SAFETY DATA SHEET

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

PRINCIPAL FORTE

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	19.01.2024	800080006238	Date of first issue: 19.01.2024

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 : PRINCIPAL FORTE

Unique Formula Identifier (UFI) : 5KYA-50T9-W00S-6G22

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

Use of the Substance/Mixture : Herbicide

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 1462 457272
E-mail address **:** SDS@corteva.com

1.4 Emergency telephone number

+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)

Acute toxicity, Category 4	H302: Harmful if swallowed.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.

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 :

H302 Harmful if swallowed.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P261 Avoid breathing dust.
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 disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste.

Hazardous components which must be listed on the label:
dicamba (ISO)
Rimsulfuron
ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate

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)
dicamba (ISO)	1918-00-9 217-635-6 607-043-00-X	Acute Tox. 4; H302 Acute Tox. 4; H332 Eye Dam. 1; H318 Aquatic Chronic 3; H412	60.05
sodium 3,6-dichloro-o-anisate	1982-69-0 217-846-3 607-243-00-7	Aquatic Chronic 3; H412	9.91
Nicosulfuron	111991-09-4 601-148-4	Aquatic Acute 1; H400 Aquatic Chronic 1; H410 _____ M-Factor (Acute aquatic toxicity): 100 M-Factor (Chronic aquatic toxicity): 10	6.87
Rimsulfuron	122931-48-0	Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	3.26
ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate	163520-33-0 443-870-0 607-694-00-X	Acute Tox. 4; H302 Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	3.22

		M-Factor (Acute aquatic toxicity): 1	
Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts	68608-89-9 271-808-0	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Irrit. 2; H315 Eye Dam. 1; H318 Aquatic Acute 1; H400 Aquatic Chronic 2; H411 M-Factor (Acute aquatic toxicity): 1	>= 0.25 - < 0.3
Substances with a workplace exposure limit :			
Barden Clay	1332-58-7 310-194-1		>= 1 - < 3

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Never give anything by mouth to an unconscious person.

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 : If inhaled, remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Call a poison control center or doctor for treatment advice.

In case of skin contact : Take off all contaminated clothing immediately.
Rinse skin immediately with plenty of water for 15-20 minutes.
Wash contaminated clothing before re-use.

In case of eye contact : Hold eye 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 eye.
Call a poison control center or doctor for treatment advice.

If swallowed : Have person sip a glass of water if able to swallow.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.

Call a poison control center or doctor for treatment advice.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : No cases of human intoxication are known and the symptoms of experimental intoxication are not known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Water spray
Alcohol-resistant foam

Unsuitable extinguishing media : Dry chemical

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.
Applying foam will release significant amounts of hydrogen gas that can be trapped under the foam blanket.
Do not allow run-off from fire fighting to enter drains or water courses.

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 : Do not allow extinguishing medium to contact container contents. Most fire extinguishing media will cause hydrogen evolution, and once the fire is put out, may accumulate in poorly ventilated or confined areas and result in flash fire or explosion if ignited.
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.

Further information : 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 : Ensure adequate ventilation.
Avoid dust formation.
Avoid breathing dust.
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.
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 : Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in.
Pick up and arrange disposal without creating dust.
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.
Sweep up or vacuum up spillage and collect in suitable container for disposal.
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

Advice on safe handling : 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.
Avoid formation of respirable particles.
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.
Do not get in eyes.
Avoid contact with skin and eyes.
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.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Regular cleaning of equipment, work area and clothing. Keep working clothes separately. Contaminated work clothing should not be allowed out of the workplace. Wash hands and face before breaks and immediately after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in a closed container. 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

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
Barden Clay	1332-58-7	Long-term exposure limit (8-hour TWA reference period) (Respirable dust)	2 mg/m3	GB EH40

		Long term exposure limit (Respirable dust)	0.1 mg/m3	2004/37/EC
	Further information: Carcinogens or mutagens			

Derived No Effect Level (DNEL):

Substance name	End Use	Exposure routes	Potential health effects	Value
Disodium hydrogen phosphate	Workers	Inhalation	Long-term systemic effects	4.07 mg/m3
	Consumers	Inhalation	Long-term systemic effects	3.04 mg/m3

Predicted No Effect Concentration (PNEC):

Substance name	Environmental Compartment	Value
Disodium hydrogen phosphate	Fresh water	0.05 mg/l
	Marine water	0.005 mg/l
	Intermittent use/release	0.5 mg/l
	Sewage treatment plant	50 mg/l

8.2 Exposure controls

Engineering measures

Use only with adequate ventilation.

