SAFETY DATA SHEET

According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

PAS™

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	20.10.2023	800080002927	Date of first issue: 20.10.2023

Corteva Agriscience™ encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container. This Safety Data Sheet adheres to the standards and regulatory requirements of Great Britain and may not meet the regulatory requirements in other countries.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : PAS™

Unique Formula Identifier (UFI) : 6GN5-V0GW-W00J-4J6N

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

Use of the Substance/Mixture : End use herbicide product

1.3 Details of the supplier of the safety data sheet

COMPANY IDENTIFICATION
Manufacturer/importer
Corteva Agriscience UK Ltd
CPC2 CAPITAL PARK
FULBOURN CAMBRIDGE - England - CB21 5XE
UNITED KINGDOM

Customer Information Number : +44 8006 89 8899
E-mail address : SDS@corteva.com

1.4 Emergency telephone number

SGS +32 3 575 55 55 OR

+44 161 88 41235

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Skin sensitisation, Category 1 H317: May cause an allergic skin reaction.

Specific target organ toxicity - repeated exposure, Category 2	H373: May cause damage to organs through prolonged or repeated exposure.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Hazard pictograms :

Signal word : Warning

Hazard statements :
H317 May cause an allergic skin reaction.
H373 May cause damage to organs (Kidney) through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280 Wear protective gloves/ protective clothing.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

Disposal:

P501 Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste.

Additional Labelling

EUH401 To avoid risks to human health and the environment, comply with the instructions for use.

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.

Ecological information: 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.

Toxicological information: 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.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
fluroxypyr-meptyl (ISO)	81406-37-3 279-752-9 607-272-00-5	Aquatic Acute 1; H400 Aquatic Chronic 1; H410	21.81
Triclopyr-2-butoxyethyl ester	64700-56-7 265-024-8	Acute Tox. 4; H302 Skin Sens. 1B; H317 STOT RE 2; H373 (Kidney) Aquatic Acute 1; H400 Aquatic Chronic 1; H410 _____ M-Factor (Acute aquatic toxicity): 10 M-Factor (Chronic aquatic toxicity): 10	20.45
Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt	1335202-81-7 01-2119560592-37	Skin Irrit. 2; H315 Eye Dam. 1; H318 Aquatic Chronic 3; H412	>= 3 - < 10
2-methylpropan-1-ol	78-83-1 201-148-0 603-108-00-1	Flam. Liq. 3; H226 Skin Irrit. 2; H315 Eye Dam. 1; H318 STOT SE 3; H335 (Respiratory system) STOT SE 3; H336 (Central nervous system)	>= 1 - < 3

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

Protection of first-aiders	:	First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
If inhaled	:	Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.
In case of skin contact	:	Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.
In case of eye contact	:	Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.
If swallowed	:	Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

None known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment	:	Skin contact may aggravate preexisting dermatitis. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	Water spray Alcohol-resistant foam Carbon dioxide (CO2)

Unsuitable extinguishing media	:	Do not use direct water stream. High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting	:	Exposure to combustion products may be a hazard to health. Vapours may form explosive mixtures with air. Do not allow run-off from fire fighting to enter drains or water courses. Flash back possible over considerable distance.
Hazardous combustion products	:	Nitrogen oxides (NOx) Carbon oxides

5.3 Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.
Specific extinguishing methods	:	Remove undamaged containers from fire area if it is safe to do so. Evacuate area. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Further information	:	Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Do not use a solid water stream as it may scatter and spread fire. Use a water spray to cool fully closed containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

6.2 Environmental precautions

Environmental precautions	:	If the product contaminates rivers and lakes or drains inform respective authorities. Discharge into the environment must be avoided.

Prevent further leakage or spillage if safe to do so.
Prevent spreading over a wide area (e.g. by containment or oil barriers).
Retain and dispose of contaminated wash water.
Local authorities should be advised if significant spillages cannot be contained.
Prevent from entering into soil, ditches, sewers,underwater.
See Section 12, Ecological Information.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Clean up remaining materials from spill with suitable absorbant.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in.
For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped,
Recovered material should be stored in a vented container. The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to overpressurization of the container.
Keep in suitable, closed containers for disposal.
Wipe up with absorbent material (e.g. cloth, fleece).
Non-sparking tools should be used.
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).
Suppress (knock down) gases/vapours/mists with a water spray jet.
See Section 13, Disposal Considerations, for additional information.

6.4 Reference to other sections

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Local/Total ventilation : Use with local exhaust ventilation.
Advice on safe handling : Avoid formation of aerosol.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Provide sufficient air exchange and/or exhaust in work rooms.
Do not breathe vapours/dust.
Do not smoke.
Handle in accordance with good industrial hygiene and safety practice.
Avoid exposure - obtain special instructions before use.

Smoking, eating and drinking should be prohibited in the application area.
Do not get on skin or clothing.
Avoid inhalation of vapour or mist.
Do not swallow.
Avoid contact with skin and eyes.
Avoid contact with eyes.
Keep container tightly closed.
Keep away from heat and sources of ignition.
Take precautionary measures against static discharges.
Take care to prevent spills, waste and minimize release to the environment.
Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in a closed container. No smoking. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in properly labelled containers. Store in accordance with the particular national regulations.

Advice on common storage : Strong oxidizing agents
Explosives
Gases

Packaging material : Unsuitable material: None known.

7.3 Specific end use(s)

Specific use(s) : Plant protection products subject to Regulation (EC) No 1107/2009.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
fluroxypyr-meptyl (ISO)	81406-37-3	Time Weighted Average (TWA):	10 mg/m3	Dow IHG
Triclopyr-2-butoxyethyl ester	64700-56-7	Time Weighted Average (TWA):	2 mg/m3	Dow IHG
2-methylpropan-1-ol	78-83-1	Short-term exposure limit (15-minute reference period)	75 ppm 231 mg/m3	GB EH40
		Long-term exposure limit (8-hour TWA reference period)	50 ppm 154 mg/m3	GB EH40
		Short term exposure limit	50 ppm	Corteva OEL

		Time weighted average	75 ppm	Corteva OEL
2-methylpropan-1-ol	78-83-1	Short-term exposure limit (15-minute reference period)	75 ppm 231 mg/m3	GB EH40
		Long-term exposure limit (8-hour TWA reference period)	50 ppm 154 mg/m3	GB EH40
		Short term exposure limit	50 ppm	Corteva OEL
		Time weighted average	75 ppm	Corteva OEL

Derived No Effect Level (DNEL):

