

# SAFETY DATA SHEET



## Rezuvant™

Version 1.0      Revision Date: 04/26/2022      SDS Number: 800080005880      Date of last issue: -  
Date of first issue: 04/26/2022

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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.

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### SECTION 1. IDENTIFICATION

Product name : Rezuvant™

#### 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

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### SECTION 2. HAZARDS IDENTIFICATION

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

Flammable liquids : Category 4

Skin sensitization : Category 1

Carcinogenicity : Category 2

Reproductive toxicity : Category 2

Aspiration hazard : Category 1

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### GHS label elements

Hazard pictograms

:



Signal Word

:

Danger

Hazard Statements

:

H227 Combustible liquid.  
H304 May be fatal if swallowed and enters airways.  
H317 May cause an allergic skin reaction.  
H351 Suspected of causing cancer.  
H361 Suspected of damaging fertility or the unborn child.

Precautionary Statements

:

#### Prevention:

P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.  
P261 Avoid breathing mist or vapors.  
P272 Contaminated work clothing must not be allowed out of the workplace.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

#### Response:

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P331 Do NOT induce vomiting.  
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
P363 Wash contaminated clothing before reuse.  
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

#### Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.  
P405 Store locked up.

#### Disposal:

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

### Other hazards

None known.

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**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS****Components**

Chemical name	CAS-No.	Concentration (% w/w)
fluroxypyr-meptyl (ISO)	81406-37-3	15.32
pinoxaden (ISO)	243973-20-8	5.1
Cloquintocet-mexyl	99607-70-2	1.28
Halauxifen-methyl	943831-98-9	0.44
Tri(2-ethylhexyl) phosphate	78-42-2	>= 30 - < 40
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified	64742-94-5	>= 10 - < 20
2-methylpentane-2,4-diol	107-41-5	>= 10 - < 20
Ethylhexanol	104-76-7	>= 1 - < 3
Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts	90194-26-6	>= 1 - < 3
naphthalene	91-20-3	>= 0.1 - < 0.3

Actual concentration is withheld as a trade secret

**SECTION 4. FIRST AID MEASURES**

- If inhaled : Move person to fresh air; if effects occur, consult a physician.
- In case of skin contact : Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse.  
Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands.
- In case of eye contact : Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.  
Suitable emergency eye wash facility should be immediately available.
- 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.

**SECTION 5. FIRE-FIGHTING MEASURES**

- Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)
- Unsuitable extinguishing media : Do not use direct water stream.  
High volume water jet



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posal 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).

Non-sparking tools should be used.

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

Suppress (knock down) gases/vapors/mists with a water spray jet.

See Section 13, Disposal Considerations, for additional information.

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**SECTION 7. HANDLING AND STORAGE**

Local/Total ventilation	:	Use with local exhaust ventilation.
Advice on safe handling	:	<p>Avoid formation of aerosol.</p> <p>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.</p> <p>Provide sufficient air exchange and/or exhaust in work rooms.</p> <p>Do not breathe vapors/dust.</p> <p>Do not smoke.</p> <p>Handle in accordance with good industrial hygiene and safety practice.</p> <p>Avoid exposure - obtain special instructions before use.</p> <p>Smoking, eating and drinking should be prohibited in the application area.</p> <p>Do not get on skin or clothing.</p> <p>Avoid inhalation of vapor or mist.</p> <p>Do not swallow.</p> <p>Avoid contact with skin and eyes.</p> <p>Avoid contact with eyes.</p> <p>Keep container tightly closed.</p> <p>Keep away from heat and sources of ignition.</p> <p>Take precautionary measures against static discharges.</p> <p>Take care to prevent spills, waste and minimize release to the environment.</p> <p>Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.</p>
Conditions for safe storage	:	<p>Store in a closed container.</p> <p>No smoking.</p> <p>Containers which are opened must be carefully resealed and kept upright to prevent leakage.</p> <p>Keep in properly labeled containers.</p>

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Materials to avoid : Store in accordance with the particular national regulations.  
 : Do not store near acids.  
 Strong oxidizing agents  
 Explosives  
 Gases

