

SAFETY DATA SHEET



ForeFront® HL

Version 1.0 Revision Date: 05/03/2023 SDS Number: 800080002614 Date of last issue: -
Date of first issue: 05/03/2023

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

SECTION 1. IDENTIFICATION

Product name : ForeFront® HL

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).
+1 800-992-5994 or +1 317-337-6009

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)

Eye irritation : Category 2A

GHS label elements

Hazard pictograms :



Signal Word : Warning

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Hazard Statements : H319 Causes serious eye irritation.

Precautionary Statements : **Prevention:**
P264 Wash skin thoroughly after handling.
P280 Wear eye protection/ face protection.
Response:
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/ attention.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
salts of 2,4-D	2008-39-1	41.26
Aminopyralid Triisopropanolamine Salt	566191-89-7	8.24
Propylene glycol	57-55-6	>= 3 - < 10
Alkylphenol alkoxyate	69029-39-6	>= 3 - < 10
Balance	Not Assigned	> 30

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.

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 : Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center

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or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.
Never give anything by mouth to an unconscious person.

- Most important symptoms and effects, both acute and delayed : None known.
- Protection of first-aiders : 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.
-

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.
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:
Nitrogen oxides (NOx)
Hydrogen chloride gas
Carbon oxides
- Specific extinguishing methods : Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
- 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.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.

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SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
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.
Prevent from entering into soil, ditches, sewers, underwater.
See Section 12, Ecological Information.
- Methods and materials for containment and cleaning up : Clean up remaining materials from spill with suitable absorbent.
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 over-pressurization of the container.
Keep in suitable, closed containers for disposal.
Wipe up with absorbent material (e.g. cloth, fleece).
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
See Section 13, Disposal Considerations, for additional information.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Do not breathe vapors/dust.
Do not smoke.
Handle in accordance with good industrial hygiene and safety practice.
Smoking, eating and drinking should be prohibited in the application area.
Do not get in eyes.
Avoid contact with skin and eyes.
Avoid prolonged or repeated contact with skin.
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.

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- Conditions for safe storage : Store in a closed container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in properly labeled containers.
Store in accordance with the particular national regulations.
- Materials to avoid : 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
salts of 2,4-D	2008-39-1	TWA	10 mg/m ³	Dow IHG
Propylene glycol	57-55-6	TWA	10 mg/m ³	US WEEL
Alkylphenol alkoxylate	69029-39-6	TWA	2 mg/m ³	Dow IHG

- Engineering measures** : Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations.

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: 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.

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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 : Yellow to orange

Odor : Mild

Odor Threshold : No data available

pH : 6.69 (73 °F / 23 °C)
Concentration: 1 %
Method: pH Electrode
(1% aqueous suspension)

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

Evaporation rate : No data available

Flammability (solid, gas) : Not applicable

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

Relative density : No data available

Density : 1.173 g/cm³ (68 °F / 20 °C)
Method: Digital density meter

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Solubility(ies)
Water solubility : No data available

Partition coefficient: n-octanol/water : No data available.

Autoignition temperature : No data available

Viscosity
Viscosity, dynamic : 10.16 mPa.s (104 °F / 40 °C)

Explosive properties : No

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 : None.

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)
Hydrogen chloride gas
Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg
Method: OECD 425 or equivalent
GLP: yes

Acute inhalation toxicity : LC50 (Rat): > 5.26 mg/l
Exposure time: 4 h
Test atmosphere: Liquid aerosol.
GLP: yes

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

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Method: OECD Test Guideline 402
GLP: yes

Components:**salts of 2,4-D:**

Acute oral toxicity : LD50 (Rat): 949 mg/kg
LD50 (Mouse, male and female): 976 mg/kg

Acute dermal toxicity : LD50 (Rabbit): 2,244 mg/kg

Aminopyralid Triisopropanolamine Salt:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Remarks: For similar material(s):

Acute inhalation toxicity : LC50 (Rat): > 5.79 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: For similar material(s):

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg
Remarks: For similar material(s):

Propylene glycol:

Acute oral toxicity : LD50 (Rat): > 20,000 mg/kg

Acute inhalation toxicity : LC50 (Rabbit): 317.042 mg/l
Exposure time: 2 h
Test atmosphere: dust/mist
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: Mist may cause irritation of upper respiratory tract (nose and throat).

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute dermal toxicity

Alkylphenol alkoxyate:

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

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

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Skin corrosion/irritation**Components:****Aminopyralid Triisopropanolamine Salt:**

Result : No skin irritation

Propylene glycol:

Species : Rabbit
Result : No skin irritation

Alkylphenol alkoxyate:

Species : Rabbit
Result : No skin irritation

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

Result : Eye irritation

Components:**salts of 2,4-D:**

Species : Rabbit
Result : Corrosive

Aminopyralid Triisopropanolamine Salt:

Result : No eye irritation

Propylene glycol:

Species : Rabbit
Result : No eye irritation

Alkylphenol alkoxyate:

Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitization**Components:****salts of 2,4-D:**

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

Aminopyralid Triisopropanolamine Salt:

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

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pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Propylene glycol:

Species : human
Assessment : Does not cause skin sensitization.

