

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



NovaGraz™

Version 1.0 Revision Date: 09/26/2024 SDS Number: 800080102443 Date of last issue: -
Date of first issue: 09/26/2024

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

SECTION 1. IDENTIFICATION

Product name : NovaGraz™

Manufacturer or supplier's details

COMPANY IDENTIFICATION

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

Customer Information Number : 1-800-258-3033

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)

Acute toxicity (Oral) : Category 4

Skin corrosion : Category 1B

Serious eye damage : Category 1

Skin sensitization : Category 1

Specific target organ toxicity : Category 3 (Respiratory system)

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- single exposure

GHS label elements

Hazard pictograms



Signal Word

: Danger

Hazard Statements

: H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.

Precautionary Statements

: **Prevention:**

P261 Avoid breathing mist or vapors.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
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.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal:

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

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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 | 35.11 |
| Florpyrauxifen-benzyl | 1390661-72-9 | 0.49 |
| Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide | Not Assigned | >= 10 - < 20 |
| Alcohols, C11-14-iso-, C13-rich, ethoxylated | 78330-21-9 | >= 3 - < 10 |
| Alkoxyolated phosphate ester | 68130-47-2 | >= 3 - < 10 |
| Propylene glycol | 57-55-6 | >= 3 - < 10 |
| Balance | Not Assigned | > 10 |

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : When symptoms persist or in all cases of doubt seek medical advice.

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 : Immediate continued and thorough washing in flowing water for at least 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential. Wash clothing before reuse. Properly dispose of leather items such as shoes, belts, and watchbands. Suitable emergency safety shower facility should be immediately available.

In case of eye contact : Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.

If swallowed : Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor.

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

Notes to physician : Treat symptomatically.

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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:
Carbon oxides
Hydrogen chloride gas

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

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Ensure adequate ventilation.
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.

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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 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 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

Local/Total ventilation :

- Use with local exhaust ventilation.

Advice on safe handling :

- To avoid spills during handling keep bottle on a metal tray.
- Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Do not breathe vapors/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.
- Do not breathe vapors or spray mist.
- Do not swallow.
- Do not get in eyes.
- Avoid contact with skin and eyes.
- Keep container tightly closed.
- Take care to prevent spills, waste and minimize release to the environment.

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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.
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
Organic peroxides
Explosives

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/m3 | Dow IHG |
| Propylene glycol | 57-55-6 | TWA | 10 mg/m3 | US WEEL |

Engineering measures : Use engineering controls to maintain airborne level below exposure limit requirements or guidelines.

Personal protective equipment

Respiratory protection : Respiratory protection should be worn when there is a potential to inhale dust, vapours, mist or spray
In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

Hand protection

Remarks : Use gloves chemically resistant to this material. When prolonged or frequently repeated contact may occur, protective gloves of class 6 (breakthrough time greater than 480 minutes) are recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes) is recommended. Specific properties of gloves such as length, thickness and material barrier shall be adapted to the specific product nature and task. For manufacturing processes refer to site local occupational health guidance and procedures, for farmer use refer to labels and/or gloves manufacturer's, supplier's recommendations.
Examples of preferred glove barrier materials include: Nitrile/butadiene rubber ("nitrile" or "NBR").

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Eye protection : Safety glasses (with side shields) should be consistent with EN 166 or equivalent.
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

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.
Do not wear rings, watches, or similar apparel because they can entrap material and cause a burn.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : Yellow

Odor : mild

Odor Threshold : No data available

pH : 5.6
Method: CIPAC MT 75.3

Freezing point : No data available

Melting point/ range : Not applicable

Boiling point/boiling range : No data available

Flash point : Method: closed cup
None

Evaporation rate : No data available

Flammability (solid, gas) : Not expected to form explosive dust-air mixtures.

Flammability (liquids) : Not expected to be a static-accumulating flammable liquid.

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapor pressure : No data available

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Relative vapor density : No data available

Relative density : 1.098

Density : No data available

Solubility(ies)
Water solubility : No data available

Autoignition temperature : 662 °F / 350 °C
Method: EC Method A15

Viscosity
Viscosity, dynamic : No data available

Explosive properties : No
Method: EC Method A.14

Oxidizing properties : No
Method: EC Method A.21

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
Strong oxidizing agents

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
Hydrogen chloride gas

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SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

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

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

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 3.551 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity

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

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

Acute oral toxicity : LD50 (Rat): 500 - 2,000 mg/kg

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).