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
2-methylpentane-2,4-diol	107-41-5	STEL (Aerosol)	10 mg/m3	Dow IHG
		TLV-C (Vapor)	25 ppm	Dow IHG
		TWA (Vapor)	25 ppm	ACGIH
		STEL (Vapor)	50 ppm	ACGIH
		STEL (Inhalable fraction, Aerosol only)	10 mg/m3	ACGIH
		C	25 ppm 125 mg/m3	OSHA P0
fluroxypyr-meptyl (ISO)	81406-37-3	TWA	10 mg/m3	Dow IHG
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified	64742-94-5	TWA	100 mg/m3	Corteva OEL
		STEL	300 mg/m3	Corteva OEL
		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
Ethylhexanol	104-76-7	TWA	2 ppm	Corteva OEL
naphthalene	91-20-3	TWA	10 ppm	Dow IHG
		STEL	15 ppm	Dow IHG
		TWA	10 ppm	ACGIH
		TWA	10 ppm 50 mg/m3	OSHA Z-1
		TWA	10 ppm 50 mg/m3	OSHA P0
		STEL	15 ppm 75 mg/m3	OSHA P0

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

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

Eye protection : Use safety glasses (with side shields).

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.

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### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid.

Color : yellow

Odor : Solvent

Odor Threshold : No data available

pH : 4.80 (70.0 °F / 21.1 °C)

Melting point/range : Not applicable

Freezing point : No data available

Boiling point/boiling range : No data available

Flash point : 176 °F / 80 °C  
Method: closed cup

Evaporation rate : No data available

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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 : 0.9785 g/cm<sup>3</sup> (68 °F / 20 °C)

Solubility(ies)  
Water solubility : No data available

Autoignition temperature : No data available

Viscosity  
Viscosity, dynamic : 31.7 mPa.s (68 °F / 20 °C)  
14.2 mPa.s (104 °F / 40 °C)

Explosive properties : No

Oxidizing properties : No data available

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### 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.  
Vapors may form explosive mixture with air.  
May form explosive dust-air mixture.

Conditions to avoid : Heat, flames and sparks.

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:  
Carbon oxides

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### SECTION 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

##### Product:

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

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Method: OECD Test Guideline 423  
Symptoms: No deaths occurred at this concentration.

Acute inhalation toxicity : LC50 (Rat, male and female): 8.4 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 : Acute toxicity estimate: > 5,000 mg/kg  
Method: Calculation method

**Components:****fluroxypyr-meptyl (ISO):**

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

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

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

**pinoxaden (ISO):**

Acute oral toxicity : Remarks: Low toxicity if swallowed.  
Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

LD50 (Rat): 500 mg/kg  
Method: Expert judgment

Acute inhalation toxicity : Remarks: Prolonged excessive exposure to dust may cause adverse effects.

LC50 (Rat, male): 4.63 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403

Acute dermal toxicity : Remarks: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

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LD50 (Rat, male and female): > 2,000 mg/kg  
 Method: OECD Test Guideline 402  
 Symptoms: No deaths occurred at this concentration.

**Cloquintocet-mexyl:**

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

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.42 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, male and female): > 5,000 mg/kg

**Halauxifen-methyl:**

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

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

**Tri(2-ethylhexyl) phosphate:**

Acute oral toxicity : LD50 (Rat, male): 9,260 mg/kg

Acute inhalation toxicity : Remarks: Brief exposure (minutes) is not likely to cause adverse effects.

LC50 (Rat, male and female): > 0.447 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

**Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

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

Acute inhalation toxicity : LC50 (Rat): > 4.688 mg/l  
 Exposure time: 4 h  
 Test atmosphere: vapor  
 Assessment: The substance or mixture has no acute inhalation toxicity  
 Remarks: For similar material(s):  
 Maximum attainable concentration.

