SAFETY DATA SHEET

Novixid™

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	02/28/2022	800080005537	Date of first issue: 02/28/2022

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 the United States and may not meet the regulatory requirements in other countries.

SECTION 1. IDENTIFICATION

Product name : Novixid™

Manufacturer or supplier's details

COMPANY IDENTIFICATION

Manufacturer/importer : CORTEVA AGRISCIENCE LLC
9330 ZIONSVILLE RD
INDIANAPOLIS, IN, 46268-1053
UNITED STATES

Customer Information Number : 800-992-5994

E-mail address : customerinformation@corteva.com

Emergency telephone : INFOTRAC (CONTRACT 84224).

800-992-5994 or 317-337-6009

Recommended use of the chemical and restrictions on use

Recommended use : End use herbicide product

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Penoxsulam	219714-96-2	2.1

Florpyrauxifen-benzyl	1390661-72-9	1.31
Dipropylene glycol monomethyl ether	34590-94-8	>= 3 - < 10
Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts	90194-26-6	>= 3 - < 10
Ethylhexanol	104-76-7	>= 3 - < 10
methanol	67-56-1	>= 0.3 - < 1
Balance	Not Assigned	> 60

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

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. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Suitable emergency safety shower facility should be available in work area.

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 : No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed : None known.

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.

Notes to physician : 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.
Skin contact may aggravate preexisting dermatitis.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray
Alcohol-resistant foam

Unsuitable extinguishing media : None known.

Specific hazards during fire fighting : Exposure to combustion products may be a hazard to health.

Hazardous combustion prod- : During a fire, smoke may contain the original material in addi-

ucts

tion to combustion products of varying composition which may be toxic and/or irritating.

Hazardous combustion products
Nitrogen oxides (NOx)
Carbon oxides

Specific extinguishing methods : Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.
Use water spray to cool unopened containers.

Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

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

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.

Methods and materials for containment and 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).
See Section 13, Disposal Considerations, for additional information.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not breathe vapors/dust. Handle in accordance with good industrial hygiene and safety practice. Smoking, eating and drinking should be prohibited in the application area. 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.
Conditions for safe storage	:	Store in a closed container. Keep in properly labeled containers. Store in accordance with the particular national regulations.
Materials to avoid	:	Do not store near acids. Strong oxidizing agents
Packaging material	:	Unsuitable material: None known.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Dipropylene glycol monomethyl ether	34590-94-8	TWA	10 ppm	Dow IHG
		STEL	30 ppm	Dow IHG
		TWA	100 ppm	ACGIH
		STEL	150 ppm	ACGIH
		TWA	100 ppm 600 mg/m3	OSHA Z-1
Ethylhexanol	104-76-7	TWA	2 ppm	Corteva OEL
methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m3	OSHA Z-1

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
methanol	67-56-1	Methanol	Urine	End of shift (As soon as possible after exposure ceases)	15 mg/l	ACGIH BEI

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 require-

ments or guidelines, general ventilation should be sufficient for most operations.
Local exhaust ventilation may be necessary for some operations.

Personal protective equipment

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, 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.

Hand protection

Remarks : Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Neoprene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). 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.

Eye protection : Use chemical goggles.

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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid.
Color	:	Tan
Odor	:	Sweet
Odor Threshold	:	No data available
pH	:	4.39 (69.4 °F / 20.8 °C) Method: pH Electrode 1% Aqueous solution
Melting point/range	:	Not applicable
Freezing point		No data available

