (Copper)	NIOSH REL
quartz (SiO2)	14808-60-7	TWA (Respirable dust)	0.05 mg/m3	OSHA Z-1
		TWA (respirable)	10 mg/m3 / %SiO2+2	OSHA Z-3
		TWA (respirable)	250 mppcf / %SiO2+5	OSHA Z-3
		TWA (respirable dust fraction)	0.1 mg/m3	OSHA P0
		TWA (Respirable particulate matter)	0.025 mg/m3 (Silica)	ACGIH
		PEL (respirable)	0.05 mg/m3	OSHA CARC
		TWA (Respirable dust)	0.05 mg/m3 (Silica)	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 limit they must use appropriate certified respirators.
Hand protection		
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 break through 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	:	No special protective equipment required.
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/freezing point	:	No data available
Initial boiling point and 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
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/cm3
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 characteristics		
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

Based on available data, the classification criteria are not met.

Product:

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 (ISO):

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 LC50 (Rat, male and female): > 4.33 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity The value is given in analogy to the following substances: metolachlor
Acute dermal toxicity	:	LD50 (Rabbit, male and female): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

propane-1,2-diol:

Acute oral toxicity	:	LD50 (Rat): > 20,000 mg/kg Assessment: The substance or mixture has no acute oral toxicity
Acute inhalation toxicity	:	LC50 (Rabbit): 317,042 mg/l Exposure time: 2 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal toxicity

mesotrione (ISO):

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 (1:1):

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

Acute dermal 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 dihydroxide:

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

quartz (SiO2):

Acute oral toxicity	:	Remarks: No data available
Acute inhalation toxicity	:	Remarks: No data available
Acute dermal toxicity	:	Remarks: No data available

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Product:

Species	:	Rabbit
Result	:	No skin irritation

Components:

S-metolachlor (ISO):

Species	:	Rabbit
Result	:	No skin irritation

propane-1,2-diol:

Result	:	No skin irritation

mesotrione (ISO):

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 dihydroxide:

Species : Rabbit
Result : No skin irritation

quartz (SiO2):

Remarks : No data available

Serious eye damage/eye irritation

Based on available data, the classification criteria are not met.

Product:

Species : Rabbit
Result : No eye irritation

Components:

S-metolachlor (ISO):

Species : Rabbit
Result : No eye irritation

propane-1,2-diol:

Result : No eye irritation

mesotrione (ISO):

Species : Rabbit
Result : No eye irritation

nitric acid ammonium salt (1:1):

Result : Eye irritation

pyroxasulfone:

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 dihydroxide:

Species	:	Rabbit
Result	:	Irreversible effects on the eye

quartz (SiO2):

Remarks	:	No data available

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

No applicable information is available

Product:

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

Components:

S-metolachlor (ISO):

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

propane-1,2-diol:

Result	:	Does not cause skin sensitization.

mesotrione (ISO):

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

pyroxasulfone:

Test Type	:	Local lymph node assay (LLNA)
Species	:	Mouse
Result	:	Does not cause skin sensitization.

benoxacor:

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

bicyclopyrone:

Test Type	:	mouse lymphoma cells
Species	:	Mouse
Result	:	Does not cause skin sensitization.

copper dihydroxide:

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

quartz (SiO2):

Remarks	:	No data available

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Components:

S-metolachlor (ISO):

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

propane-1,2-diol:

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

mesotrione (ISO):

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:

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

copper dihydroxide:

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

quartz (SiO2):

Germ cell mutagenicity - Assessment : No data available

Carcinogenicity

Based on available data, the classification criteria are not met.

Components:

S-metolachlor (ISO):

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

propane-1,2-diol:

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

mesotrione (ISO):

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., These is no evidence that these findings are relevant to humans., Weight of evidence does not support classification as a carcinogen

copper dihydroxide:

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

quartz (SiO2):

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

IARC has concluded that there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica in the

form of quartz or cristobalite from occupational sources and in experimental animals from quartz and cristobalite (Group 1). It was noted however, that carcinogenicity was not detected in all industrial circumstances and may be dependent on inherent characteristics of the crystalline silica or external factors affecting its biological activity.