Acute dermal toxicity : LD50 (Rabbit): > 3,160 mg/kg  
 Assessment: The substance or mixture has no acute dermal toxicity

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Remarks: For similar material(s):

### **2-methylpentane-2,4-diol:**

- Acute oral toxicity : LD50 (Rat): 3,600 - 4,700 mg/kg
- Acute inhalation toxicity : Remarks: Vapor from heated material may cause respiratory irritation.  
No deaths occurred following exposure to a saturated atmosphere.
- Acute dermal toxicity : LD50 (Rabbit): 13,200 mg/kg

### **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

### **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

### **naphthalene:**

- Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
- Lethal Dose (Humans): 5 - 15 grams  
Method: Estimated.  
Remarks: Excessive exposure may cause hemolysis, thereby impairing the blood's ability to transport oxygen.  
Ingestion of naphthalene by humans has caused hemolytic anemia.  
Toxicity from swallowing may be greater in humans than in animals.  
In humans, symptoms may include:  
Confusion.  
Lethargy.  
Muscle spasms or twitches.  
Convulsions.  
Coma.
- Acute inhalation toxicity : Remarks: Excessive exposure may cause irritation to upper respiratory tract (nose and throat).  
Excessive exposure may cause lung injury.  
Signs and symptoms of excessive exposure may include:

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Headache.  
Confusion.  
Sweating.  
Nausea and/or vomiting.

LC50 (Rat): > 0.41 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Symptoms: The LC50 value is greater than the Maximum Attainable Concentration.  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat): > 2,500 mg/kg  
Remarks: Human case reports suggest Naphthalene may be absorbed through the skin in toxic amounts, especially in children.

LD50 (Rabbit): > 2,500 mg/kg

**Skin corrosion/irritation****Product:**

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : No skin irritation

**Components:****fluroxypyr-meptyl (ISO):**

Species : Rabbit  
Result : No skin irritation

**pinoxaden (ISO):**

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : No skin irritation

**Tri(2-ethylhexyl) phosphate:**

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : Skin irritation

**2-methylpentane-2,4-diol:**

Result : Skin irritation

**Ethylhexanol:**

Species : Rabbit  
Result : Skin irritation

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

Result : Skin irritation

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

Species : Rabbit  
 Result : No eye irritation  
 Method : OECD Test Guideline 405

**Components:****pinoxaden (ISO):**

Species : Rabbit  
 Result : Eye irritation  
 Method : OECD Test Guideline 405

**2-methylpentane-2,4-diol:**

Result : Eye irritation

**Ethylhexanol:**

Species : Rabbit  
 Result : Eye irritation

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

Result : Corrosive

**Respiratory or skin sensitization****Product:**

Test Type : Local lymph node assay (LLNA)  
 Species : Mouse  
 Assessment : May cause sensitization by skin contact.  
 Method : OECD Test Guideline 429

**Components:****fluroxypyr-meptyl (ISO):**

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

**pinoxaden (ISO):**

Test Type : Local lymph node assay (LLNA)  
 Species : Mouse  
 Assessment : The product is a skin sensitizer, sub-category 1A.  
 Method : OECD Test Guideline 429  
 Remarks : For skin sensitization:  
 Did not cause allergic skin reactions when tested in guinea pigs.  
 Has demonstrated the potential for contact allergy in mice.

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Remarks : For respiratory sensitization:  
No relevant data found.

**Cloquintocet-mexyl:**

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

**Halauxifen-methyl:**

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

Remarks : For respiratory sensitization:  
No relevant data found.

**Tri(2-ethylhexyl) phosphate:**

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

Remarks : For respiratory sensitization:  
No relevant data found.

**Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

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

Remarks : For respiratory sensitization:  
No relevant data found.

**2-methylpentane-2,4-diol:**

Remarks : Did not cause allergic skin reactions when tested in guinea pigs.  
Skin contact may cause an allergic skin reaction in a small proportion of individuals.

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.

**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.

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**naphthalene:**

Assessment : Does not cause skin sensitization.  
 Remarks : Skin contact may cause an allergic skin reaction in a small proportion of individuals.  
 Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:  
 No relevant data found.