Personal protective equipment

Eye/face protection : Use chemical goggles.
Wear safety glasses with side shields.
Additionally wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.

Hand protection

Remarks : Use gloves chemically resistant to this material. 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 : Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection : Where there is potential for airborne exposures in excess of applicable limits, wear approved respiratory protection with dust/mist cartridge.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	solid
Colour	:	No color information provided
Odour	:	No odor information provided
Odour Threshold	:	No data available
pH	:	7
Melting point/range	:	No data available
Freezing point		Not applicable
Boiling point/boiling range	:	Not applicable
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	No data available
Upper explosion limit / Upper flammability limit	:	Not applicable
Lower explosion limit / Lower flammability limit	:	Not applicable
Vapour pressure	:	Not applicable
Relative vapour density	:	Not applicable
Relative density	:	No data available
Density	:	No data available
Bulk density	:	0.66 kg/m3 0.6 kg/m3
Solubility(ies)		
Water solubility	:	No data available
Auto-ignition temperature	:	Not applicable
Viscosity		
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.

9.2 Other information

Surface tension	:	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.
None known.

10.4 Conditions to avoid

Conditions to avoid : None known.

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:

dicamba (ISO):

Acute oral toxicity : LD50 (Rat): 1,040 - 1,707 mg/kg

Acute inhalation toxicity : Remarks: Prolonged excessive exposure to dust may cause adverse effects.
Dust may cause irritation of the upper respiratory tract (nose and throat) and lungs.

LC50 (Rat): > 9.6 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

LC50 (Rat): 4.46 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

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

Nicosulfuron:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Method: US EPA Test Guideline OPP 81-1

Acute inhalation toxicity : LC50 (Rat): > 5.9 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: US EPA Test Guideline OPP 81-3
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: US EPA Test Guideline OPP 81-2
Assessment: The substance or mixture has no acute dermal toxicity

Rimsulfuron:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Method: Directive 67/548/EEC, Annex V, B.1.

Acute inhalation toxicity : LC50 (Rat): > 205.4 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Directive 67/548/EEC, Annex V, B.2.
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Method: Directive 67/548/EEC, Annex V, B.3.
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute dermal toxicity

ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate:

Acute oral toxicity : LD50 (Rat, male and female): 1,740 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): 5.04 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Symptoms: No deaths occurred at this concentration.

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Symptoms: No deaths occurred at this concentration.

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:

Acute oral toxicity : LD50 (Rat, male and female): 520 mg/kg

Acute dermal toxicity : LD50 (Rat, male and female): > 1,000 - < 1,600 mg/kg
Method: OECD Test Guideline 402
Remarks: For similar material(s):

Barden Clay:

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

Skin corrosion/irritation

Components:

Nicosulfuron:

Species : Rabbit
Method : US EPA Test Guideline OPP 81-5
Result : No skin irritation

Rimsulfuron:

Species : Rabbit
Method : Directive 67/548/EEC, Annex V, B.4.
Result : No skin irritation

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:

Species : Rabbit
Result : Skin irritation

Barden Clay:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation

Components:

dicamba (ISO):

Result : Corrosive

Nicosulfuron:

Species : Rabbit
Method : US EPA Test Guideline OPP 81-4
Result : No eye irritation

Rimsulfuron:

Species : Rabbit

Method : Directive 67/548/EEC, Annex V, B.5.
Result : No eye irritation

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:

Species : Rabbit
Method : OECD Test Guideline 405
Result : Corrosive

Barden Clay:

Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitisation

Components:

dicamba (ISO):

Remarks : Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Nicosulfuron:

Test Type : Buehler Test
Species : Guinea pig
Method : US EPA Test Guideline OPP 81-6
Result : Did not cause sensitisation on laboratory animals.

Rimsulfuron:

Test Type : Maximisation Test
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Does not cause skin sensitisation.

ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate:

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

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:

Test Type : Maximisation Test
Species : Guinea pig
Assessment : Does not cause skin sensitisation.
Method : OECD Test Guideline 406
Remarks : For skin sensitization:
For similar material(s):
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Germ cell mutagenicity

Components:

dicamba (ISO):

Germ cell mutagenicity- Assessment : In vitro genetic toxicity studies were negative in some cases and positive in other cases., Animal genetic toxicity studies were negative.

Nicosulfuron:

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

Rimsulfuron:

Germ cell mutagenicity- Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects., Animal testing did not show any mutagenic effects.

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:

Germ cell mutagenicity- Assessment : In vitro genetic toxicity studies were negative., In vivo tests showed mutagenic effects

Carcinogenicity

Components:

Nicosulfuron:

Carcinogenicity - Assessment : Did not cause cancer in laboratory animals.