Substance name	End Use	Exposure routes	Potential health effects	Value
2-methylpropan-1-ol	Workers	Skin contact	Acute systemic effects	
	Remarks:No data available			
	Workers	Inhalation	Acute systemic effects	
	Remarks:No data available			
	Workers	Skin contact	Acute systemic effects	
	Remarks:No data available			
	Workers	Inhalation	Acute systemic effects	
	Remarks:No data available			
	Workers	Skin contact	Long-term systemic effects	
	Remarks:No data available			
	Workers	Inhalation	Long-term systemic effects	
	Remarks:No data available			
	Workers	Skin contact	Long-term local effects	
	Remarks:No data available			
	Workers	Inhalation	Long-term local effects	310 mg/m3
	Consumers	Skin contact	Acute systemic effects	
	Remarks:No data available			
	Consumers	Inhalation	Acute systemic effects	
	Remarks:No data available			
	Consumers	Skin contact	Acute local effects	
	Remarks:No data available			
	Consumers	Inhalation	Acute local effects	
	Remarks:No data available			
	Consumers	Skin contact	Long-term systemic	

			effects	
	Remarks:No data available			
	Consumers	Inhalation	Long-term systemic effects	
	Remarks:No data available			
	Consumers	Skin contact	Long-term local effects	
	Remarks:No data available			
	Consumers	Ingestion	Long-term local effects	25 mg/kg bw/day
	Consumers	Inhalation	Long-term local effects	55 mg/m3

Predicted No Effect Concentration (PNEC):

Substance name	Environmental Compartment	Value
2-methylpropan-1-ol	Fresh water	0.4 mg/l
	Marine water	0.04 mg/l
	Intermittent use/release	11 mg/l
	Sewage treatment plant	10 mg/l
	Soil	0.0699 mg/kg dry weight (d.w.)
	Fresh water sediment	1.52 mg/kg dry weight (d.w.)
	Marine sediment	0.152 mg/kg dry weight (d.w.)

8.2 Exposure controls

Engineering measures

Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations.
Local exhaust ventilation may be necessary for some operations.

Personal protective equipment

Eye/face protection : Use chemical goggles.

Hand protection

Remarks : Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Skin and body protection : Use protective clothing chemically resistant to this material.

Respiratory protection	:	Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	Liquid.
Colour	:	Yellow
Odour	:	Mild
Odour Threshold	:	No data available
pH	:	5.15 (24.0 °C) Concentration: 1 % GLP: yes
Melting point/range	:	No data available
Freezing point		No data available
Boiling point/boiling range	:	No data available
Flash point	:	85 °C Method: ASTM D 93, closed cup GLP: yes
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
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Density	:	1.02 g/cm3 (20 °C) GLP: yes
Bulk density	:	No data available

Solubility(ies)
Water solubility : Emulsion
Auto-ignition temperature : No data available

Viscosity
Viscosity, dynamic : 20.5 mPa,s (20 °C)
Method: OECD 114
GLP: yes

9.56 mPa,s (40 °C)
Method: OECD 114
GLP: yes

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Not classified as a reactivity hazard.

10.2 Chemical stability

No decomposition if stored and applied as directed.
Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Stable under recommended storage conditions.
No hazards to be specially mentioned.
Vapours may form explosive mixture with air.
May form explosive dust-air mixture.

10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid : Strong acids
Strong bases

10.6 Hazardous decomposition products

Carbon oxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Components:

fluroxypyr-meptyl (ISO):

Acute oral toxicity	:	LD50 (Rat): > 2,000 mg/kg Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute oral toxicity
Acute inhalation toxicity	:	LC50 (Rat, male and female): > 1.16 mg/l Exposure time: 4 h Test atmosphere: dust/mist Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute inhalation toxicity Remarks: Maximum attainable concentration.
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute dermal toxicity

Triclopyr-2-butoxyethyl ester:

Acute oral toxicity	:	LD50 (Rat, male and female): 803 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 4.8 mg/l Exposure time: 4 h Test atmosphere: dust/mist Symptoms: The LC50 value is greater than the Maximum Attainable Concentration. Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute dermal toxicity

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:

Acute oral toxicity	:	LD50 (Rat, female): 4,445 mg/kg
Acute dermal toxicity	:	LD50 (Rat, male and female): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

2-methylpropan-1-ol:

Acute oral toxicity	:	LD50 (Rat, female): 3,350 mg/kg Method: OECD 401 or equivalent
Acute inhalation toxicity	:	LC50 (Rat, male and female): > 28.2 mg/l Exposure time: 6 h Test atmosphere: vapour Assessment: The substance or mixture has no acute inhalation toxicity LC50 (Rat, male and female): > 8000 ppm Exposure time: 4 h Test atmosphere: vapour
Acute dermal toxicity	:	LD50 (Rabbit, male and female): > 2,000 mg/kg Method: OECD Test Guideline 402 Target Organs: Central nervous system Symptoms: No deaths occurred at this concentration.

Skin corrosion/irritation

Components:

fluroxypyr-meptyl (ISO):

Species	:	Rabbit
Result	:	No skin irritation

Triclopyr-2-butoxyethyl ester:

Species	:	Rabbit
Result	:	No skin irritation

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:

Result	:	Skin irritation

2-methylpropan-1-ol:

Species	:	Rabbit
Result	:	Skin irritation

Serious eye damage/eye irritation

Components:

Triclopyr-2-butoxyethyl ester:

Species	:	Rabbit
Result	:	No eye irritation

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:

Result	:	Corrosive

2-methylpropan-1-ol:

Species : Rabbit
Result : Corrosive

Respiratory or skin sensitisation

Components:

fluroxypyr-meptyl (ISO):
Species : Guinea pig
Assessment : Does not cause skin sensitisation.

Triclopyr-2-butoxyethyl ester:
Species : Guinea pig
Assessment : The product is a skin sensitiser, sub-category 1B.

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:
Remarks : For skin sensitization:
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Germ cell mutagenicity

Components:

fluroxypyr-meptyl (ISO):
Germ cell mutagenicity- Assessment : In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

Triclopyr-2-butoxyethyl ester:
Germ cell mutagenicity- Assessment : In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:
Germ cell mutagenicity- Assessment : In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

2-methylpropan-1-ol:
Germ cell mutagenicity- Assessment : In vitro genetic toxicity studies were predominantly negative., Animal genetic toxicity studies were negative.

Carcinogenicity

Components:

fluroxypyr-meptyl (ISO):

Carcinogenicity - Assessment : For similar active ingredient(s)., Fluroxypyr., Did not cause cancer in laboratory animals.

Triclopyr-2-butoxyethyl ester:

Carcinogenicity - Assessment : For similar active ingredient(s)., Triclopyr., Did not cause cancer in laboratory animals.

2-methylpropan-1-ol:

Carcinogenicity - Assessment : Available data are inadequate to evaluate carcinogenicity.

Reproductive toxicity

Components:

fluroxypyr-meptyl (ISO):

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
Has been toxic to the fetus in laboratory animals at doses toxic to the mother., Did not cause birth defects in laboratory animals.

Triclopyr-2-butoxyethyl ester:

Reproductive toxicity - Assessment : For similar active ingredient(s)., Triclopyr., In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.
Has been toxic to the fetus in laboratory animals at doses toxic to the mother., Did not cause birth defects in laboratory animals.

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
Did not cause birth defects or any other fetal effects in laboratory animals.

2-methylpropan-1-ol:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

STOT - single exposure

Components:

Triclopyr-2-butoxyethyl ester:

Assessment : Evaluation of available data suggests that this material is not

an STOT-SE toxicant.