**Germ cell mutagenicity****Components:****fluroxypyr-meptyl (ISO):**

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

**pinoxaden (ISO):**

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

**Cloquintocet-mexyl:**

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

**Halauxifen-methyl:**

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

**Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

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

**2-methylpentane-2,4-diol:**

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

**Ethylhexanol:**

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

**naphthalene:**

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

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**Carcinogenicity****Components:****fluroxypyr-meptyl (ISO):**

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

**pinoxaden (ISO):**

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

**Cloquintocet-mexyl:**

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

**Halauxifen-methyl:**

Carcinogenicity - Assessment : For similar active ingredient(s), Halauxifen., 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.

**naphthalene:**

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies  
  
Has caused cancer in some laboratory animals., In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.

**IARC**      Group 2B: Possibly carcinogenic to humans  
naphthalene      91-20-3

**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**      Reasonably anticipated to be a human carcinogen  
naphthalene      91-20-3

**Reproductive toxicity****Components:****fluroxypyr-meptyl (ISO):**

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



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**pinoxaden (ISO):**

Reproductive toxicity - Assessment : Suspected human reproductive toxicant

In animal studies, has been shown to interfere with reproduction.  
Did not cause birth defects in laboratory animals.

**Cloquintocet-mexyl:**

Reproductive toxicity - Assessment : Did not cause birth defects or any other fetal effects in laboratory animals.

**Halauxifen-methyl:**

Reproductive toxicity - Assessment : For similar active ingredient(s), Halauxifen., In animal studies, did not interfere with reproduction.  
Has been toxic to the fetus in laboratory animals at doses toxic to the mother., Did not cause birth defects in laboratory animals.

**Tri(2-ethylhexyl) phosphate:**

Reproductive toxicity - Assessment : Did not cause birth defects or any other fetal effects in laboratory animals.

**Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.  
For similar material(s);, Did not cause birth defects or any other fetal effects in laboratory animals.

**2-methylpentane-2,4-diol:**

Reproductive toxicity - Assessment : In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals., In animal studies, did not interfere with fertility.  
Did not cause birth defects 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.

**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.

**naphthalene:**

Reproductive toxicity - Assessment : Available data are inadequate to determine effects on reproduction.  
Did not cause birth defects in laboratory animals.

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**STOT-single exposure****Product:**

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

**Components:****pinoxaden (ISO):**

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

**Cloquintocet-mexyl:**

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

**Halauxifen-methyl:**

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

**Tri(2-ethylhexyl) phosphate:**

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

**Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

Routes of exposure : Inhalation  
Assessment : May cause drowsiness or dizziness.

**2-methylpentane-2,4-diol:**

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.

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

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

**naphthalene:**

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

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### STOT-repeated exposure

#### Product:

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

### Repeated dose toxicity

#### Components:

##### **fluroxypyr-meptyl (ISO):**

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

##### **pinoxaden (ISO):**

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

##### **Cloquintocet-mexyl:**

Remarks : In animals, effects have been reported on the following organs:  
Liver.  
Kidney.  
Thymus.  
Thyroid.  
Bladder.  
Bone marrow.

##### **Halauxifen-methyl:**

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

##### **Tri(2-ethylhexyl) phosphate:**

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

##### **Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

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

##### **2-methylpentane-2,4-diol:**

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

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**Ethylhexanol:**

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

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

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

**naphthalene:**

Remarks : Observations in animals include:  
Respiratory effects.  
Excessive exposure may cause hemolysis, thereby impairing the blood's ability to transport oxygen.  
Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust.  
Ingestion of naphthalene by humans has caused hemolytic anemia.

**Aspiration toxicity****Product:**

May be fatal if swallowed and enters airways.

**Components:****fluroxypyr-meptyl (ISO):**

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

**pinoxaden (ISO):**

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

**Cloquintocet-mexyl:**

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

**Halauxifen-methyl:**

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

**Tri(2-ethylhexyl) phosphate:**

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

**Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

May be fatal if swallowed and enters airways.

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### **2-methylpentane-2,4-diol:**

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

### **Ethylhexanol:**

May be harmful if swallowed and enters airways.