Rimsulfuron:

Carcinogenicity - Assessment : Did not cause cancer in laboratory animals.

ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate:

Carcinogenicity - Assessment : Did not cause cancer in laboratory animals.

Barden Clay:

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

Available data suggest that the material is unlikely to cause cancer.

Reproductive toxicity

Components:

dicamba (ISO):

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

Nicosulfuron:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction., In animal studies, did not interfere with fertility.
Did not show teratogenic effects in animal experiments.

Rimsulfuron:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
Development effects were not observed in laboratory animals.

ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate:

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.

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:

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

STOT - single exposure

Product:

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

Components:

Nicosulfuron:

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

Rimsulfuron:

Assessment : Available data are inadequate to determine single exposure specific target organ toxicity.

ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate:

Assessment : Available data are inadequate to determine single exposure specific target organ toxicity.

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:

Assessment : Available data are inadequate to determine single exposure specific target organ toxicity.

Barden Clay:

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

STOT - repeated exposure

Product:

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

Repeated dose toxicity

Components:

dicamba (ISO):

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

Nicosulfuron:

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

Rimsulfuron:

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

ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate:

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

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:

Remarks : For similar material(s):
In animals, effects have been reported on the following organs:
spleen
Heart
Thymus.
Liver

Barden Clay:

Remarks : Repeated excessive exposure to crystalline silica may cause silicosis, a progressive and disabling disease of the lungs.

Aspiration toxicity

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

Components:

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

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

ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate:
Based on physical properties, not likely to be an aspiration hazard.

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:
Based on physical properties, not likely to be an aspiration hazard.

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

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish	:	LC50 (Rainbow trout (Oncorhynchus mykiss)): 74.9 mg/l Exposure time: 96 h Test Type: Static renewal test Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna): 7.14 mg/l Exposure time: 48 h Test Type: Static renewal test Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): > 11.4 mg/l End point: Growth inhibition Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Information source: Internal study report

NOEC (Lemna gibba (duckweed)): 0.00111 mg/l
End point: Growth inhibition
Exposure time: 7 d
Method: OECD Test Guideline 221
Remarks: Information source: Internal study report

ErC50 (Lemna gibba (duckweed)): > 0.0109 mg/l
End point: Growth inhibition
Exposure time: 7 d
Method: OECD Test Guideline 221
Remarks: Information source: Internal study report

Toxicity to soil dwelling organisms : LC50: > 720 mg/kg
Exposure time: 28 d
End point: growth
Species: Eisenia andrei (red worm)
Method: OECD Test Guideline 222

LC50: 189.9 mg/kg
Exposure time: 28 d
End point: growth
Species: Eisenia andrei (red worm)
Method: OECD Test Guideline 222

Toxicity to terrestrial organisms : LD50: > 100 µg/bee
Exposure time: 48 h
End point: Acute oral toxicity
Species: Apis mellifera (bees)
Method: OECD Test Guideline 213

contact LD50: > 100 µg/bee
Exposure time: 48 h
End point: Acute contact toxicity
Species: Apis mellifera (bees)
Method: OECD Test Guideline 214

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

Components:

dicamba (ISO):

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).

LC50 (Lepomis macrochirus (Bluegill sunfish)): 20 mg/l
Exposure time: 48 h
Method: Method Not Specified.

LC50 (Oncorhynchus mykiss (rainbow trout)): 28 - 153 mg/l
Exposure time: 96 h
Method: Method Not Specified.

LC50 (Lepomis macrochirus (Bluegill sunfish)): 135 - 180 mg/l
Exposure time: 4 d
Test Type: static test
Method: Method Not Specified.

LC50 (Cyprinodon variegatus (sheepshead minnow)): > 180 mg/l
Exposure time: 4 d
Test Type: static test
Method: Method Not Specified.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 110 - 750 mg/l
Exposure time: 48 h
Method: Method Not Specified.

LC50 (scud Gammarus sp.): 3.9 - 4.9 mg/l
Exposure time: 4 d

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).

dietary LC50: > 10000 mg/kg diet.
Exposure time: 8 d
Species: Colinus virginianus (Bobwhite quail)

oral LD50: 216 mg/kg bodyweight.
Exposure time: 14 d
Species: Colinus virginianus (Bobwhite quail)

contact LD50: > 100 micrograms/bee
Exposure time: 2 d
Species: Apis mellifera (bees)

oral LD50: > 100 micrograms/bee
Exposure time: 2 d
Species: Apis mellifera (bees)

sodium 3,6-dichloro-o-anisate:

Ecotoxicology Assessment

Acute aquatic toxicity : Harmful to aquatic life.