Alkylphenol alkoxyate:

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

Germ cell mutagenicity**Components:****salts of 2,4-D:**

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

Aminopyralid Triisopropanolamine Salt:

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

Propylene glycol:

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

Alkylphenol alkoxyate:

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

Carcinogenicity**Components:****salts of 2,4-D:**

Carcinogenicity - Assessment : Available data are inadequate to evaluate carcinogenicity., There is no evidence of carcinogenicity in laboratory animal toxicity studies. While some epidemiological studies report a positive association between 2,4-D exposure and cancer, a weight of evidence analysis of the epidemiology data across studies reveals no indication that 2,4-D causes cancer in humans.

Aminopyralid Triisopropanolamine Salt:

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

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Propylene glycol:

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:****salts of 2,4-D:**

Reproductive toxicity - Assessment : For similar active ingredient(s), 2,4-Dichlorophenoxyacetic acid., In laboratory animals, excessive doses toxic to the parent animals caused decreased weight and survival of offspring.
Contains component(s) which did not cause birth defects in animals; other fetal effects occurred only at doses toxic to the mother., The component(s) is/are: , 2,4-Dichlorophenoxyacetic acid.

Aminopyralid Triisopropanolamine Salt:

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

Propylene glycol:

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

Alkylphenol alkoxyate:

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

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STOT-single exposure**Components:****Aminopyralid Triisopropanolamine Salt:**

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

Propylene glycol:

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

Alkylphenol alkoxyate:

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

Repeated dose toxicity**Components:****salts of 2,4-D:**

Remarks : In animals, effects have been reported on the following organs:
Bone marrow.
Adrenal gland.
Eye.
Kidney.
Liver.
Spleen.
Testes.
Thyroid.

Aminopyralid Triisopropanolamine Salt:

Remarks : For similar active ingredient(s).
Aminopyralid.
In animals, effects have been reported on the following organs:
Gastrointestinal tract.

Propylene glycol:

Remarks : In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

Alkylphenol alkoxyate:

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

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Aspiration toxicity**Product:**

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

Components:**salts of 2,4-D:**

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

Aminopyralid Triisopropanolamine Salt:

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

Propylene glycol:

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

Alkylphenol alkoxyate:

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

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

Toxicity to fish : Remarks: Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

LC50 (Lepomis macrochirus (Bluegill sunfish)): 83 mg/l
Exposure time: 96 h
Test Type: semi-static test

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
GLP: yes

EC50 (eastern oyster (Crassostrea virginica)): 96 mg/l
Exposure time: 96 h
Test Type: flow-through test
Method: Other guidelines

Components:**salts of 2,4-D:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 250 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203 or Equivalent

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- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 184 mg/l
Exposure time: 48 h
- Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 66.5 mg/l
End point: Growth rate inhibition
Exposure time: 5 d
- EbC50 (diatom Navicula sp.): 5.28 mg/l
End point: Biomass
Exposure time: 5 d
- EC50 (Lemna gibba (duckweed)): 0.58 mg/l
End point: Biomass
Exposure time: 14 d
- Toxicity to terrestrial organisms : oral LD50 (Colinus virginianus (Bobwhite quail)): 500 mg/kg bodyweight.
Exposure time: 14 d
- dietary LC50 (Colinus virginianus (Bobwhite quail)): 5620 mg/kg diet.
Exposure time: 8 d
- contact LD50 (Apis mellifera (bees)): > 100 micrograms/bee
Exposure time: 48 h
End point: mortality
GLP: yes
- oral LD50 (Apis mellifera (bees)): > 100 micrograms/bee
Exposure time: 48 h
End point: mortality
GLP: yes

Ecotoxicology Assessment

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

Aminopyralid Triisopropanolamine Salt:

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 360 mg/l
Exposure time: 96 h
Remarks: For similar material(s):
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 460 mg/l
Exposure time: 48 h
Remarks: For similar material(s):
- Toxicity to algae/aquatic plants : ErC50 (Myriophyllum spicatum): 0.363 mg/l
Exposure time: 14 d
Remarks: For similar material(s):
- NOEC (Myriophyllum spicatum): 0.0639 mg/l
Exposure time: 14 d
Remarks: For similar material(s):

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ErC50 (Pseudokirchneriella subcapitata (green algae)): > 1,000 mg/l

Exposure time: 72 h

Remarks: For similar material(s):

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

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

Propylene glycol:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 40,613 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : LC50 (Ceriodaphnia dubia (water flea)): 18,340 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)): 19,000 mg/l
End point: Growth rate inhibition
Exposure time: 96 h
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Ceriodaphnia dubia (water flea)): 13,020 mg/l
End point: number of offspring
Exposure time: 7 d
Test Type: semi-static test