Boiling point/boiling range	:	No data available
Flash point	:	> 212 °F / > 100 °C Method: Pensky-Martens Closed Cup ASTM D 93, closed cup
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	No data available
Density	:	0.9536 g/cm3 (68 °F / 20 °C) Method: Digital density meter
Solubility(ies)		
Water solubility	:	No data available
Autoignition temperature	:	486 °F / 252 °C
Viscosity		
Viscosity, dynamic	:	
Viscosity, kinematic	:	90 - 1120 mm2/s (68 °F / 20 °C) 60 - 1020 mm2/s (104 °F / 40 °C)
Explosive properties	:	Not explosive
Oxidizing properties	:	No significant increase (>5C) in temperature.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	No decomposition if stored and applied as directed. Stable under normal conditions.
Possibility of hazardous reactions	:	Stable under recommended storage conditions. No hazards to be specially mentioned. None known.
Conditions to avoid	:	None known.
Incompatible materials	:	Strong acids Strong bases
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:
Nitrogen oxides (NOx)
Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity : LD50 (Rat, female): > 5,000 mg/kg
Method: OECD Test Guideline 423

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.96 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 402

Components:

Penoxsulam:

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

LD50 (Mouse, female): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): > 3.50 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Symptoms: No deaths occurred at this concentration.
GLP: yes
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: Maximum attainable concentration.

Acute dermal toxicity : LD50 (Rabbit, male and female): > 5,000 mg/kg
GLP: yes

Florpyrauxifen-benzyl:

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

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.23 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

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

Dipropylene glycol monomethyl ether:

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

Acute inhalation toxicity : LC50 (Rat): 3.35 mg/l
Exposure time: 7 h
Test atmosphere: vapor
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): 9,510 mg/kg

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

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

Ethylhexanol:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Target Organs: Central nervous system

Acute inhalation toxicity : LC50 (Rat): 2.17 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 3,000 mg/kg
Method: OECD Test Guideline 402

methanol:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Assessment: The component/mixture is toxic after single ingestion.
Remarks: Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart.
Effects may be delayed.

Lethal Dose (Humans): 340 mg/kg
Method: Estimated.

Lethal Dose (Humans): Method: Estimated.

Acute inhalation toxicity : LC50 (Rat): 3 mg/l
Exposure time: 4 h
Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rabbit): 15,800 mg/kg
Assessment: The component/mixture is toxic after single contact with skin.
Remarks: Effects of methanol are the same as observed via oral and inhalation exposure and include central nervous system (CNS) depression, visual impairment up to blindness, metabolic acidosis, with effects on organ systems such as liver, kidneys and heart, even death.

Skin corrosion/irritation

Product:

Species : Rabbit
Result : No skin irritation

Components:

Florpyrauxifen-benzyl:

Species : Rabbit
Result : No skin irritation

Dipropylene glycol monomethyl ether:

Species : Rabbit
Result : No skin irritation

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

Result : Skin irritation

Ethylhexanol:

Species : Rabbit
Result : Skin irritation

methanol:

Result : No skin irritation

Serious eye damage/eye irritation

Product:

Species : Rabbit
Result : No eye irritation

Components:

Florpyrauxifen-benzyl:

Species : Rabbit
Result : No eye irritation

Dipropylene glycol monomethyl ether:

Species : Rabbit

Result : No eye irritation

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

Result : Corrosive

Ethylhexanol:

Species : Rabbit
Result : Eye irritation

methanol:

Result : No eye irritation

Respiratory or skin sensitization

Product:

Test Type : Buehler Test
Species : Guinea pig
Assessment : Does not cause skin sensitization.

Components:

Penoxsulam:

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

Florpyrauxifen-benzyl:

Assessment : The product is a skin sensitizer, sub-category 1B.

Dipropylene glycol monomethyl ether:

Species : human
Result : Does not cause skin sensitization.

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

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

Remarks : For respiratory sensitization:
No relevant data found.

Ethylhexanol:

Test Type : HRIPT (human repeat insult patch test)
Species : human
Assessment : Does not cause skin sensitization.

Germ cell mutagenicity

Components:

Penoxsulam:

Germ cell mutagenicity - Assessment : In vitro genetic toxicity studies were negative., The following information is based on limited data and/or screening studies., Animal genetic toxicity studies were negative.