IARC	**Group 1: Carcinogenic to humans**	
	quartz (SiO_2) (Silica dust, crystalline)	14808-60-7
	Group 2A: Probably carcinogenic to humans	
	nitric acid ammonium salt (1:1) (nitrate (ingested) under conditions that result in endogenous nitrosation)	6484-52-2
OSHA	**OSHA specifically regulated carcinogen**	
	quartz (SiO_2) (crystalline silica)	14808-60-7
NTP	**Known to be human carcinogen**	
	quartz (SiO_2) (Silica, Crystalline (Respirable Size))	14808-60-7

Reproductive toxicity

May damage the unborn child.

Components:

S-metolachlor (ISO):

Reproductive toxicity - Assessment	:	No toxicity to reproduction No effects on or via lactation

propane-1,2-diol:

Reproductive toxicity - Assessment	:	No toxicity to reproduction, No effects on or via lactation

mesotrione (ISO):

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

pyroxasulfone:

Reproductive toxicity - Assessment	:	No toxicity to reproduction

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 dihydroxide:

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

quartz (SiO2):

Reproductive toxicity - Assessment : No data available

STOT-single exposure

Based on available data, the classification criteria are not met.

Components:

propane-1,2-diol:

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

quartz (SiO2):

Remarks : No data available

STOT-repeated exposure

May cause damage to organs (Kidney, Liver, Urinary system, Heart, Nervous system) through prolonged or repeated exposure.

Components:

S-metolachlor (ISO):

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

propane-1,2-diol:

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

mesotrione (ISO):

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 dihydroxide:

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

quartz (SiO2):

Routes of exposure : Inhalation
Target Organs : Lungs
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Aspiration toxicity

Based on available data, the classification criteria are not met.

Components:

propane-1,2-diol:

No aspiration toxicity classification

Endocrine disrupting properties

Components:

S-metolachlor (ISO):

Assessment : Does not have endocrine disrupting properties.

mesotrione (ISO):

Assessment : Does not have endocrine disrupting properties.
Remarks : Weight of evidence

benoxacor:

Assessment : Does not have endocrine disrupting properties.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

S-metolachlor (ISO):

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 12 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)): 0.056 mg/l Exposure time: 72 h EC10 (Raphidocelis subcapitata (freshwater green alga)): 0.014 mg/l End point: Growth rate Exposure time: 72 h ErC50 (Elodea canadensis (Canadian waterweed)): 0.062 mg/l Exposure time: 7 d NOEC (Lemna gibba (gibbous duckweed)): 0.00384 mg/l Exposure time: 7 d
Toxicity to fish (Chronic toxicity)	:	EC10 (Pimephales promelas (fathead minnow)): 0.22 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

propane-1,2-diol:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 40,613 mg/l Exposure time: 96 h Test Type: static test
Toxicity to daphnia and other aquatic invertebrates	:	(Ceriodaphnia dubia (water flea)): 18,340 mg/l Exposure time: 48 h Test Type: static test
Toxicity to algae/aquatic plants	:	ErC50 (Raphidocelis subcapitata (freshwater green alga)): 19,000 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Ceriodaphnia dubia (Water flea)): 13,020 mg/l Exposure time: 7 d Test Type: semi-static test

mesotrione (ISO):

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
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

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

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:

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
		NOEC (Desmodesmus subspicatus (green algae)): 2.8 mg/l End point: Growth rate Exposure time: 72 h EC10 (Lemna gibba (gibbous duckweed)): 5.99 mg/l End point: Frond growth Exposure time: 7 d
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 0.31 mg/l Exposure time: 32 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	:	Harmful to aquatic life.
Chronic aquatic toxicity	:	Harmful 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 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 dihydroxide:

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

Persistence and degradability

Components:

S-metolachlor (ISO):

Biodegradability : Result: Not readily biodegradable.

Stability in water : Degradation half life: 53 - 147 d
Remarks: Product is not persistent.

propane-1,2-diol:

Biodegradability : Result: Readily biodegradable.

mesotrione (ISO):

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

benoxacor:

Biodegradability : Result: Not readily biodegradable.

Stability in water : Remarks: Product is not persistent.

bicyclopyrone:

Biodegradability : Result: Not readily biodegradable.

Bioaccumulative potential

Components:

S-metolachlor (ISO):

Bioaccumulation : Remarks: Does not bioaccumulate.

