

# SAFETY DATA SHEET



## CIRPREME A

Version 1.0      Revision Date: 10/12/2022      SDS Number: 800080100552      Date of last issue: -  
Date of first issue: 10/12/2022

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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 Canada and may not meet the regulatory requirements in other countries.

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### SECTION 1. IDENTIFICATION

Product name : CIRPREME A  
Other means of identification : No data available

#### Manufacturer or supplier's details

#### COMPANY IDENTIFICATION

Manufacturer/importer : CORTEVA AGRISCIENCE CANADA COMPANY  
#2450, 215 - 2ND STREET S.W.  
CALGARY AB, T2P 1M4  
CANADA

Customer Information Number : 800-667-3852  
E-mail address : solutions@corteva.com

Emergency telephone number : CANUTEC  
1-888-226-8832

#### 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 Hazardous Products Regulations

Skin sensitisation : Sub-category 1B

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### GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : H317 May cause an allergic skin reaction.

Precautionary statements :

#### Prevention:

P261 Avoid breathing dust.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves.

#### Response:

P302 + P352 IF ON SKIN: Wash with plenty of water.

P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

#### Disposal:

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

### Other hazards

None known.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Components

Chemical name	Common Name/Synonym	CAS-No.	Concentration (% w/w)
Halauxifen-methyl	Halauxifen-methyl	943831-98-9	20.85
florasulam (ISO)	florasulam (ISO)	145701-23-1	20
Sodium lignosulfonate	Sodium lignosulfonate	8061-51-6	$\geq 10 - < 20$ *
Kaolin	Kaolin	1332-58-7	$\geq 10 - < 20$ *
citric acid	citric acid	77-92-9	$\geq 3 - < 10$ *
Sodium N-methyl-N-oleoyltaurine	Sodium N-methyl-N-oleoyltaurine	137-20-2	$\geq 1 - < 3$ *
Quartz	Quartz	14808-60-7	$\geq 0.1 - < 0.3$ *
Balance	Balance	Not Assigned	$> 5$

\* Actual concentration or concentration range is withheld as a trade secret

## SECTION 4. FIRST AID MEASURES

If inhaled : Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

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- In case of skin contact : Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.  
Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.
- In case of eye contact : Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.
- If swallowed : No emergency medical treatment necessary.
- Most important symptoms and effects, both acute and delayed : None known.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection).  
If potential for exposure exists refer to Section 8 for specific personal protective equipment.
- Notes to physician : No specific antidote.  
Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.  
Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.
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### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Water spray  
Alcohol-resistant foam
- Unsuitable extinguishing media : None known.
- Specific hazards during fire-fighting : Exposure to combustion products may be a hazard to health.
- Hazardous combustion products : During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating.  
Combustion products may include and are not limited to:  
Carbon oxides  
Nitrogen oxides (NOx)  
Hydrogen chloride gas  
Hydrogen fluoride  
Hydrogen cyanide (hydrocyanic acid)
- Specific extinguishing methods : Remove undamaged containers from fire area if it is safe to do so.  
Evacuate area.  
Use water spray to cool unopened containers.
- Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.  
Use personal protective equipment.

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### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Avoid dust formation.  
Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
- Environmental precautions : Discharge into the environment must be avoided.  
Prevent further leakage or spillage if safe to do so.  
Retain and dispose of contaminated wash water.  
Local authorities should be advised if significant spillages cannot be contained.
- Methods and materials for containment and cleaning up : Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in.  
Pick up and arrange disposal without creating dust.  
Recovered material should be stored in a vented container.  
The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to over-pressurization of the container.  
Sweep up and shovel.  
Keep in suitable, closed containers for disposal.  
Sweep up or vacuum up spillage and collect in suitable container for disposal.  
See Section 13, Disposal Considerations, for additional information.

### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Handle in accordance with good industrial hygiene and safety practice.  
Smoking, eating and drinking should be prohibited in the application area.  
Take care to prevent spills, waste and minimize release to the environment.  
Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
- Conditions for safe storage : Store in a closed container.  
Keep in properly labelled containers.  
Store in accordance with the particular national regulations.
- Materials to avoid : Strong oxidizing agents
- Packaging material : Unsuitable material: None known.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Kaolin	1332-58-7	TWA (Respirable)	2 mg/m <sup>3</sup>	CA AB OEL
		TWA (Respirable)	2 mg/m <sup>3</sup>	CA BC OEL

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		TWAEV (respirable dust)	2 mg/m3	CA QC OEL
		TWA (Respirable particulate matter)	2 mg/m3	ACGIH
Quartz	14808-60-7	TWA (Respirable particulates)	0.025 mg/m3	CA AB OEL
		TWA (Respirable fraction)	0.1 mg/m3	CA ON OEL
		TWAEV (respirable dust)	0.1 mg/m3	CA QC OEL
		TWA (Respirable)	0.025 mg/m3 (Silica)	CA BC OEL
		TWA (Respirable particulate matter)	0.025 mg/m3 (Silica)	ACGIH

**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.

**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, in dusty atmospheres, use an approved particulate respirator.

**Hand protection**

**Remarks** : Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyvinyl chloride ("PVC" or "vinyl"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

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

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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 : Granules.

Colour : Tan

Odour : Mild

Odour Threshold : No data available

pH : 5.62 (24.5 °C)  
Method: pH Electrode  
(1% aqueous suspension)

Melting point/range : Not determined

Freezing point : Not applicable

Boiling point/boiling range : Not applicable

Flash point : Method: closed cup  
Not applicable

Evaporation rate : Not applicable

Flammability (solid, gas) : No data available

Upper explosion limit / Upper flammability limit : Not applicable

Lower explosion limit / Lower flammability limit : Not applicable

Vapour pressure : Not applicable

Relative vapour density : Not applicable

Density : No data available

Bulk density : 0.59 g/m<sup>3</sup> (22.6 °C)  
Method: Loose Volumetric

Solubility(ies)  
Water solubility : Not determined

Auto-ignition temperature : Not applicable

Viscosity  
Viscosity, kinematic : Not applicable

Explosive properties : No

Oxidizing properties : No significant increase (>5C) in temperature.

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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.  
None known.  
Conditions to avoid : None known.  
Incompatible materials : Strong acids  
Strong bases  
Hazardous decomposition products : Decomposition products depend upon temperature, air supply and the presence of other materials.  
Decomposition products can include and are not limited to:  
Carbon oxides  
Nitrogen oxides (NOx)  
Hydrogen chloride gas  
Hydrogen fluoride  
Hydrogen cyanide (hydrocyanic acid)

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### SECTION 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

##### Product:

Acute oral toxicity : LD50 (Rat, female): > 5,000 mg/kg  
Method: OECD Test Guideline 423  
Symptoms: No deaths occurred at this concentration.  
Acute inhalation toxicity : LC50 (Rat, male and female): > 5.71 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 436  
Acute dermal toxicity : LD50 (Rat, male and female): > 5,000 mg/kg  
Method: OECD Test Guideline 402  
Symptoms: No deaths occurred at this concentration.

##### Components:

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

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

##### **florasulam (ISO):**

Acute oral toxicity : LD50 (Rat): > 6,000 mg/kg  
LD50 (Mouse): > 5,000 mg/kg  
Acute inhalation toxicity : LC50 (Rat): > 5.0 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The substance or mixture has no acute inhalation toxicity

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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

### **Sodium lignosulfonate:**

Acute oral toxicity : LD50 (Rat, male and female): > 10,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): 0.48 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The substance or mixture has no acute inhalation toxicity

### **Kaolin:**

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

### **citric acid:**

Acute oral toxicity : LD50 (Mouse): 5,400 mg/kg  
Assessment: The substance or mixture has no acute oral toxicity