2-methylpropan-1-ol:

Exposure routes	:	Inhalation
Target Organs	:	Nervous system
Assessment	:	May cause drowsiness or dizziness.

Exposure routes	:	Inhalation
Target Organs	:	Respiratory Tract
Assessment	:	May cause respiratory irritation.

STOT - repeated exposure

Components:

Triclopyr-2-butoxyethyl ester:

Target Organs	:	Kidney
Assessment	:	May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

fluroxypyr-meptyl (ISO):

Remarks	:	Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:

Remarks	:	Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

2-methylpropan-1-ol:

Remarks	:	In animals, effects have been reported on the following organs: Liver. Central nervous system. Observations in animals include: Anesthetic or narcotic effects.

Aspiration toxicity

Components:

fluroxypyr-meptyl (ISO):

Based on physical properties, not likely to be an aspiration hazard.

Triclopyr-2-butoxyethyl ester:

Based on physical properties, not likely to be an aspiration hazard.

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:
Based on physical properties, not likely to be an aspiration hazard.

2-methylpropan-1-ol:
Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 32 mg/l Exposure time: 48 h Test Type: semi-static test Method: OECD Test Guideline 202 or Equivalent
Toxicity to algae/aquatic plants	:	ErC50 (diatom Navicula sp.): 0.854 mg/l End point: Growth rate inhibition Exposure time: 72 h Test Type: static test Method: OECD Test Guideline 201 or Equivalent NOEC (Myriophyllum spicatum): 0.0977 mg/l End point: Growth inhibition Exposure time: 14 d Test Type: Growth inhibition
Toxicity to soil dwelling organisms	:	LC50: > 2,000 mg/kg Exposure time: 14 d Species: Eisenia fetida (earthworms) GLP:yes
Toxicity to terrestrial organisms	:	oral LD50: > 217.4 micrograms/bee Exposure time: 48 h Species: Apis mellifera (bees) contact LD50: > 200 micrograms/bee Exposure time: 48 h Species: Apis mellifera (bees)

Components:

fluroxypyr-meptyl (ISO):

Toxicity to fish	:	Remarks: Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species). LC50 (Oncorhynchus mykiss (rainbow trout)): > 0.225 mg/l

Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203 or Equivalent

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 0.183 mg/l
Exposure time: 48 h
Test Type: semi-static test
Method: OECD Test Guideline 202 or Equivalent

Toxicity to algae/aquatic plants : ErC50 (diatom Navicula sp.): 0.24 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201 or Equivalent

EbC50 (alga Scenedesmus sp.): > 0.47 mg/l
Exposure time: 72 h

ErC50 (Selenastrum capricornutum (green algae)): > 1.410 mg/l
Exposure time: 96 h

ErC50 (Myriophyllum spicatum): 0.075 mg/l
Exposure time: 14 d

NOEC (Myriophyllum spicatum): 0.031 mg/l
Exposure time: 14 d

Toxicity to fish (Chronic toxicity) : NOEC: 0.32 mg/l
Species: Rainbow trout (Oncorhynchus mykiss)

Toxicity to soil dwelling organisms : LC50: > 1,000 mg/kg
Species: Eisenia fetida (earthworms)

Toxicity to terrestrial organisms : Remarks: Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

oral LD50: > 2000 mg/kg bodyweight.
Exposure time: 5 d
Species: Colinus virginianus (Bobwhite quail)

dietary LC50: > 5000 mg/kg diet.
Species: Colinus virginianus (Bobwhite quail)

oral LD50: > 100 micrograms/bee
Exposure time: 48 h
Species: Apis mellifera (bees)

contact LD50: > 100 micrograms/bee
Exposure time: 48 h
Species: Apis mellifera (bees)

Triclopyr-2-butoxyethyl ester:

Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.36 mg/l Exposure time: 96 h Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 2.9 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): > 3.00 mg/l End point: Growth rate inhibition Exposure time: 96 h Method: OECD Test Guideline 201 ErC50 (Myriophyllum spicatum): 0.0473 mg/l Exposure time: 14 d NOEC (Myriophyllum spicatum): 0.00722 mg/l Exposure time: 14 d
M-Factor (Acute aquatic toxicity)	:	10
Toxicity to fish (Chronic toxicity)	:	NOEC: 0.0263 mg/l Species: Rainbow trout (Oncorhynchus mykiss)
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 1.6 mg/l End point: number of offspring Exposure time: 21 d Species: Daphnia magna (Water flea) LOEC: 5.1 mg/l End point: number of offspring Exposure time: 21 d Species: Daphnia magna (Water flea) MATC (Maximum Acceptable Toxicant Level): 2.9 mg/l End point: number of offspring Exposure time: 21 d Species: Daphnia magna (Water flea)
M-Factor (Chronic aquatic toxicity)	:	10
Toxicity to soil dwelling organisms	:	LC50: > 1,042 mg/kg Exposure time: 14 d Species: Eisenia fetida (earthworms)
Toxicity to terrestrial organisms	:	oral LD50: 735 mg/kg bodyweight. Exposure time: 21 d Species: Colinus virginianus (Bobwhite quail) dietary LC50: 1890 mg/kg diet.

Exposure time: 8 d
Species: Colinus virginianus (Bobwhite quail)

oral LD50: > 110 µg/bee
Exposure time: 48 h
End point: mortality
Species: Apis mellifera (bees)

contact LD50: > 100 µg/bee
Exposure time: 48 h
End point: mortality
Species: Apis mellifera (bees)

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:

Toxicity to fish	:	Remarks: Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested). Remarks: Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species). LC50 (Fish): > 1 - 10 mg/l Exposure time: 96 h Test Type: Static
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 2.9 mg/l Exposure time: 48 h Test Type: Static
Toxicity to algae/aquatic plants	:	EC50 (Algae): 29 mg/l Exposure time: 96 h Test Type: Static
Toxicity to microorganisms	:	EC50 (Bacteria): 550 mg/l Exposure time: 3 h
Toxicity to fish (Chronic toxicity)	:	0.23 mg/l Exposure time: 72 d Species: Fish Test Type: flow-through
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	1.18 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Test Type: flow-through test

Ecotoxicology Assessment

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

2-methylpropan-1-ol:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 1,430 mg/l Exposure time: 96 h Test Type: flow-through test Method: OECD Test Guideline 203 or Equivalent
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia pulex (Water flea)): 1,100 mg/l Exposure time: 48 h Test Type: static test
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 1,799 mg/l End point: Growth rate inhibition Exposure time: 72 h Test Type: static test
Toxicity to microorganisms	:	IC50 (activated sludge): > 1,000 mg/l End point: Growth inhibition Exposure time: 16 h Test Type: static test
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 20 mg/l End point: number of offspring Exposure time: 21 d Species: Daphnia magna (Water flea) MATC (Maximum Acceptable Toxicant Level): 28 mg/l End point: number of offspring Exposure time: 21 d Species: Daphnia magna (Water flea)

12.2 Persistence and degradability

Components:

fluroxypyr-meptyl (ISO):

Biodegradability	:	Result: Not biodegradable Remarks: Material is not readily biodegradable according to OECD/EEC guidelines. Biodegradation: 32 % Exposure time: 28 d Method: OECD Test Guideline 301D or Equivalent Remarks: 10-day Window: Fail
ThOD	:	2.2 kg/kg
Stability in water	:	Test Type: Hydrolysis Degradation half life: 454 d

Triclopyr-2-butoxyethyl ester:

Biodegradability	:	Result: Not readily biodegradable. Biodegradation: 18 %

Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent
Remarks: 10-day Window: Fail

Biochemical Oxygen Demand (BOD) : 0.004 kg/kg

ThOD : 1.39 kg/kg

Stability in water : Test Type: Hydrolysis
Degradation half life (half-life): 8.7 d (25 °C)
pH: 7

Photodegradation : Rate constant: 2.3E-11 cm3/s
Method: Estimated.