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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

Skin corrosion/irritation

Components:

salts of 2,4-D:

Species : Rabbit
Result : No skin irritation

Florpyrauxifen-benzyl:

Species : Rabbit
Result : No skin irritation

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

Species : Rabbit
Result : Skin irritation

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

Species : Rabbit
Result : No skin irritation

Alkoxylated phosphate ester:

Result : Causes burns.

Propylene glycol:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation

Components:

salts of 2,4-D:

Species : Rabbit
Result : Corrosive

Florpyrauxifen-benzyl:

Species : Rabbit
Result : No eye irritation

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

Species : Rabbit
Result : Corrosive

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Alcohols, C11-14-iso-, C13-rich, ethoxylated:

Species : Rabbit
Result : Corrosive

Alkoxylated phosphate ester:

Result : Corrosive

Propylene glycol:

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.
Remarks : For similar material(s):

Florpyrauxifen-benzyl:

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

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

Species : Guinea pig
Assessment : Does not cause skin sensitization.
Remarks : For similar material(s):

Propylene glycol:

Species : human
Assessment : Does not cause skin sensitization.

Germ cell mutagenicity

Components:

salts of 2,4-D:

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

Florpyrauxifen-benzyl:

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

Animal genetic toxicity studies were negative.

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Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

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

Propylene glycol:

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

Florpyrauxifen-benzyl:

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

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

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mother., The component(s) is/are:, 2,4-Dichlorophenoxyacetic acid.

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.

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

Reproductive toxicity - Assessment : For similar material(s):, Did not cause birth defects or any other fetal effects in laboratory animals.

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.

STOT-single exposure

Components:

Florpyrauxifen-benzyl:

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

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

Routes of exposure : Inhalation
Assessment : May cause respiratory irritation.

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

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

Alkoxylated phosphate ester:

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

Propylene glycol:

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 or-

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gans:
Bone marrow.
Adrenal gland.
Eye.
Kidney.
Liver.
Spleen.
Testes.
Thyroid.

Florpyrauxifen-benzyl:

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

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

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

Alkoxylated phosphate ester:

Remarks : No relevant data found.

Propylene glycol:

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

Aspiration toxicity

Components:

salts of 2,4-D:

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

Florpyrauxifen-benzyl:

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

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

May be harmful if swallowed and enters airways.

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

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

Alkoxylated phosphate ester:

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

Propylene glycol:

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

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

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

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 (Lemma gibba (duckweed)): 0.58 mg/l
End point: Biomass
Exposure time: 14 d

ErC50 (Myriophyllum spicatum): 0.346 mg/l
Exposure time: 14 d
Remarks: For similar material(s):

NOEC (Myriophyllum spicatum): 0.0305 mg/l
Exposure time: 14 d
Remarks: For similar material(s):

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 17.1 mg/l
End point: survival
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 27.5 mg/l
Exposure time: 21 d
Test Type: flow-through test

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

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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

Florpyrauxifen-benzyl:

| | |
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| Toxicity to fish | : LC50 (Oncorhynchus mykiss (rainbow trout)): > 0.0490 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)): > 0.0424 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)): > 2250 mg/kg bodyweight. End point: mortality |

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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.

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 14.8 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 7.7 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 16.06 mg/l
Exposure time: 72 h

Ecotoxicology Assessment

Acute aquatic toxicity : Toxic to aquatic life.

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): > 1 - 10 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia): > 1 - 10 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Algae): > 1 - 10 mg/l
Exposure time: 72 h

Alkoxylated phosphate ester:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 8.8 mg/l
End point: Immobilization
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 8.8 mg/l
Exposure time: 48 h
Test Type: semi-static test

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NOEC (Desmodesmus subspicatus (green algae)): 6.25 mg/l
Exposure time: 72 h
Test Type: semi-static test

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

Persistence and degradability

Components:

salts of 2,4-D:

Biodegradability : Result: Not biodegradable
Remarks: For similar active ingredient(s).

Florpyrauxifen-benzyl:

Biodegradability : Result: Not 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

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Degradation half life (DT50): 1.3 d (25 °C) pH: 9

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

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

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

Chemical Oxygen Demand (COD) : 2.890 mg/g

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

Biodegradability : Result: Readily biodegradable.
Biodegradation: > 90 %
Exposure time: 28 d
Method: OECD Test Guideline 301E or Equivalent
Remarks: 10-day Window: Pass

Result: Readily biodegradable.
Biodegradation: > 60 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent
Remarks: 10-day Window: Pass

Alkoxylated phosphate ester:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 87 %
Exposure time: 28 d

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

Result: Readily biodegradable.
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 %

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Incubation time: 10 d

86.000 %
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.