Florpyrauxifen-benzyl:

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

Dipropylene glycol monomethyl ether:

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

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

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

Ethylhexanol:

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

methanol:

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

Carcinogenicity

Components:

Penoxsulam:

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

Florpyrauxifen-benzyl:

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

Dipropylene glycol monomethyl ether:

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

Ethylhexanol:

Carcinogenicity - Assessment : In laboratory animals, evidence of carcinogenic activity was observed., These is no evidence that these findings are relevant to humans.

methanol:

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

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Components:

Penoxsulam:

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.

Florpyrauxifen-benzyl:

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

Dipropylene glycol monomethyl ether:

Reproductive toxicity - Assessment : For similar material(s):, In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.
Did not cause birth defects or any other fetal effects in laboratory animals.

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium 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.

Ethylhexanol:

Reproductive toxicity - Assessment : Has caused birth defects in laboratory animals only at doses toxic to the mother., Has been toxic to the fetus in laboratory animals at doses toxic to the mother., These concentrations exceed relevant human dose levels.

methanol:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
Methanol has caused birth defects in mice at doses nontoxic to the mother as well as slight behavioral effects in offspring of rats.

STOT-single exposure

Product:

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

Components:

Florpyrauxifen-benzyl:

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

Dipropylene glycol monomethyl ether:

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

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

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

Ethylhexanol:

Routes of exposure : Inhalation
Target Organs : Respiratory Tract
Assessment : May cause respiratory irritation.

methanol:

Target Organs : Eyes, Central nervous system
Assessment : Causes damage to organs.

Repeated dose toxicity

Components:

Penoxsulam:

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

Florpyrauxifen-benzyl:

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

Dipropylene glycol monomethyl ether:

Remarks : Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

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

Ethylhexanol:

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

methanol:

Remarks : Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart.

Aspiration toxicity

Product:

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

Components:

Penoxsulam:

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

Florpyrauxifen-benzyl:

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

Dipropylene glycol monomethyl ether:

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

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

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

Ethylhexanol:

May be harmful if swallowed and enters airways.

methanol:

May be harmful if swallowed and enters airways.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): > 100 mg/l Exposure time: 96 h Test Type: semi-static test Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna Straus (Water flea)): 72.3 mg/l Exposure time: 48 h Test Type: semi-static test Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 18.4 mg/l End point: Growth rate inhibition Exposure time: 72 h Method: OECD Test Guideline 201 ErC50 (Myriophyllum spicatum): 0.000154 mg/l Exposure time: 14 d NOEC (Myriophyllum spicatum): 0.0000095 mg/l Exposure time: 14 d
Toxicity to soil dwelling organisms	:	LC50 (Eisenia fetida (earthworms)): > 2,000 mg/kg Exposure time: 14 d
Toxicity to terrestrial organisms	:	oral LD50 (Colinus virginianus (Bobwhite quail)): > 5200 mg/kg bodyweight. oral LD50 (Anas platyrhynchos (Mallard duck)): > 5200 mg/kg bodyweight. oral LD50 (Apis mellifera (bees)): > 1278.99 micrograms/bee Exposure time: 48 h contact LD50 (Apis mellifera (bees)): 752.63 micrograms/bee Exposure time: 48 h

Ecotoxicology Assessment

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

Components:

Penoxsulam:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l Exposure time: 96 h Test Type: static test

Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 0.126 mg/l End point: Growth rate inhibition Exposure time: 72 h Test Type: static test Method: OECD Test Guideline 201 EbC50 (Lemna minor (duckweed)): 0.00329 mg/l End point: Biomass Exposure time: 14 d Method: OECD 221.
M-Factor (Acute aquatic toxicity)	:	100
M-Factor (Chronic aquatic toxicity)	:	100
Toxicity to microorganisms	:	EC50 (activated sludge): > 1,000 mg/l Exposure time: 3 h
Toxicity to soil dwelling organisms	:	LC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg Exposure time: 14 d GLP: yes NOEC (Eisenia fetida (earthworms)): 1,000 mg/kg Exposure time: 56 d
Toxicity to terrestrial organisms	:	oral LD50 (Anas platyrhynchos (Mallard duck)): > 2000 mg/kg bodyweight. End point: mortality dietary LC50 (Colinus virginianus (Bobwhite quail)): > 5063 mg/kg diet. Exposure time: 8 d End point: mortality GLP: yes contact LD50 (Apis mellifera (bees)): > 100 µg/bee Exposure time: 48 h End point: mortality GLP: yes oral LD50 (Apis mellifera (bees)): > 100 µg/bee Exposure time: 48 h End point: mortality GLP: yes

Ecotoxicology Assessment

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

Florpyrauxifen-benzyl:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 1 mg/l Exposure time: 96 h Remarks: The LC50 value is above the water solubility. LC50 (Cyprinodon variegatus (sheepshead minnow)): > 0.0403 mg/l Exposure time: 96 h Remarks: The LC50 value is above the water solubility.
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 0.0623 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): > 1 mg/l End point: Growth rate inhibition Exposure time: 72 h ErC50 (Myriophyllum spicatum): 0.000154 mg/l Exposure time: 14 d NOEC (Myriophyllum spicatum): 0.0000095 mg/l Exposure time: 14 d
M-Factor (Acute aquatic toxicity)	:	1,000
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 0.0370 mg/l Exposure time: 33 d Test Type: static test
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 0.0378 mg/l Exposure time: 21 d
M-Factor (Chronic aquatic toxicity)	:	10,000
Toxicity to microorganisms	:	EC50 (activated sludge): > 1,000 mg/l Exposure time: 3 h Method: OECD Test Guideline 209
Toxicity to soil dwelling organisms	:	LC50 (Eisenia fetida (earthworms)): > 2,000 mg/kg Exposure time: 14 d
Toxicity to terrestrial organisms	:	oral LD50 (Colinus virginianus (Bobwhite quail)): > 2000 mg/kg bodyweight. End point: mortality dietary LC50 (Anas platyrhynchos (Mallard duck)): > 5620 mg/kg diet.

oral LD50 (Apis mellifera (bees)): > 105.4 µg/bee
Exposure time: 48 h
End point: mortality

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

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

Dipropylene glycol monomethyl ether:

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): > 1,000 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203 or Equivalent

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 1,919 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202 or Equivalent

LC50 (Crangon crangon (shrimp)): > 1,000 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 202 or Equivalent

LC50 (copepod Acartia tonsa): 2,070 mg/l
Exposure time: 48 h
Test Type: static test
Method: ISO TC147/SC5/WG2

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 969 mg/l
End point: Biomass
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 201 or Equivalent

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): > 0.5 mg/l
Exposure time: 22 d
Test Type: flow-through test
Method: OECD Test Guideline 211 or Equivalent

LOEC (Daphnia magna (Water flea)): > 0.5 mg/l
Exposure time: 22 d
Test Type: flow-through test
Method: OECD Test Guideline 211 or Equivalent

MATC (Maximum Acceptable Toxicant Level) (Daphnia magna (Water flea)): > 0.5 mg/l
Exposure time: 22 d

Test Type: flow-through test
Method: OECD Test Guideline 211 or Equivalent

Toxicity to microorganisms : EC10 (Pseudomonas putida): 4,168 mg/l
Exposure time: 18 h

Ecotoxicology Assessment

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

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 fish (Chronic toxicity) : (Fish): 0.23 mg/l
Exposure time: 72 d
Test Type: flow-through

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : (Daphnia magna (Water flea)): 1.18 mg/l
Exposure time: 21 d
Test Type: flow-through test

Toxicity to microorganisms : EC50 (Bacteria): 550 mg/l
Exposure time: 3 h

Ecotoxicology Assessment

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

Ethylhexanol:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 32 - 37 mg/l
Exposure time: 96 h