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:

Biodegradability : Remarks: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Result: Readily biodegradable.
Biodegradation: 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent
Remarks: 10-day Window: Pass

2-methylpropan-1-ol:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 70 - 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent
Remarks: 10-day Window: Pass

Inoculum: activated sludge
Biodegradation: 90 %
Exposure time: 14 d
Method: OECD Test Guideline 301C or Equivalent
Remarks: 10-day Window: Not applicable

Biochemical Oxygen Demand (BOD) : 64 - 69 %
Incubation time: 5 d

73 - 79 %
Incubation time: 10 d

72 - 81 %
Incubation time: 20 d

Chemical Oxygen Demand (COD) : 2.29 kg/kg
Method: Dichromate

ThOD : 2.59 kg/kg
Method: Estimated.

Photodegradation : Test Type: Half-life (indirect photolysis)
Sensitiser: OH radicals
Rate constant: 6.88E-12 cm3/s
Method: Estimated.

12.3 Bioaccumulative potential

Components:

fluroxypyr-meptyl (ISO):

Bioaccumulation : Species: Oncorhynchus mykiss (rainbow trout)
Bioconcentration factor (BCF): 26
Method: Measured

Partition coefficient: n-octanol/water :

log Pow: 5.04
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Triclopyr-2-butoxyethyl ester:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 110

Partition coefficient: n-octanol/water : log Pow: 4.62
pH: 7
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:

Bioaccumulation : Bioconcentration factor (BCF): 2 - 1,000

Partition coefficient: n-octanol/water :

log Pow: 2.89
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

2-methylpropan-1-ol:

Bioaccumulation : Bioconcentration factor (BCF): 2
Method: Estimated.

Partition coefficient: n-octanol/water : log Pow: 0.76
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

12.4 Mobility in soil

Components:

fluroxypyr-meptyl (ISO):

Distribution among environmental compartments : Koc: 6200 - 43000
Remarks: Expected to be relatively immobile in soil (Koc > 5000).

Triclopyr-2-butoxyethyl ester:

Distribution among environmental compartments : Remarks: Calculation of meaningful sorption data was not possible due to very rapid degradation in the soil.
For the degradation product:
Triclopyr.
Potential for mobility in soil is very high (Koc between 0 and 50).

Stability in soil : Test Type: aerobic degradation
Dissipation time: 144 - 1,248 h

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:

Distribution among environmental compartments : Remarks: No relevant data found.

2-methylpropan-1-ol:

Distribution among environmental compartments : Koc: 2
Method: Estimated.
Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

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:

fluroxypyr-meptyl (ISO):

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).

Triclopyr-2-butoxyethyl ester:

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).

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:

Assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

2-methylpropan-1-ol:

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.

Components:

fluroxypyr-meptyl (ISO):

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Triclopyr-2-butoxyethyl ester:

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt:

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

2-methylpropan-1-ol:

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identifica-

tion and disposal methods in compliance with applicable regulations.
If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

SECTION 14: Transport information

14.1 UN number

ADR	:	UN 3082
RID	:	UN 3082
IMDG	:	UN 3082
IATA	:	UN 3082

14.2 UN proper shipping name

ADR	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Triclopyr, Fluroxypyr)
RID	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Triclopyr, Fluroxypyr)
IMDG	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Triclopyr, Fluroxypyr)
IATA	:	Environmentally hazardous substance, liquid, n.o.s. (Triclopyr, Fluroxypyr)

14.3 Transport hazard class(es)

		Class	Subsidiary risks
ADR	:	9	
RID	:	9	
IMDG	:	9	
IATA	:	9	

14.4 Packing group

ADR

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9
Tunnel restriction code	:	(-)

RID

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90

Labels : 9

IMDG
Packing group : III
Labels : 9
EmS Code : F-A, S-F
Remarks : Stowage category A

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

ADR
Environmentally hazardous : yes

RID
Environmentally hazardous : yes

IMDG
Marine pollutant : yes(Triclopyr, Fluroxypyr)

14.6 Special precautions for user

Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code, IATA Special provision A197, and ADR/RID special provision 375.

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.

SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation : Not applicable

The Persistent Organic Pollutants Regulations (retained Regulation (EU) 2019/1021 as amended for Great Britain)	:	Not applicable
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	:	Not applicable
UK REACH List of substances subject to authorisation (Annex XIV)	:	Not applicable
Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	E1	ENVIRONMENTAL HAZARDS

Registration Number : MAPP 17772

15.2 Chemical safety assessment

A Chemical Safety Assessment is not required for this substance when it is used in the specified applications.
The mixture is evaluated within the frame of the provisions of Regulation (EC) No. 1107/2009.
Refer to the label for exposure assessment information.

SECTION 16: Other information

Full text of H-Statements

H226	:	Flammable liquid and vapour.
H302	:	Harmful if swallowed.
H315	:	Causes skin irritation.
H317	:	May cause an allergic skin reaction.
H318	:	Causes serious eye damage.
H335	:	May cause respiratory irritation.
H336	:	May cause drowsiness or dizziness.
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.
H412	:	Harmful 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
Eye Dam.	:	Serious eye damage
Flam. Liq.	:	Flammable liquids
Skin Irrit.	:	Skin irritation
Skin Sens.	:	Skin sensitisation
STOT RE	:	Specific target organ toxicity - repeated exposure
STOT SE	:	Specific target organ toxicity - single exposure
Corteva OEL	:	Corteva Occupational Exposure Limit
Dow IHG	:	Dow Industrial Hygiene Guideline
GB EH40	:	UK. EH40 WEL - Workplace Exposure Limits
Corteva OEL / STEL	:	Short term exposure limit

Corteva OEL / TWA : Time weighted average
Dow IHG / TWA : Time Weighted Average (TWA):
GB EH40 / TWA : Long-term exposure limit (8-hour TWA reference period)
GB EH40 / STEL : Short-term exposure limit (15-minute reference period)
ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; ASTM - American Society for the Testing of Materials; ECx - Concentration associated with x% response; EmS - Emergency Schedule; ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; 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; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; 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; NOEC - Non-Observed Effective Concentration; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; (Q)SAR - (Quantitative) Structure Activity Relationship; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SDS - Safety Data Sheet; UN - United Nations.