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).

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).

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

Partition coefficient: n-octanol/water : log Pow: < 3.44 (68 °F / 20 °C)
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

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

Alkoxylated phosphate ester:

Bioaccumulation : Remarks: No data available.

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

Propylene glycol:

Bioaccumulation : Bioconcentration factor (BCF): 0.09
Method: Estimated.

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Partition coefficient: n-octanol/water : log Pow: -1.07
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:

salts of 2,4-D:

Distribution among environmental compartments : Remarks: For similar active ingredient(s).
2,4-Dichlorophenoxyacetic acid.
Potential for mobility in soil is very high (Koc between 0 and 50).

Florpyrauxifen-benzyl:

Distribution among environmental compartments : Koc: 15305 - 33500
Remarks: Expected to be relatively immobile in soil (Koc > 5000).

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

Distribution among environmental compartments : Koc: 527.3
Remarks: Potential for mobility in soil is low (Koc between 500 and 2000).

Alkoxylated phosphate ester:

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

Propylene glycol:

Distribution among environmental compartments : Koc: < 1
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).

Balance:

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

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Other adverse effects

Components:

salts of 2,4-D:

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 : Substance is not persistent, bioaccumulative, and toxic (PBT). Substance is not very persistent and very bioaccumulative (vPvB).

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

Reaction mass of N,N-dimethyldecan-1-amide and N,N-dimethyloctanamide:

Results of PBT and vPvB assessment : Substance is not persistent, bioaccumulative, and toxic (PBT). Substance is not very persistent and very bioaccumulative (vPvB).

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

Alcohols, C11-14-iso-, C13-rich, ethoxylated:

Results of PBT and vPvB assessment : Substance is not persistent, bioaccumulative, and toxic (PBT). Substance is not very persistent and very bioaccumulative (vPvB).

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

Alkoxylated phosphate ester:

Results of PBT and vPvB assessment : This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT). This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

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.

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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 1760

Proper shipping name : CORROSIVE LIQUID, N.O.S.
(Alkoxylated phosphate ester)

Class : 8

Packing group : II

Labels : 8

Environmentally hazardous : yes

IATA-DGR

UN/ID No. : UN 1760

Proper shipping name : Corrosive liquid, n.o.s.
(Alkoxylated phosphate ester)

Class : 8

Packing group : II

Labels : Corrosive

Packing instruction (cargo aircraft) : 855

Packing instruction (passenger aircraft) : 851

IMDG-Code

UN number : UN 1760

Proper shipping name : CORROSIVE LIQUID, N.O.S.

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(Alkoxylated phosphate ester, Florpyrauxifen-benzyl, 2,4-D Salt)

| | | |
|------------------|---|--|
| Class | : | 8 |
| Packing group | : | II |
| Labels | : | 8 |
| EmS Code | : | F-A, S-B |
| Marine pollutant | : | yes(Florpyrauxifen-benzyl, 2,4-D Salt) |
| Remarks | : | Stowage category B |

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 Road

| | | |
|----------------------|---|--|
| UN/ID/NA number | : | UN 1760 |
| Proper shipping name | : | Corrosive liquids, n.o.s. (Alkoxylated phosphate ester) |
| Class | : | 8 |
| Packing group | : | II |
| Labels | : | CORROSIVE |
| ERG Code | : | 154 |
| Marine pollutant | : | no |
| Reportable Quantity | : | 2,4-D Salt only regulated in pack sizes > 128 kg |

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 | : | Acute toxicity (any route of exposure) Respiratory or skin sensitization Skin corrosion or irritation Serious eye damage or eye irritation Specific target organ toxicity (single or repeated exposure) |
| 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 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:

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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.

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 |

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. CFR - Code of Federal Regulations. IARC - International Agency for Research on Cancer. IATA-DGR - International Air Transport Association Dangerous Goods Regulations. OSHA - Occupational Safety and Health Administration. RCRA - Resource Conservation and Recovery Act. RQ - Reportable Quantity. SARA - Superfund Amendments and Reauthorization Act. TSCA - Toxic Substances Control Act.

Revision Date : 09/26/2024

Product code: T6E-6-1

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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