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

Nicosulfuron:

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)): > 1,000 mg/l
Exposure time: 96 h
Test Type: static test
Method: US EPA Test Guideline OPP 72-1
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
Exposure time: 48 h
Test Type: static test
Method: US EPA Test Guideline OPP 72-2
GLP: yes

NOEC (Daphnia magna (Water flea)): 43 mg/l

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 71.17 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
GLP: yes

EbC50 (Anabaena flos-aquae (cyanobacteria)): 41.8 mg/l
Exposure time: 96 h
Method: Directive 67/548/EEC, Annex V, C.3.
GLP: yes

ErC50 (Anabaena flos-aquae (cyanobacteria)): 59.8 mg/l
Exposure time: 96 h
Method: Directive 67/548/EEC, Annex V, C.3.
GLP: yes

EC50 (Lemna gibba (duckweed)): 0.0032 mg/l
Exposure time: 7 d
Method: US EPA Test Guideline OPP 122-2 & 123-2
GLP: yes

M-Factor (Acute aquatic toxicity) : 100

Toxicity to fish (Chronic toxicity) : NOEC: 24 mg/l
Exposure time: 90 d
Species: Oncorhynchus mykiss (rainbow trout)
Test Type: Early Life-Stage
Method: OECD Test Guideline 210
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 43 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: Static-Renewal
Method: OECD Test Guideline 202

GLP: yes

M-Factor (Chronic aquatic toxicity) : 10

Toxicity to terrestrial organisms : oral LD50: > 2,250 mg/kg
Species: Colinus virginianus (Bobwhite quail)
Method: US EPA Test Guideline OPP 71-1
GLP:yes

dietary LC50: > 5,620 mg/kg
Exposure time: 5 d
Species: Anas platyrhynchos (Mallard duck)
Method: US EPA Test Guideline OPP 71-2
GLP:yes

oral LD50: 0.050 mg/kg
Exposure time: 48 h
Species: Apis mellifera (bees)
Method: OECD Test Guideline 213
GLP:yes

oral LD50: > 100 mg/kg
Exposure time: 48 h
Species: Apis mellifera (bees)
Method: OECD Test Guideline 214
GLP:yes

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

Rimsulfuron:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 390 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia (water flea)): > 360 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae/aquatic plants : EbC50 (Pseudokirchneriella subcapitata (green algae)): 1.2 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
GLP: yes

ErC50 (Pseudokirchneriella subcapitata (green algae)): 2.8 mg/l

Exposure time: 48 h
Method: OECD Test Guideline 201
GLP: yes

EC50 (Lemna gibba (duckweed)): 0.023 mg/l
End point: Frond
Exposure time: 14 d
Method: US EPA Test Guideline OPP 122-2 & 123-2
GLP: yes

EC50 (Lemna gibba (duckweed)): 0.017 mg/l
End point: Biomass
Exposure time: 14 d
Method: US EPA Test Guideline OPP 122-2 & 123-2
GLP: yes

ErC50 (Anabaena flos-aquae (cyanobacteria)): 5.2 mg/l
Exposure time: 96 h
Method: US EPA Test Guideline OPPTS 850.5400
GLP: yes

Toxicity to fish (Chronic toxicity) : NOEC: 110 mg/l
Exposure time: 90 d
Species: Oncorhynchus mykiss (rainbow trout)
Test Type: Early Life-Stage
Method: OECD Test Guideline 210
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.82 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 202
GLP: yes

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

Toxicity to terrestrial organisms : oral LD50: > 2,250 mg/kg
Species: Colinus virginianus (Bobwhite quail)
Method: US EPA Test Guideline OPP 71-1
GLP:yes

oral LD50: > 2,000 mg/kg
Species: Anas platyrhynchos (Mallard duck)
Method: US EPA Test Guideline OPP 71-1
GLP:yes

dietary LC50: > 5,620 mg/kg
Exposure time: 8 d
Species: Colinus virginianus (Bobwhite quail)
Method: OECD Test Guideline 205

dietary LC50: > 5,620 mg/kg
Exposure time: 8 d
Species: Anas platyrhynchos (Mallard duck)
Method: OECD Test Guideline 205

contact LD50: 1,000 ppm
Species: Apis mellifera (bees)
Method: OEPP/EPPO Test Guideline 170
GLP:yes

oral LD50: 1,000 ppm
Species: Apis mellifera (bees)
Method: OEPP/EPPO Test Guideline 170

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.34 mg/l
End point: mortality
Exposure time: 96 h
Test Type: flow-through

LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.22 mg/l
End point: mortality
Exposure time: 96 h
Test Type: flow-through