Toxicity to microorganisms : NOEC (Pseudomonas putida): > 20,000 mg/l
Exposure time: 18 h

Alkylphenol alkoxyate:

Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 4.8 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203 or Equivalent

LC50 (Oncorhynchus mykiss (rainbow trout)): 3.7 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203 or Equivalent

Toxicity to daphnia and other : LC50 (Daphnia magna (Water flea)): 10.5 mg/l

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aquatic invertebrates	Exposure time: 48 h Method: OECD Test Guideline 202 or Equivalent
Toxicity to terrestrial organisms	: dietary LC50 (<i>Apis mellifera</i> (bees)): > 105 micrograms/bee Exposure time: 2 d contact LD50 (<i>Apis mellifera</i> (bees)): > 100 micrograms/bee Exposure time: 2 d No Observed Effects Level (NOEL) (<i>Colinus virginianus</i> (Bobwhite quail)): 2,250 mg/kg oral LD50 (<i>Colinus virginianus</i> (Bobwhite quail)): > 2,250 mg/kg

Ecotoxicology Assessment

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

Persistence and degradability**Components:****salts of 2,4-D:**

Biodegradability : Result: Readily biodegradable.
Remarks: For similar active ingredient(s).

Aminopyralid Triisopropanolamine Salt:

Biodegradability : Remarks: For similar material(s):
Aminopyralid.
Material is not readily biodegradable according to OECD/EEC guidelines.

Propylene glycol:

Biodegradability : aerobic
Result: Readily biodegradable.
Biodegradation: 81 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent
Remarks: 10-day Window: Pass

Biodegradation: 96 %
Exposure time: 64 d
Method: OECD Test Guideline 306 or Equivalent
Remarks: 10-day Window: Not applicable

Biochemical Oxygen Demand (BOD) : 69.000 %
Incubation time: 5 d

70.000 %
Incubation time: 10 d

86.000 %

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Incubation time: 20 d

Chemical Oxygen Demand (COD) : 1.53 kg/kg

ThOD : 1.68 kg/kg

Photodegradation : Rate constant: 1.28E-11 cm³/s
Method: Estimated.**Alkylphenol alkoxyate:**Biodegradability : Result: Not biodegradable
Remarks: Biodegradation under aerobic laboratory conditions is below detectable limits (BOD₂₀ or BOD₂₈/ThOD < 2.5%). Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Chemical Oxygen Demand (COD) : 1.78 kg/kg

ThOD : 2.35 kg/kg

Bioaccumulative potential**Components:****salts of 2,4-D:**Partition coefficient: n-octanol/water : Remarks: For similar active ingredient(s).
2,4-Dichlorophenoxyacetic acid.
Bioconcentration potential is low (BCF < 100 or Log Pow < 3).**Aminopyralid Triisopropanolamine Salt:**

Partition coefficient: n-octanol/water :

Remarks: For similar active ingredient(s).
Aminopyralid.
Bioconcentration potential is low (BCF < 100 or Log Pow < 3).**Propylene glycol:**Bioaccumulation : Bioconcentration factor (BCF): 0.09
Method: Estimated.Partition coefficient: n-octanol/water : log Pow: -1.07
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).**Alkylphenol alkoxyate:**

Partition coefficient: n- : Remarks: No bioconcentration is expected because of the

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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.

Propylene glycol:

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.

Alkylphenol alkoxyate:

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.

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

SAFETY DATA SHEET



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Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2,4-D Salt)
Class : 9
Packing group : III
Labels : 9

IATA-DGR

UN/ID No. : UN 3082
Proper shipping name : Environmentally hazardous substance, liquid, n.o.s. (2,4-D Salt)
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. (2,4-D Salt)
Class : 9
Packing group : III
Labels : 9
EmS Code : F-A, S-F
Marine pollutant : yes(2,4-D Salt)
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

UN/ID/NA number : UN 3082
Proper shipping name : Environmentally hazardous substance, liquid, n.o.s. (2,4-D Salt)
Class : 9
Packing group : III
Labels : CLASS 9
ERG Code : 171
Marine pollutant : no
Reportable Quantity : 2,4-D Salt only regulated in pack sizes > 110 kg

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.

THE ABOVE INFORMATION ONLY APPLIES TO PACKAGE SIZES WHERE THE HAZARDOUS SUBSTANCE MEETS THE REPORTABLE QUANTITY.

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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 : Serious eye damage or eye irritation

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**

Propylene glycol 57-55-6

California Prop. 65

WARNING: This product can expose you to chemicals including propylene oxide, ethylene oxide, which is/are known to the State of California to cause cancer, and ethylene oxide, 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 : 62719-630

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

Dow IHG	:	Dow Industrial Hygiene Guideline
US WEEL	:	USA. Workplace Environmental Exposure Levels (WEEL)
Dow IHG / TWA	:	Time Weighted Average (TWA):
US WEEL / TWA	:	8-hr TWA

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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 Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International 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; TECl - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 05/03/2023

Product code: GF-2633

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

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