Further information

Classification of the mixture:		**Classification procedure:**
Skin Sens. 1	H317	Calculation method
STOT RE 2	H373	Calculation method
Aquatic Acute 1	H400	Based on product data or assessment
Aquatic Chronic 1	H410	Based on product data or assessment

Product code: GF-2044

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.

GB / 6N

SAFETY DATA SHEET

According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

TOR™

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	07.12.2023	800080003470	Date of first issue: 07.12.2023

Corteva Agriscience™ encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container. This Safety Data Sheet adheres to the standards and regulatory requirements of Great Britain and may not meet the regulatory requirements in other countries.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : TOR™

Unique Formula Identifier (UFI) : 71K0-V0DE-800H-K75T

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

Use of the Substance/Mixture : End use herbicide product

1.3 Details of the supplier of the safety data sheet

COMPANY IDENTIFICATION
Manufacturer/importer
Corteva Agriscience UK Ltd
CPC2 CAPITAL PARK
FULBOURN CAMBRIDGE - England - CB21 5XE
UNITED KINGDOM

Customer Information Number **:** +44 8006 89 8899
E-mail address **:** SDS@corteva.com

1.4 Emergency telephone number

SGS +32 3 575 55 55 OR

+44 161 88 41235

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Skin irritation, Category 2 H315: Causes skin irritation.

Serious eye damage, Category 1	H318: Causes serious eye damage.
Specific target organ toxicity - single exposure, Category 3, Respiratory system	H335: May cause respiratory irritation.
Specific target organ toxicity - repeated exposure, Category 2	H373: May cause damage to organs through prolonged or repeated exposure.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Hazard pictograms :

Signal word : Danger

Hazard statements :
H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.

Response:

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P391 Collect spillage.

Disposal:

P501 Dispose of contents/container to a licensed hazardous-waste disposalcontractor or collection site except for empty clean containers whichcan be disposed of as non-hazardous waste.

Hazardous components which must be listed on the label:

Clopyralid Triethylamine Salt
Triclopyr Triethylamine Salt
triethylamine

Additional Labelling

EUH401 To avoid risks to human health and the environment, comply with the instructions for use.

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.

Ecological information: 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.

Toxicological information: 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.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
Clopyralid Triethylamine Salt	119308-91-7	Eye Dam. 1; H318 Aquatic Chronic 1; H410 ——————— M-Factor (Chronic aquatic toxicity): 10	26.55
Triclopyr Triethylamine Salt	57213-69-1 260-625-1	Flam. Liq. 3; H226 Eye Irrit. 2; H319 STOT RE 2; H373 (Kidney) Aquatic Acute 1; H400 Aquatic Chronic 1; H410	24.26
triethylamine	121-44-8 204-469-4 612-004-00-5 01-2119475467-26-0012, 01-2119475467-26-0013	Flam. Liq. 2; H225 Acute Tox. 4; H302 Acute Tox. 3; H331 Acute Tox. 3; H311 Skin Corr. 1A; H314 Eye Dam. 1; H318 STOT SE 3; H335 (Respiratory system)	>= 1 - < 3

		_____ specific concentration limit STOT SE 3; H335 >= 1 %	
Substances with a workplace exposure limit :			
ethanol	64-17-5 200-578-6 603-002-00-5 01-2119457610-43	Flam. Liq. 2; H225 _____ specific concentration limit 2A; H319 > 50 %	>= 1 - < 3

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection).
If potential for exposure exists refer to Section 8 for specific personal protective equipment.

If inhaled : Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.
If breathing is difficult, oxygen should be administered by qualified personnel.

In case of skin contact : Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

In case of eye contact : Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.
Suitable emergency eye wash facility should be immediately available.

If swallowed : Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor.
Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

None known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Maintain adequate ventilation and oxygenation of the patient.
May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help.
Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress.
Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist.
No specific antidote.
Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.
Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.
Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO2)

Unsuitable extinguishing media : Do not use direct water stream.
High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Exposure to combustion products may be a hazard to health.
Vapours may form explosive mixtures with air.
Do not allow run-off from fire fighting to enter drains or water courses.
Flash back possible over considerable distance.

Hazardous combustion products : During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating.
Combustion products may include and are not limited to:
Carbon oxides
Nitrogen oxides (NOx)

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Specific extinguishing methods	:	Remove undamaged containers from fire area if it is safe to do so. Evacuate area. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Further information	:	Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Do not use a solid water stream as it may scatter and spread fire. Use a water spray to cool fully closed containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

6.2 Environmental precautions

Environmental precautions	:	If the product contaminates rivers and lakes or drains inform respective authorities. Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained. Prevent from entering into soil, ditches, sewers,underwater. See Section 12, Ecological Information.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Clean up remaining materials from spill with suitable absorbant. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, Recovered material should be stored in a vented container. The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to overpressurization of the container.

Keep in suitable, closed containers for disposal.
Wipe up with absorbent material (e.g. cloth, fleece).
Non-sparking tools should be used.
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).
Suppress (knock down) gases/vapours/mists with a water spray jet.
See Section 13, Disposal Considerations, for additional information.

6.4 Reference to other sections

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Local/Total ventilation	:	Use with local exhaust ventilation.
Advice on safe handling	:	To avoid spills during handling keep bottle on a metal tray. Avoid formation of aerosol. Provide sufficient air exchange and/or exhaust in work rooms. Do not breathe vapours/dust. Do not smoke. Handle in accordance with good industrial hygiene and safety practice. Avoid exposure - obtain special instructions before use. Smoking, eating and drinking should be prohibited in the application area. Do not breathe vapours or spray mist. Do not swallow. Do not get in eyes. Avoid contact with skin and eyes. Avoid prolonged or repeated contact with skin. Keep container tightly closed. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Store in a closed container. No smoking. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in properly labelled containers. Store in accordance with the particular national regulations.
Advice on common storage	:	Strong oxidizing agents Explosives Gases
Packaging material	:	Unsuitable material: None known.

7.3 Specific end use(s)

Specific use(s) : Plant protection products subject to Regulation (EC) No 1107/2009.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Triclopyr Triethyl-amine Salt	57213-69-1	Time Weighted Average (TWA):	2 mg/m3	Dow IHG
triethylamine	121-44-8	Short-term exposure limit (15-minute reference period)	4 ppm 17 mg/m3	GB EH40
	Further information: Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
		Long-term exposure limit (8-hour TWA reference period)	2 ppm 8 mg/m3	GB EH40
	Further information: Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
		Limit Value - eight hours	2 ppm 8.4 mg/m3	2000/39/EC
	Further information: Identifies the possibility of significant uptake through the skin, Indicative			
		Short term exposure limit	3 ppm 12.6 mg/m3	2000/39/EC
	Further information: Identifies the possibility of significant uptake through the skin, Indicative			
		Time weighted average	1 ppm	Dow IHG
		Short term exposure limit	3 ppm	Dow IHG
ethanol	64-17-5	Long-term exposure limit (8-hour TWA reference period)	1,000 ppm 1,920 mg/m3	GB EH40

Derived No Effect Level (DNEL):