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

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

### **naphthalene:**

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

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## SECTION 12. ECOLOGICAL INFORMATION

### **Ecotoxicity**

#### **Components:**

#### **fluroxypyr-meptyl (ISO):**

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

LC50 (Oncorhynchus mykiss (rainbow trout)): > 0.225 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Method: OECD Test Guideline 203 or Equivalent

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

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

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

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

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

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

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M-Factor (Acute aquatic toxicity) : 10  
Toxicity to fish (Chronic toxicity) : NOEC (Rainbow trout (*Oncorhynchus mykiss*)): 0.32 mg/l  
M-Factor (Chronic aquatic toxicity) : 1  
Toxicity to soil dwelling organisms : LC50 (*Eisenia fetida* (earthworms)): > 1,000 mg/kg  
Toxicity to terrestrial organisms : Remarks: Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg)., Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

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

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

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

contact LD50 (*Apis mellifera* (bees)): > 100 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.

### pinoxaden (ISO):

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 (*Oncorhynchus mykiss* (rainbow trout)): 10.3 mg/l  
Exposure time: 96 h  
Test Type: flow-through  
Method: OECD Test Guideline 203

LC50 (*Pimephales promelas* (fathead minnow)): 20 mg/l  
Exposure time: 96 h  
Test Type: flow-through  
Method: OECD Test Guideline 203

LC50 (*Cyprinodon variegatus* (sheepshead minnow)): > 16 mg/l  
Exposure time: 96 h  
Test Type: flow-through  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 52 mg/l  
Exposure time: 48 h  
Test Type: flow-through test

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Method: OECD Test Guideline 202

LC50 (Americamysis bahia (mysid shrimp)): 8.3 mg/l  
 Exposure time: 96 h  
 Test Type: flow-through test  
 Method: US EPA Test Guideline OPPTS 850.1035

EC50 (Oyster, Crassostrea virginica): 0.40 mg/l  
 Exposure time: 96 h  
 Test Type: flow-through test  
 Method: US EPA Test Guideline OPPTS 850.1035

LC50 (Oyster, Crassostrea virginica): > 0.88 mg/l  
 Exposure time: 96 h  
 Test Type: flow-through test  
 Method: US EPA Test Guideline OPPTS 850.1035

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 41 mg/l  
 Exposure time: 48 h  
 Method: OECD Test Guideline 201

ErC50 (Skeletonema costatum (Diatom)): 0.80 mg/l  
 Exposure time: 72 h  
 Test Type: Static  
 Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 1 mg/l  
 Exposure time: 32 d  
 Test Type: flow-through  
 Method: US EPA Test Guideline OPPTS 850.1400

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna): 6.25 mg/l  
 Exposure time: 21 d  
 Test Type: semi-static test  
 Method: OECD Test Guideline 211

**Ecotoxicology Assessment**

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

**Cloquintocet-mexyl:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 0.97 mg/l  
 Exposure time: 96 h  
 Test Type: flow-through test  
 Method: Method Not Specified.  
 Remarks: As the ester active substance.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 0.82 mg/l  
 Exposure time: 48 h  
 Test Type: flow-through test  
 Method: Method Not Specified.

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Toxicity to algae/aquatic plants : EbC50 (alga *Scenedesmus* sp.): 0.63 mg/l  
End point: Biomass  
Exposure time: 96 h  
Method: Method Not Specified.

EbC50 (*Lemna minor* (duckweed)): > 0.42 mg/l  
End point: Biomass  
Exposure time: 14 d  
Method: Method Not Specified.

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

Toxicity to terrestrial organisms : oral LD50 (*Anas platyrhynchos* (Mallard duck)): > 2000 mg/kg bodyweight.

dietary LC50 (*Anas platyrhynchos* (Mallard duck)): > 5200 mg/kg diet.  
Exposure time: 8 d

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

contact LD50 (*Apis mellifera* (bees)): > 100 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.