LC50 (Fathead minnow (Pimephales promelas)): 28.2 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 35.2 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 EC50 (Daphnia magna (Water flea)): 39 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 or Equivalent
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 11.5 mg/l End point: Growth rate inhibition Exposure time: 72 h Method: OECD Test Guideline 201 or Equivalent
Toxicity to microorganisms	:	EC50 (Bacteria): 256 - 320 mg/l Exposure time: 16 h

methanol:

Toxicity to fish	:	Remarks: Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). LC50 (Oncorhynchus mykiss (rainbow trout)): 19,000 mg/l Exposure time: 96 h Method: Method Not Specified.
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): > 10,000 mg/l Exposure time: 24 h Method: Method Not Specified.
Toxicity to microorganisms	:	IC50 (activated sludge): > 1,000 mg/l Exposure time: 3 h

Persistence and degradability

Components:

Penoxsulam:

Biodegradability	:	Result: Not biodegradable. Remarks: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability. Biodegradation: 14.7 % Exposure time: 28 d Method: OECD Test Guideline 301B or Equivalent Remarks: 10-day Window: Fail
Photodegradation	:	Sensitizer: OH radicals Rate constant: 6.03E-11 cm3/s Method: Estimated.

Florpyrauxifen-benzyl:

Biodegradability	:	Result: Not readily biodegradable. Biodegradation: 14.6 % Exposure time: 29 d Method: OECD Test Guideline 301B Remarks: 10-day Window: Fail
Stability in water	:	Test Type: Hydrolysis Degradation half life (DT50): 913 d (25 °C) pH: 4 Test Type: Hydrolysis Degradation half life (DT50): 111 d (25 °C) pH: 7 Test Type: Hydrolysis Degradation half life (DT50): 1.3 d (25 °C) pH: 9

Dipropylene glycol monomethyl ether:

Biodegradability	:	Result: Readily biodegradable. Biodegradation: 75 % Exposure time: 28 d Remarks: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability). aerobic Method: OECD Test Guideline 301F or Equivalent Remarks: 10-day Window: Pass
Biochemical Oxygen Demand (BOD)	:	0 % Incubation time: 5 d 0 % Incubation time: 10 d 31.6 % Incubation time: 20 d
Chemical Oxygen Demand (COD)	:	2.02 kg/kg Method: Dichromate
ThOD	:	2.06 kg/kg
Photodegradation	:	Test Type: Half-life (indirect photolysis) Sensitizer: OH radicals Rate constant: 5.00E-05 cm3/s Method: Estimated.

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

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

Ethylhexanol:

Biodegradability : Result: Readily biodegradable.
Biodegradation: > 95 %
Exposure time: 5 d
Method: OECD Test Guideline 302B or Equivalent
Remarks: 10-day Window: Not applicable

Biodegradation: 68 %
Exposure time: 17 d
Method: OECD Test Guideline 301B or Equivalent
Remarks: 10-day Window: Pass

Biochemical Oxygen Demand (BOD) : 26 - 70 %
Incubation time: 5 d

75 - 81 %
Incubation time: 10 d

86 - 87 %
Incubation time: 20 d

Chemical Oxygen Demand (COD) : 2.70 kg/kg

ThOD : 2.95 kg/kg

Photodegradation : Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Rate constant: 1.32E-11 cm3/s
Method: Estimated.

methanol:

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

Result: Readily biodegradable.
Biodegradation: 99 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent
Remarks: 10-day Window: Pass

Biochemical Oxygen Demand (BOD) : 72 %
Incubation time: 5 d

79 %
Incubation time: 20 d

Chemical Oxygen Demand (COD) : 1.49 kg/kg
Method: Dichromate

ThOD : 1.50 kg/kg

Photodegradation : Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Concentration: 1,500,000 1/cm3
Rate constant: 6.16E-13 cm3/s
Method: Estimated.