Substance name	End Use	Exposure routes	Potential health effects	Value
triethylamine	Workers	Inhalation	Acute systemic effects	12.6 mg/m3
	Workers	Inhalation	Acute local effects	12.6 mg/m3

	Workers	Skin contact	Long-term systemic effects	12.1 mg/kg bw/day
	Workers	Inhalation	Long-term systemic effects	8.4 mg/m3
	Workers	Inhalation	Long-term local effects	8.4 mg/m3
ethanol	Workers	Inhalation	Acute local effects	1900 mg/m3
	Workers	Skin contact	Long-term systemic effects	343 mg/kg bw/day
	Workers	Inhalation	Long-term systemic effects	950 mg/m3
	Consumers	Inhalation	Acute local effects	950 mg/m3
	Consumers	Skin contact	Long-term systemic effects	206 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	114 mg/m3
	Consumers	Ingestion	Long-term systemic effects	87 mg/kg bw/day

Predicted No Effect Concentration (PNEC):

Substance name	Environmental Compartment	Value
triethylamine	Fresh water	0.064 mg/l
	Marine water	0.0064 mg/l
	Intermittent use/release	0.064 mg/l
	Sewage treatment plant	100 mg/l
	Fresh water sediment	0.1992 mg/kg
	Soil	2.361 mg/kg
ethanol	Fresh water	0.96 mg/l
	Marine water	0.79 mg/l
	Intermittent use/release	2.75 mg/l
	Sewage treatment plant	580 mg/l
	Fresh water sediment	3.6 mg/kg
	Marine sediment	2.9 mg/kg
	Soil	0.63 mg/kg
	Oral (Secondary Poisoning)	720 mg/kg food

8.2 Exposure controls

Engineering measures

Use engineering controls to maintain airborne level below exposure limit requirements or guidelines.
If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation.
Local exhaust ventilation may be necessary for some operations.

Personal protective equipment

Eye/face protection : Use chemical goggles.

Hand protection

Remarks : Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber

		("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Skin and body protection	:	Wear clean, body-covering clothing.
Respiratory protection	:	Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	Liquid.
Colour	:	Yellow to purple
Odour	:	Amine.
Odour Threshold	:	No data available
pH	:	7.04 Concentration: 1 % Method: CIPAC MT 75.1 1% aqueous solution.
Melting point/range	:	Not applicable
Freezing point		No data available
Boiling point/boiling range	:	No data available
Flash point	:	> 87 °C Method: Setaflash Closed Cup, closed cup
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable to liquids
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	:	1.15 g/cm3 (20 °C) Method: Pyknometer
Solubility(ies)		
Water solubility	:	Soluble
Auto-ignition temperature	:	> 420 °C Method: EC Method A15
Viscosity		
Viscosity, dynamic	:	19.05 mPa,s (20 °C) Method: OECD 114
Viscosity, kinematic	:	14.47 mm2/s (20 °C) Method: OECD 114
Explosive properties	:	No
Oxidizing properties	:	No

9.2 Other information

Surface tension	:	36.6 mN/m, 40 °C

SECTION 10: Stability and reactivity

10.1 Reactivity

Not classified as a reactivity hazard.

10.2 Chemical stability

No decomposition if stored and applied as directed.
Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	Stable under recommended storage conditions. No hazards to be specially mentioned. Vapours may form explosive mixture with air. May form explosive dust-air mixture.

10.4 Conditions to avoid

Conditions to avoid	:	Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid	:	Strong acids Strong bases

10.6 Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials.
Decomposition products can include and are not limited to:
Carbon oxides
Nitrogen oxides (NOx)

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Components:

Clopyralid Triethylamine Salt:

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg Remarks: For similar active ingredient(s).
Acute inhalation toxicity	:	LC50 (Rat): > 1.3 mg/l Exposure time: 4 h Test atmosphere: dust/mist Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute inhalation toxicity Remarks: For similar active ingredient(s). Maximum attainable concentration.
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg Remarks: For similar active ingredient(s).

Triclopyr Triethylamine Salt:

Acute oral toxicity	:	LD50 (Rat): > 2,000 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 2.6 mg/l Exposure time: 4 h Test atmosphere: dust/mist Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute inhalation toxicity Remarks: Maximum achievable concentration.
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

triethylamine:

Acute oral toxicity	:	LD50 (Rat): 730 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): 14.4 mg/l Exposure time: 1 h

Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rabbit): 580 mg/kg

ethanol:

Acute oral toxicity : LD50 (Rat): > 7,000 mg/kg

LDLo (human): 1,400 mg/kg

Acute inhalation toxicity : LC50 (Rat): 124.7 mg/l
Exposure time: 4 h
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rabbit): > 15,800 mg/kg

Skin corrosion/irritation

Components:

triethylamine:

Species : Rabbit
Result : Causes severe burns.

ethanol:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation

Components:

Clopyralid Triethylamine Salt:

Result : Corrosive

Triclopyr Triethylamine Salt:

Result : Eye irritation

triethylamine:

Species : Rabbit
Result : Corrosive

ethanol:

Species : Rabbit
Result : Eye irritation

Respiratory or skin sensitisation

Product:

Assessment : Does not cause skin sensitisation.

Components:

Clopyralid Triethylamine Salt:

Remarks : For similar active ingredient(s).
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Triclopyr Triethylamine Salt:

Remarks : Did not demonstrate the potential for contact allergy in mice.

Remarks : For respiratory sensitization:
No relevant data found.

triethylamine:

Species : Mouse
Result : Does not cause skin sensitisation.

ethanol:

Species : Guinea pig
Assessment : Does not cause skin sensitisation.

Germ cell mutagenicity

Components:

Clopyralid Triethylamine Salt:

Germ cell mutagenicity- Assessment : For similar active ingredient(s)., Clopyralid., In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

Triclopyr Triethylamine Salt:

Germ cell mutagenicity- Assessment : In vitro genetic toxicity studies were negative.

triethylamine:

Germ cell mutagenicity- Assessment : In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

ethanol:

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

Carcinogenicity

Components:

Clopyralid Triethylamine Salt:

Carcinogenicity - Assessment	:	For similar active ingredient(s)., Clopyralid., Did not cause cancer in laboratory animals.

Triclopyr Triethylamine Salt:

Carcinogenicity - Assessment	:	For similar active ingredient(s)., Triclopyr., Did not cause cancer in laboratory animals.

triethylamine:

Carcinogenicity - Assessment	:	Available data are inadequate to evaluate carcinogenicity.

ethanol:

Carcinogenicity - Assessment	:	Animal testing did not show any carcinogenic effects., Ethanol when not consumed in an alcoholic beverage is not classifiable as a human carcinogen., Epidemiology studies provide evidence that drinking of alcoholic beverages (containing ethanol) is associated with cancer, and IARC has classified alcoholic beverages as carcinogenic to humans.