LD50 (Rat): 3,000 - 12,000 mg/kg

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

### **Sodium N-methyl-N-oleoyltaurine:**

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

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

### **Skin corrosion/irritation**

#### **Product:**

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

#### **Components:**

##### **Kaolin:**

Species : Rabbit  
Result : No skin irritation

##### **citric acid:**

Result : No skin irritation

##### **Quartz:**

Result : No skin irritation



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### **Serious eye damage/eye irritation**

#### **Product:**

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

#### **Components:**

##### **Sodium lignosulfonate:**

Result : Eye irritation

##### **Kaolin:**

Species : Rabbit  
Result : No eye irritation

##### **citric acid:**

Result : Eye irritation

##### **Sodium N-methyl-N-oleoyltaurine:**

Species : Rabbit  
Result : Eye irritation

##### **Quartz:**

Result : No eye irritation

### **Respiratory or skin sensitisation**

#### **Product:**

Test Type : Local lymph node assay  
Species : Mouse  
Assessment : The product is a skin sensitiser, sub-category 1B.  
Method : OECD Test Guideline 429

#### **Components:**

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

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

Remarks : For respiratory sensitization:  
No relevant data found.

##### **florasulam (ISO):**

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

Remarks : For respiratory sensitization:  
No relevant data found.

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### **Sodium lignosulfonate:**

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

Remarks : For respiratory sensitization:  
No relevant data found.

### **Sodium N-methyl-N-oleoyltaurine:**

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

### **Germ cell mutagenicity**

#### **Components:**

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

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

##### **florasulam (ISO):**

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

##### **Sodium lignosulfonate:**

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

##### **citric acid:**

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

##### **Sodium N-methyl-N-oleoyltaurine:**

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

##### **Quartz:**

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

### **Carcinogenicity**

#### **Product:**

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

#### **Components:**

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

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

##### **florasulam (ISO):**

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

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### **Kaolin:**

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

### **citric acid:**

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

### **Quartz:**

Carcinogenicity - Assessment : Human carcinogen.

Has caused cancer in humans., Has caused cancer in laboratory animals.

### **Reproductive toxicity**

#### **Components:**

#### **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.

#### **florasulam (ISO):**

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

#### **citric acid:**

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

#### **Sodium N-methyl-N-oleoyltaurine:**

Reproductive toxicity - Assessment : Screening studies suggest that this material does not affect reproduction.

#### **Quartz:**

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

### **STOT - single exposure**

#### **Product:**

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

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### Components:

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

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

#### **Kaolin:**

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

#### **citric acid:**

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

#### **Sodium N-methyl-N-oleoyltaurine:**

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

#### **Quartz:**

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

### **STOT - repeated exposure**

#### Components:

#### **Quartz:**

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

### **Repeated dose toxicity**

#### Components:

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

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

#### **florasulam (ISO):**

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

#### **Sodium lignosulfonate:**

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

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### **Kaolin:**

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

### **citric acid:**

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

### **Sodium N-methyl-N-oleoyltaurine:**

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

### **Quartz:**

Remarks : In humans, effects have been reported on the following organs:  
Kidney.  
Repeated excessive exposure to crystalline silica may cause silicosis, a progressive and disabling disease of the lungs.

### **Aspiration toxicity**

#### **Product:**

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

#### **Components:**

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

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

##### **florasulam (ISO):**

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

##### **Sodium lignosulfonate:**

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

##### **Kaolin:**

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

##### **citric acid:**

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

##### **Sodium N-methyl-N-oleoyltaurine:**

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

##### **Quartz:**

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

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## SECTION 12. ECOLOGICAL INFORMATION