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

mesotrione (ISO):

Bioaccumulation : Remarks: Low bioaccumulation potential.

pyroxasulfone:

Bioaccumulation : Remarks: Low bioaccumulation potential.

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

benoxacor:

Bioaccumulation : Bioconcentration factor (BCF): 94
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 (ISO):

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 (ISO):

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	:	Koc: 218.2 Remarks: Moderately mobile in soils
Stability in soil	:	Dissipation time: 0.5 - 5.3 d Percentage dissipation: 50 % (DT50) Remarks: Product is not persistent.

bicyclopyrone:

Distribution among environmental compartments	:	Remarks: Highly mobile in soils
Stability in soil	:	Remarks: Product is not persistent.

Other adverse effects

Components:

S-metolachlor (ISO):

Results of PBT and vPvB assessment	:	Not persistent, bioaccumulative, and toxic (PBT).

mesotrione (ISO):

Results of PBT and vPvB assessment	:	Not persistent, bioaccumulative, and toxic (PBT). Remarks: Weight of evidence

benoxacor:

Results of PBT and vPvB assessment	:	Not persistent, bioaccumulative, and toxic (PBT).

bicyclopyrone:

Results of PBT and vPvB assessment : Not persistent, bioaccumulative, and toxic (PBT).

Endocrine disrupting properties

Components:

S-metolachlor (ISO):

Assessment : Does not have endocrine disrupting properties.

mesotrione (ISO):

Assessment : Does not have endocrine disrupting properties.
Remarks : Weight of evidence

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.
This product will not be classified as a RCRA characteristic hazardous waste when discarded.

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)
Class : 9
Packing group : III
Labels : 9
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.

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 IMO instruments

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 for non-bulk packaging; 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.

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 ammonium salt (1:1)	6484-52-2	>= 1 - < 5 %
nitric acid sodium salt	7631-99-4	< 0.1 %

California Prop. 65

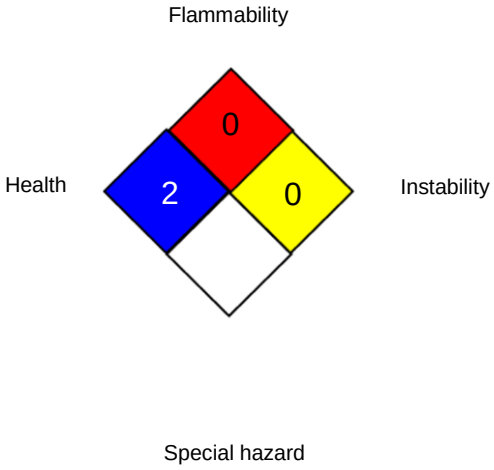
WARNING: This product can expose you to chemicals including quartz (SiO2), dioxosilane, naphthalene, ethylbenzene, which is/are known to the State of California to cause cancer, and toluene, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov. **California Regulated Carcinogens**

quartz (SiO2)	14808-60-7

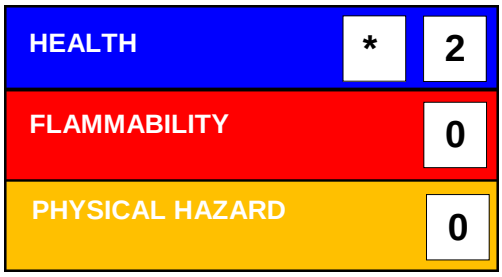
SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV / CED:



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

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA CARC	:	OSHA Specifically Regulated Chemicals/Carcinogens
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-3	:	USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts
Syngenta	:	Syngenta Occupational Exposure Limits
US WEEL	:	USA. Workplace Environmental Exposure Levels (WEEL)
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA CARC / PEL	:	Permissible exposure limit (PEL)
OSHA P0 / TWA	:	8-hour time weighted average
OSHA Z-1 / TWA	:	8-hour time weighted average
OSHA Z-3 / TWA	:	8-hour time weighted average
Syngenta / TWA	:	Time weighted average
US WEEL / TWA	:	8-hr TWA

AIIC - 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 Standardization; 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; 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 Organization 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 concerning the Registration, Evaluation, Authorization 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

Revision Date : 09/28/2026

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

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.

US / EN