Reproductive toxicity

Components:

Clopyralid Triethylamine Salt:

Reproductive toxicity - Assessment	:	For similar active ingredient(s)., Clopyralid., In animal studies, did not interfere with reproduction. For similar active ingredient(s)., Clopyralid caused birth defects in test animals, but only at greatly exaggerated doses that were severely toxic to the mothers. No birth defects were observed in animals given clopyralid at doses several times greater than those expected during normal exposure.

Triclopyr Triethylamine Salt:

Reproductive toxicity - Assessment	:	For similar active ingredient(s)., Triclopyr., In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. Has been toxic to the fetus in laboratory animals at doses toxic to the mother., Did not cause birth defects in laboratory animals.

ethanol:

Reproductive toxicity - Assessment	:	Animal testing did not show any effects on fertility. Has caused birth defects in lab animals at high doses.

STOT - single exposure

Product:

Assessment : May cause respiratory irritation.

Components:

Clopyralid Triethylamine Salt:

Assessment : Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Triclopyr Triethylamine Salt:

Assessment : Evaluation of available data suggests that this material is not an STOT-SE toxicant.

triethylamine:

Exposure routes : Inhalation
Target Organs : Respiratory Tract
Assessment : May cause respiratory irritation.

ethanol:

Assessment : Evaluation of available data suggests that this material is not an STOT-SE toxicant.

STOT - repeated exposure

Components:

Triclopyr Triethylamine Salt:

Target Organs : Kidney
Assessment : May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

Clopyralid Triethylamine Salt:

Remarks : For similar active ingredient(s).
Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Triclopyr Triethylamine Salt:

Remarks : In animals, effects have been reported on the following organs:
Kidney.

triethylamine:

Remarks : Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Aspiration toxicity

Product:

Based on physical properties, not likely to be an aspiration hazard.

Components:

Clopyralid Triethylamine Salt:

Based on physical properties, not likely to be an aspiration hazard.

Triclopyr Triethylamine Salt:

Based on available information, aspiration hazard could not be determined.

triethylamine:

Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

ethanol:

Based on physical properties, not likely to be an aspiration hazard.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish	:	Remarks: Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested). LC50 (Oncorhynchus mykiss (rainbow trout)): > 130 mg/l Exposure time: 96 h Test Type: flow-through test Method: OECD Test Guideline 203 or Equivalent
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 130 mg/l Exposure time: 48 h Test Type: flow-through test Method: OECD Test Guideline 202 or Equivalent
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): > 130 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 or Equivalent ErC50 (Lemna minor (duckweed)): > 130 mg/l

Exposure time: 14 d
Method: OECD 221.

ErC50 (Myriophyllum spicatum): 0.582 mg/l
Exposure time: 14 d

NOEC (Myriophyllum spicatum): 0.0916 mg/l
Exposure time: 14 d

Toxicity to soil dwelling organisms : LC50: 650 mg/kg
Exposure time: 14 d
Species: Eisenia fetida (earthworms)

Toxicity to terrestrial organisms : Remarks: Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg).

oral LD50: 1358 mg/kg bodyweight.
Species: Colinus virginianus (Bobwhite quail)

contact LD50: > 100 µg/bee
Species: Apis mellifera (bees)

oral LD50: > 104 µg/bee
Species: Apis mellifera (bees)

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

Components:

Clopyralid Triethylamine Salt:

Toxicity to fish : Remarks: For similar active ingredient(s).
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l
Exposure time: 96 h
Remarks: For similar active ingredient(s).

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Remarks: For similar active ingredient(s).

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 33.1 mg/l
End point: Growth rate inhibition
Exposure time: 96 h
Remarks: For similar material(s):

ErC50 (Myriophyllum spicatum): > 3 mg/l
Exposure time: 14 d
Remarks: For similar material(s):

NOEC (Myriophyllum spicatum): 0.0089 mg/l
Exposure time: 14 d
Remarks: For similar material(s):

M-Factor (Chronic aquatic toxicity) : 10

Toxicity to terrestrial organisms : Remarks: For similar active ingredient(s).
Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

Ecotoxicology Assessment

Acute aquatic toxicity : Harmful to aquatic life.

Toxic to aquatic life.

Chronic aquatic toxicity :

Very toxic to aquatic life with long lasting effects.

Triclopyr Triethylamine Salt:

Toxicity to fish : Remarks: For similar material(s):
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50 (Cyprinus carpio (Carp)): 350 mg/l
Exposure time: 96 h

LC50 (Lepomis macrochirus (Bluegill sunfish)): > 100 mg/l
Exposure time: 96 h
Test Type: semi-static test

Toxicity to daphnia and other aquatic invertebrates : EC50 (eastern oyster (Crassostrea virginica)): 56 - 87 mg/l
Exposure time: 48 h
Test Type: static test

EC50 (Daphnia magna (Water flea)): > 448 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 107 mg/l
End point: Growth rate inhibition
Exposure time: 72 h

ErC50 (blue-green alga Anabaena flos-aquae): > 100 mg/l

Exposure time: 72 h
Test Type: Growth inhibition

EC50 (Lemna gibba): > 1,000 mg/l
Exposure time: 7 d
Test Type: Growth inhibition

ErC50 (Myriophyllum spicatum): 0.241 mg/l
Exposure time: 14 d
Remarks: For similar material(s):

NOEC (Myriophyllum spicatum): 0.0191 mg/l
Exposure time: 14 d
Remarks: For similar material(s):

Toxicity to terrestrial organisms : Remarks: Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
Material is moderately toxic to birds on an acute basis (LD50 between 51 and 500 mg/kg).

oral LD50: 300 mg/kg bodyweight.
Species: Colinus virginianus (Bobwhite quail)

dietary LC50: 11622 mg/kg diet.
Species: Colinus virginianus (Bobwhite quail)

contact LD50: > 100 µg/bee
Exposure time: 48 h
Species: Apis mellifera (bees)

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

triethylamine:

Toxicity to fish : LC50 (Rainbow trout (Oncorhynchus mykiss)): 36 mg/l
Exposure time: 96 h
Test Type: flow-through test
Method: OECD Test Guideline 203 or Equivalent

Toxicity to daphnia and other aquatic invertebrates : LC50 (water flea Ceriodaphnia dubia): 17 mg/l
Exposure time: 48 h
Test Type: semi-static test
Method: OECD Test Guideline 202 or Equivalent

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 8 mg/l
End point: Growth rate
Exposure time: 72 h

NOEC (Pseudokirchneriella subcapitata (green algae)): 1.1 mg/l

End point: Growth rate
Exposure time: 72 h

Toxicity to microorganisms : EC10 (Pseudomonas putida): 71 mg/l
End point: Growth inhibition
Exposure time: 17 h
Test Type: Static

EC50 (Pseudomonas putida): 95 mg/l
End point: Growth inhibition
Exposure time: 17 h
Test Type: Static

Toxicity to fish (Chronic toxicity) : LOEC: > 100 mg/l
End point: mortality
Exposure time: 60 d
Species: Rainbow trout (Oncorhynchus mykiss)
Test Type: semi-static test

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 7.1 mg/l
End point: mortality
Exposure time: 7 d
Species: Ceriodaphnia dubia (water flea)
Test Type: semi-static test