### Halauxifen-methyl:

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

LC50 (*Rainbow trout* (*Oncorhynchus mykiss*)): 2.01 mg/l  
Exposure time: 96 h  
Test Type: static test

LC50 (*Pimephales promelas* (fathead minnow)): > 3.22 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 2.12 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)): > 3.0 mg/l  
Exposure time: 96 h

ErC50 (*Myriophyllum spicatum*): 0.000393 mg/l  
End point: Growth rate inhibition  
Exposure time: 14 d



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- M-Factor (Acute aquatic toxicity) : 1,000
- Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 0.259 mg/l  
End point: Other  
Test Type: flow-through test
- NOEC (Cyprinodon variegatus (sheepshead minnow)): 0.00272 mg/l  
Exposure time: 36 d  
Test Type: flow-through test
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.484 mg/l  
End point: number of offspring  
Exposure time: 21 d  
Test Type: semi-static test
- M-Factor (Chronic aquatic toxicity) : 1,000
- Toxicity to microorganisms : EC50 (activated sludge): > 981 mg/l  
Exposure time: 1 d
- Toxicity to soil dwelling organisms : LC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg  
Exposure time: 14 d  
End point: mortality
- Toxicity to terrestrial organisms : Remarks: Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg)., Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
- dietary LC50 (Colinus virginianus (Bobwhite quail)): > 5,620 ppm  
Exposure time: 5 d  
Method: Other guidelines
- dietary LC50 (Anas platyrhynchos (Mallard duck)): > 5,620 ppm  
Exposure time: 5 d  
Method: Other guidelines
- oral LD50 (Colinus virginianus (Bobwhite quail)): > 2250 mg/kg bodyweight.  
End point: mortality
- contact LD50 (Apis mellifera (bees)): > 98.1 µg/bee  
Exposure time: 48 h  
End point: mortality
- oral LD50 (Apis mellifera (bees)): > 108 µg/bee  
Exposure time: 48 h  
End point: mortality

### Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

**Tri(2-ethylhexyl) phosphate:**

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).

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna): > 1 mg/l  
Exposure time: 48 h  
Test Type: Static  
Method: Method Not Specified.

**Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

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

LC50 (Oncorhynchus mykiss (rainbow trout)): 2 - 5 mg/l  
Exposure time: 96 h  
Remarks: For similar material(s):

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 3 - 10 mg/l  
Exposure time: 48 h  
Remarks: For similar material(s):

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 11 mg/l  
Exposure time: 72 h  
Remarks: For similar material(s):

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

**Ecotoxicology Assessment**

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

**2-methylpentane-2,4-diol:**

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)): 9,450 mg/l  
Exposure time: 96 h  
Test Type: flow-through test  
Method: OECD Test Guideline 203 or Equivalent

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna): 3,200 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202 or Equivalent

Toxicity to algae/aquatic : ErC50 (Selenastrum capricornutum (green algae)): > 429 mg/l



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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.

#### naphthalene:

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

LC50 (Oncorhynchus mykiss (rainbow trout)): 0.11 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.6 - 24.1 mg/l  
Exposure time: 48 h  
Test Type: static test

Toxicity to algae/aquatic plants : ErC50 (Skeletonema costatum (marine diatom)): 0.4 mg/l  
Exposure time: 72 h  
Test Type: Growth rate inhibition

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOEC (Other): 0.37 mg/l  
End point: mortality  
Exposure time: 40 d  
Test Type: flow-through

M-Factor (Chronic aquatic toxicity) : 1

### Ecotoxicology Assessment

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

### Persistence and degradability

#### Components:

#### fluroxypyr-meptyl (ISO):

Biodegradability : Result: Not biodegradable  
Remarks: Material is not readily biodegradable according to OECD/EEC guidelines.