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOEC: 0.42 mg/l
Exposure time: 28 d
Species: Oncorhynchus mykiss (rainbow trout)
Test Type: flow-through

0.65 mg/l
End point: Growth rate inhibition
Exposure time: 28 d
Species: Oncorhynchus mykiss (rainbow trout)
Test Type: flow-through

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.38 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test

Ecotoxicology Assessment

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

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:

Toxicity to fish : LC50 (Bluegill sunfish (Lepomis macrochirus)): 1.67 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna): 0.83 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): > 37 mg/l
Exposure time: 72 h

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOEC: 0.23 mg/l
Species: Rainbow trout (Salmo gairdneri)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 1.18 mg/l
Exposure time: 21 d
Species: Daphnia magna

12.2 Persistence and degradability

Components:

Nicosulfuron:

Biodegradability : Remarks: According to the results of tests of biodegradability this product is not readily biodegradable.

Rimsulfuron:

Biodegradability : Result: Not readily biodegradable.

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:

Biodegradability : Result: Not biodegradable

12.3 Bioaccumulative potential

Components:

dicamba (ISO):

Partition coefficient: n-octanol/water : Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).
Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

log Pow: -1.69 - 3.01
Method: Estimated.

sodium 3,6-dichloro-o-anisate:

Partition coefficient: n-octanol/water : Remarks: No relevant data found.

Nicosulfuron:

Bioaccumulation : Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: -1.15
Method: Estimated.
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Rimsulfuron:

Bioaccumulation : Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : Remarks: No relevant data found.

ethyl 5,5-diphenyl-2-isoxazoline-3-carboxylate:

Partition coefficient: n-octanol/water : log Pow: 3.8 (30 °C)

Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., sodium salts:

Bioaccumulation : Bioconcentration factor (BCF): 0.5

Partition coefficient: n-octanol/water : log Pow: 0 (20 °C)
pH: 5.8

Barden Clay:

Partition coefficient: n-octanol/water : Remarks: Partitioning from water to n-octanol is not applicable.

12.4 Mobility in soil

Components:

dicamba (ISO):

Distribution among environmental compartments : Koc: 0 - 470

sodium 3,6-dichloro-o-anisate:

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

Nicosulfuron:

Distribution among environmental compartments : Koc: 33 - 51
Remarks: Under actual use conditions the product has a low potential of mobility in soil.

12.5 Results of PBT and vPvB assessment

Product:

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

Components:

sodium 3,6-dichloro-o-anisate:

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

Nicosulfuron:

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).

Rimsulfuron:

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).

Barden Clay:

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:

sodium 3,6-dichloro-o-anisate:

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

Nicosulfuron:

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

Rimsulfuron:

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

Barden Clay:

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 3077

RID : UN 3077

IMDG : UN 3077

IATA : UN 3077

14.2 UN proper shipping name

ADR : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(Nicosulfuron)

RID : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(Nicosulfuron)

IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(Nicosulfuron)

IATA : Environmentally hazardous substance, solid, n.o.s.
(Nicosulfuron)

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	:	M7
Hazard Identification Number	:	90
Labels	:	9
Tunnel restriction code	:	(-)

RID

Packing group	:	III
Classification Code	:	M7
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)	:	956
Packing instruction (LQ)	:	Y956
Packing group	:	III
Labels	:	Miscellaneous

IATA (Passenger)

Packing instruction (passenger aircraft)	:	956
Packing instruction (LQ)	:	Y956
Packing group	:	III
Labels	:	Miscellaneous

14.5 Environmental hazards

ADR

Environmentally hazardous	:	yes

RID

Environmentally hazardous	:	yes

IMDG

Marine pollutant	:	yes(Nicosulfuron)

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 20797

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

H302	:	Harmful if swallowed.
H312	:	Harmful in contact with skin.
H315	:	Causes skin irritation.

H317	:	May cause an allergic skin reaction.
H318	:	Causes serious eye damage.
H332	:	Harmful if inhaled.
H400	:	Very toxic to aquatic life.
H410	:	Very toxic to aquatic life with long lasting effects.
H411	:	Toxic to aquatic life with long lasting effects.
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
Skin Irrit.	:	Skin irritation
Skin Sens.	:	Skin sensitisation
2004/37/EC	:	Europe. Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work
GB EH40	:	UK. EH40 WEL - Workplace Exposure Limits
2004/37/EC / TWA	:	Long term exposure limit
GB EH40 / TWA	:	Long-term exposure limit (8-hour TWA 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:**
Acute Tox. 4	H302	Calculation method
Eye Dam. 1	H318	Calculation method
Skin Sens. 1	H317	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-3967

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