LOEC: 14 mg/l
End point: mortality
Exposure time: 7 d
Species: Ceriodaphnia dubia (water flea)
Test Type: semi-static test

ethanol:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 11,200 - 13,000 mg/l
Exposure time: 96 h
Test Type: flow-through test
Method: Method Not Specified.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 5,414 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202 or Equivalent

Toxicity to algae/aquatic plants : EbC50 (Skeletonema costatum (marine diatom)): 10,943 - 11,619 mg/l
End point: Biomass
Exposure time: 5 d
Method: OECD Test Guideline 201 or Equivalent

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l

12.2 Persistence and degradability

Components:

Clopyralid Triethylamine Salt:

Biodegradability : Remarks: For similar active ingredient(s).
Clopyralid.
Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

Triclopyr Triethylamine Salt:

Biodegradability : Remarks: For similar active ingredient(s).
Triclopyr.
Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

Remarks: For similar active ingredient(s).
Triclopyr.
Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

triethylamine:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 96 %
Exposure time: 21 d
Method: OECD Test Guideline 301A or Equivalent
Remarks: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

ThOD : 3.49 kg/kg

Photodegradation : Test Type: Half-life (indirect photolysis)
Sensitiser: OH radicals
Rate constant: 9.26E-11 cm3/s
Method: Estimated.

ethanol:

Biodegradability : Result: Readily biodegradable.
Biodegradation: > 70 %
Exposure time: 5 d
Method: OECD Test Guideline 301D or Equivalent
Remarks: 10-day Window: Pass

ThOD : 2.08 kg/kg

Photodegradation : Test Type: Half-life (indirect photolysis)

Sensitiser: OH radicals
Rate constant: 3.58E-12 cm3/s
Method: Estimated.

12.3 Bioaccumulative potential

Components:

Clopyralid Triethylamine Salt:

Partition coefficient: n-octanol/water : Remarks: For similar active ingredient(s).
Clopyralid.
Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Triclopyr Triethylamine Salt:

Partition coefficient: n-octanol/water : Remarks: For similar active ingredient(s).
Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

triethylamine:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Exposure time: 42 d
Concentration: 0.05 mg/l
Bioconcentration factor (BCF): < 4.9
Method: Measured

Partition coefficient: n-octanol/water : log Pow: 1.45
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

ethanol:

Partition coefficient: n-octanol/water : log Pow: -0.31
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

12.4 Mobility in soil

Components:

Clopyralid Triethylamine Salt:

Distribution among environmental compartments : Remarks: For similar active ingredient(s).
Clopyralid.
Potential for mobility in soil is very high (Koc between 0 and 50).

Triclopyr Triethylamine Salt:

Distribution among environmental compartments : Remarks: For similar active ingredient(s).
Potential for mobility in soil is very high (Koc between 0 and 50).

triethylamine:

Distribution among environmental compartments : Koc: 11 - 146
Method: Estimated.
Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

ethanol:

Distribution among environmental compartments : Koc: 1.0
Method: Estimated.
Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

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:

Clopyralid Triethylamine Salt:

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).

Triclopyr Triethylamine Salt:

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).

triethylamine:

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).

ethanol:

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

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.

Components:

Clopyralid Triethylamine Salt:

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Triclopyr Triethylamine Salt:

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

triethylamine:

Ozone-Depletion Potential : Regulation: (Update: 27/06/2012 KS)
Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

ethanol:

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.
If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

SECTION 14: Transport information

14.1 UN number

ADR : UN 3082

RID : UN 3082

IMDG : UN 3082

IATA : UN 3082

14.2 UN proper shipping name

ADR : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Triclopyr)

RID : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Triclopyr)

IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Triclopyr)

IATA : Environmentally hazardous substance, liquid, n.o.s.
(Triclopyr)

14.3 Transport hazard class(es)

	Class	Subsidiary risks
ADR	9	
RID	9	
IMDG	9	
IATA	9	

14.4 Packing group

ADR

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9
Tunnel restriction code	:	(-)

RID

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9

IMDG

Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Remarks	:	Stowage category A

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

ADR
Environmentally hazardous : yes

RID
Environmentally hazardous : yes

IMDG
Marine pollutant : yes(Triclopyr)

14.6 Special precautions for user

Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code, IATA Special provision A197, and ADR/RID special provision 375.

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.

SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation	:	Not applicable
The Persistent Organic Pollutants Regulations (retained Regulation (EU) 2019/1021 as amended for Great Britain)	:	Not applicable
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	:	Not applicable
UK REACH List of substances subject to authorisation (Annex XIV)	:	Not applicable
Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	E1	ENVIRONMENTAL HAZARDS

Registration Number : 19958

15.2 Chemical safety assessment

A Chemical Safety Assessment is not required for this substance when it is used in the specified applications.
The mixture is evaluated within the frame of the provisions of Regulation (EC) No. 1107/2009.
Refer to the label for exposure assessment information.

SECTION 16: Other information

Full text of H-Statements

H225	:	Highly flammable liquid and vapour.
H226	:	Flammable liquid and vapour.
H302	:	Harmful if swallowed.
H311	:	Toxic in contact with skin.
H314	:	Causes severe skin burns and eye damage.
H318	:	Causes serious eye damage.
H319	:	Causes serious eye irritation.
H331	:	Toxic if inhaled.
H335	:	May cause respiratory irritation.
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.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Acute	:	Short-term (acute) aquatic hazard
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Eye Dam.	:	Serious eye damage
Eye Irrit.	:	Eye irritation
Flam. Liq.	:	Flammable liquids
Skin Corr.	:	Skin corrosion
STOT RE	:	Specific target organ toxicity - repeated exposure
STOT SE	:	Specific target organ toxicity - single exposure
2000/39/EC	:	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
Dow IHG	:	Dow Industrial Hygiene Guideline
GB EH40	:	UK. EH40 WEL - Workplace Exposure Limits
2000/39/EC / TWA	:	Limit Value - eight hours
2000/39/EC / STEL	:	Short term exposure limit
Dow IHG / TWA	:	Time Weighted Average (TWA):
Dow IHG / STEL	:	Short term exposure limit
Dow IHG / TWA	:	Time weighted average
GB EH40 / TWA	:	Long-term exposure limit (8-hour TWA reference period)
GB EH40 / STEL	:	Short-term exposure limit (15-minute reference period)

ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; ASTM - American Society for the Testing of Materials; ECx - Concentration associated with x% response; EmS - Emergency Schedule; ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; 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; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; LC50 - Lethal Con-

centration 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; NOEC - Non-Observed Effective Concentration; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; (Q)SAR - (Quantitative) Structure Activity Relationship; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SDS - Safety Data Sheet; UN - United Nations.

Further information

Classification of the mixture:		**Classification procedure:**
Skin Irrit. 2	H315	Calculation method
Eye Dam. 1	H318	Calculation method
STOT SE 3	H335	Based on product data or assessment
STOT RE 2	H373	Calculation method
Aquatic Acute 1	H400	Based on product data or assessment
Aquatic Chronic 1	H410	Based on product data or assessment

Product code: GF-210

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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