Biodegradation: 32 %

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

ThOD : 2.2 kg/kg

Stability in water : Test Type: Hydrolysis  
 Degradation half life (half-life): 454 d

**Halauxifen-methyl:**

Biodegradability : Result: Not biodegradable  
 Remarks: For similar active ingredient(s).  
 Halauxifen.  
 Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

Biodegradation: 7.7 %  
 Exposure time: 28 d  
 Method: OECD Test Guideline 310 or Equivalent  
 Remarks: 10-day Window: Not applicable

**Tri(2-ethylhexyl) phosphate:**

Biodegradability : Result: Not biodegradable  
 Remarks: Material is not readily biodegradable according to OECD/EEC guidelines.

aerobic  
 Inoculum: activated sludge, domestic (adaptation not specified)  
 Concentration: 100 mg/l  
 Biodegradation: 0 %  
 Exposure time: 28 d  
 Method: OECD Test Guideline 301C or Equivalent  
 Remarks: 10-day Window: Fail

**Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

Biodegradability : Remarks: Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

**2-methylpentane-2,4-diol:**

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

Biodegradation: 81 %  
 Exposure time: 28 d  
 Method: OECD Test Guideline 301F or Equivalent  
 Remarks: 10-day Window: Pass

Biochemical Oxygen De- : 2 %

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mand (BOD)

Incubation time: 5 d

29 %  
Incubation time: 10 d

48 %  
Incubation time: 20 d

ThOD : 2.30 kg/kg

**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 cm<sup>3</sup>/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

**naphthalene:**

Biodegradability : Remarks: Biodegradation under aerobic static laboratory conditions is high (BOD<sub>20</sub> or BOD<sub>28</sub>/ThOD > 40%).

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Biochemical Oxygen Demand (BOD) : 57.000 %  
Incubation time: 5 d  
  
71.000 %  
Incubation time: 10 d  
  
71.000 %  
Incubation time: 20 d

ThOD : 3.00 kg/kg

Photodegradation : Test Type: Half-life (indirect photolysis)  
Sensitizer: OH radicals  
Concentration: 1,500,000 1/cm<sup>3</sup>  
Rate constant: 2.16E-11 cm<sup>3</sup>/s  
Method: Estimated.

### Bioaccumulative potential

#### Components:

##### **fluroxypyr-meptyl (ISO):**

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

Partition coefficient: n-octanol/water :  
  
log Pow: 5.04  
Method: Measured  
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

##### **pinoxaden (ISO):**

Partition coefficient: n-octanol/water : log Pow: 3.2  
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

##### **Cloquintocet-mexyl:**

Bioaccumulation : Species: Fish  
Bioconcentration factor (BCF): 122 - 621

Partition coefficient: n-octanol/water :  
  
log Pow: 5.3  
Method: Estimated.  
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

##### **Halauxifen-methyl:**

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)

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Bioconcentration factor (BCF): 233  
 Exposure time: 42 d  
 Temperature: 71.2 °F / 21.8 °C  
 Concentration: 0.00194 mg/l

Partition coefficient: n-octanol/water : log Pow: 3.76  
 Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

**Tri(2-ethylhexyl) phosphate:**

Bioaccumulation : Species: Cyprinus carpio (Carp)  
 Bioconcentration factor (BCF): 2.4  
 Exposure time: 42 d  
 Method: OECD Test Guideline 305C

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

**Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

Partition coefficient: n-octanol/water : Remarks: For similar material(s):  
 Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

**2-methylpentane-2,4-diol:**

Bioaccumulation : Bioconcentration factor (BCF): 3  
 Method: Calculated.

Partition coefficient: n-octanol/water : log Pow: 0.58  
 Method: Estimated.  
 Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**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).

**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).

**naphthalene:**

Bioaccumulation : Species: Fish  
 Bioconcentration factor (BCF): 40 - 300  
 Exposure time: 28 d  
 Method: Measured



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Partition coefficient: n-octanol/water : log Pow: 3.3  
Method: Measured  
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

### Mobility in soil

#### Components:

##### **fluroxypyr-meptyl (ISO):**

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

##### **pinoxaden (ISO):**

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

##### **Cloquintocet-mexyl:**

Distribution among environmental compartments : Koc: 38070  
Method: Estimated.  
Remarks: Expected to be relatively immobile in soil (Koc > 5000).

##### **Halauxifen-methyl:**

Distribution among environmental compartments : Koc: 5684  
Remarks: Expected to be relatively immobile in soil (Koc > 5000).