Bioaccumulative potential

Components:

Penoxsulam:

Partition coefficient: n-octanol/water : log Pow: -0.602
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Florpyrauxifen-benzyl:

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
Bioconcentration factor (BCF): 356
Exposure time: 30 d

Partition coefficient: n-octanol/water : log Pow: 5.5 (68 °F / 20 °C)
pH: 7
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Dipropylene glycol monomethyl ether:

Partition coefficient: n-octanol/water : log Pow: 1.01
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

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).

Ethylhexanol:

Partition coefficient: n-octanol/water : log Pow: 3.1
Method: Measured
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

methanol:

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): < 10
Method: Measured

Partition coefficient: n-octanol/water : log Pow: -0.77
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Balance:

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

Mobility in soil

Components:

Penoxsulam:

Distribution among environmental compartments : Koc: 73
Method: Measured
Remarks: Potential for mobility in soil is high (Koc between 50 and 150).

Florpyrauxifen-benzyl:

Distribution among environmental compartments : Koc: 34200
Remarks: Expected to be relatively immobile in soil (Koc > 5000).

Dipropylene glycol monomethyl ether:

Distribution among environmental compartments : Koc: 0.28
Method: Estimated.
Remarks: Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Potential for mobility in soil is very high (Koc between 0 and 50).

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

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

Ethylhexanol:

Distribution among environmental compartments : Koc: 800
Method: Estimated.
Remarks: Potential for mobility in soil is low (Koc between 500 and 2000).

methanol:

Distribution among environmental compartments : Koc: 0.44
Method: Estimated.
Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

Balance:

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

Other adverse effects

Components:

Penoxsulam:

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

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

Florpyrauxifen-benzyl:

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

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

Dipropylene glycol monomethyl ether:

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

Ozone-Depletion Potential : Regulation: (Update: 11/22/2010 KS 11/25/2010 LMK)
Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts:

Results of PBT and vPvB assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

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

Ethylhexanol:

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

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

methanol:

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

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

Balance:

Results of PBT and vPvB assessment	:	This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).
Ozone-Depletion Potential	:	Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	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

International Regulations

UNRTDG

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Florpyrauxifen-benzyl, Penoxsulam)
Class	:	9
Packing group	:	III
Labels	:	9

IATA-DGR

UN/ID No.	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (Florpyrauxifen-benzyl, Penoxsulam)
Class	:	9
Packing group	:	III
Labels	:	Miscellaneous
Packing instruction (cargo aircraft)	:	964
Packing instruction (passenger aircraft)	:	964

IMDG-Code

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Florpyrauxifen-benzyl, Penoxsulam)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes
Remarks	:	Stowage category A

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

Not applicable for product as supplied.

Domestic regulation

49 CFR

Not regulated as a dangerous good

Further information

Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5L 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.

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

SARA 311/312 Hazards : No SARA Hazards

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

Pennsylvania Right To Know

Dipropylene glycol monomethyl ether	34590-94-8
Ethylhexanol	104-76-7

California Prop. 65

WARNING: This product can expose you to chemicals including methanol, toluene, n-hexane, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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

TSCA : Product contains substance(s) not listed on TSCA inventory.

TSCA list

No substances are subject to a Significant New Use Rule.

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

Federal Insecticide, Fungicide and Rodenticide Act

EPA Registration Number : 62719-701

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

CAUTION

Causes moderate eye irritation

SECTION 16. OTHER INFORMATION

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	:	ACGIH - Biological Exposure Indices (BEI)
Corteva OEL	:	Corteva Occupational Exposure Limit
Dow IHG	:	Dow Industrial Hygiene Guideline
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
Corteva OEL / TWA	:	Time weighted average
Dow IHG / STEL	:	Short term exposure limit
Dow IHG / TWA	:	Time weighted average
OSHA Z-1 / TWA	:	8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Har-

monized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 02/28/2022

Product code: GF-3565

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

US / EN