##### **Tri(2-ethylhexyl) phosphate:**

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

##### **Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

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

##### **2-methylpentane-2,4-diol:**

Distribution among environmental compartments : Koc: 1  
Method: Estimated.  
Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

##### **Ethylhexanol:**

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

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

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

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mental compartments

**naphthalene:**

Distribution among environmental compartments : Koc: 240 - 1300  
 Method: Measured  
 Remarks: Potential for mobility in soil is medium (Koc between 150 and 500).

**Other adverse effects****Components:****fluroxypyr-meptyl (ISO):**

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.

**pinoxaden (ISO):**

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.

**Cloquintocet-mexyl:**

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.

**Halauxifen-methyl:**

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.

**Tri(2-ethylhexyl) phosphate:**

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.

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**Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:**

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.

**2-methylpentane-2,4-diol:**

Results of PBT and vPvB assessment : 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.

**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.

**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.

**naphthalene:**

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.

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**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 regu-

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lations.  
If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

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### SECTION 14. TRANSPORT INFORMATION

#### International Regulations

##### UNRTDG

UN number : UN 3082  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
(Fluroxypyr 1-methylheptyl ester, Halauxifen-methyl)  
Class : 9  
Packing group : III  
Labels : 9

##### IATA-DGR

UN/ID No. : UN 3082  
Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.  
(Fluroxypyr 1-methylheptyl ester, Halauxifen-methyl)  
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.  
(Fluroxypyr 1-methylheptyl ester, Halauxifen-methyl)  
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

UN/ID/NA number : NA 1993  
Proper shipping name : Combustible liquid, n.o.s.  
(Heavy aromatic naphtha)  
Class : CBL  
Packing group : III  
Labels : NONE  
ERG Code : 128  
Marine pollutant : No

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Reportable Quantity : Benzenesulfonic Acid, 4-C10-14-Alkyl Derivs., Calcium Salts only regulated in pack sizes > 32,469 kg

### Further information

Above applies only to containers over 119 gallons or 450 liters. Not regulated if shipped in packages less than or equal to 119 gallons (450 liters). If transporting by vessel or aircraft, unless other means of transportation is impracticable, then the product must be shipped as a flammable liquid.

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

### 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.

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## SECTION 15. REGULATORY INFORMATION

**SARA 311/312 Hazards** : Flammable (gases, aerosols, liquids, or solids)  
Respiratory or skin sensitization  
Carcinogenicity  
Reproductive toxicity  
Aspiration hazard

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

naphthalene      91-20-3      >= 0.1 - < 1 %

### US State Regulations

#### Pennsylvania Right To Know

2-methylpentane-2,4-diol	107-41-5
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified	64742-94-5
Ethylhexanol	104-76-7

#### California Prop. 65

WARNING: This product can expose you to chemicals including naphthalene, 4-methylpentan-2-one, which is/are known to the State of California to cause cancer, and N-methyl-2-pyrrolidone, 4-methylpentan-2-one, 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](http://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.

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The following substance(s) is/are subject to TSCA 12(b) export notification requirements:  
Cloquintocet-mexyl 99607-70-2

**Federal Insecticide, Fungicide and Rodenticide Act**

EPA Registration Number : 62719-750

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  
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

**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)
Corteva OEL	: Corteva Occupational Exposure Limit
Dow IHG	: Dow Industrial Hygiene Guideline
OSHA P0	: USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
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 / STEL	: Short term exposure limit
Corteva OEL / TWA	: Time weighted average
Dow IHG / TWA	: Time Weighted Average (TWA):
Dow IHG / STEL	: Short term exposure limit
Dow IHG / TLV-C	: Ceiling Limit Value
Dow IHG / TWA	: Time weighted average
OSHA P0 / TWA	: 8-hour time weighted average
OSHA P0 / STEL	: Short-term exposure limit
OSHA P0 / C	: Ceiling limit
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 asso-

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ciated 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; TECI - 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 : 04/26/2022

Product code: GF-4270

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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