## Ecotoxicity

**Product:**

- 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*)): 35 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): > 100 mg/l  
Exposure time: 48 h  
Test Type: semi-static test  
Method: OECD Test Guideline 202
- Toxicity to algae/aquatic plants : ErC50 (*Pseudokirchneriella subcapitata* (green algae)): 0.0478 mg/l  
Exposure time: 72 h  
Test Type: static test  
  
ErC50 (*Myriophyllum spicatum*): 0.00387 mg/l  
Exposure time: 14 d  
Test Type: static test  
  
NOEC (*Myriophyllum spicatum*): 0.000305 mg/l  
Exposure time: 14 d  
Test Type: static test  
  
EC50 (*Lemna gibba* (duckweed)): 0.0017 mg/l  
Exposure time: 7 d  
Test Type: Growth inhibition  
Method: OECD Test Guideline 221
- Toxicity to soil dwelling organisms : LC50 (*Eisenia andrei* (red worm)): > 1,000 mg/kg  
Exposure time: 14 d  
Method: OECD Test Guideline 207
- Toxicity to terrestrial organisms : Remarks: Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).  
  
oral LD50 (*Colinus virginianus* (Bobwhite quail)): > 2000 mg/kg bodyweight.  
  
oral LD50 (*Anas platyrhynchos* (Mallard duck)): > 2000 mg/kg bodyweight.  
  
oral LD50 (*Apis mellifera* (bees)): > 212.6 µg/bee  
Exposure time: 48 h  
  
contact LD50 (*Apis mellifera* (bees)): > 200 µg/bee  
Exposure time: 48 h

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**Components:****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
- 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).

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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.

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

### florasulam (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)): > 100 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)): > 292 mg/l  
Exposure time: 48 h  
Test Type: static test  
Method: OECD Test Guideline 202 or Equivalent

Toxicity to algae/aquatic plants : ErC50 (*Pseudokirchneriella subcapitata* (green algae)): 0.00894 mg/l  
End point: Growth rate inhibition  
Exposure time: 72 h  
Test Type: static test  
Method: OECD Test Guideline 201 or Equivalent

EC50 (*Myriophyllum spicatum*): > 0.305 mg/l  
End point: Growth inhibition  
Exposure time: 14 d

M-Factor (Acute aquatic toxicity) : 100



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Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 119 mg/l  
End point: mortality  
Exposure time: 28 d  
Test Type: flow-through test

NOEC (Pimephales promelas (fathead minnow)): > 2.9 mg/l  
End point: Other  
Exposure time: 33 d  
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 38.90 mg/l  
End point: growth  
Exposure time: 21 d  
Test Type: semi-static test

MATC (Maximum Acceptable Toxicant Level) (Daphnia magna (Water flea)): 50.2 mg/l  
End point: growth  
Exposure time: 21 d  
Test Type: semi-static test

M-Factor (Chronic aquatic toxicity) : 100

Toxicity to soil dwelling organisms : LC50 (Eisenia fetida (earthworms)): > 1,320 mg/kg  
Exposure time: 14 d

Toxicity to terrestrial organisms : Remarks: Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg)., Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

oral LD50 (Coturnix japonica (Japanese quail)): 1047 mg/kg bodyweight.

dietary LC50 (Anas platyrhynchos (Mallard duck)): > 5,000 ppm  
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

### Sodium lignosulfonate:

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 (Pimephales promelas (fathead minnow)): 615 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 100 mg/l  
Exposure time: 48 h  
Test Type: static test  
Method: OECD Test Guideline 202 or Equivalent  
Remarks: For this family of materials:

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### **citric acid:**

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 (*Lepomis macrochirus* (Bluegill sunfish)): 1,516 mg/l  
Exposure time: 96 h  
Test Type: static test  
Method: OECD Test Guideline 203 or Equivalent

LC50 (*Leuciscus idus* (Golden orfe)): 440 - 760 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)): > 1,535 mg/l  
Exposure time: 24 h  
Test Type: Static  
Method: OECD Test Guideline 202 or Equivalent

### **Sodium N-methyl-N-oleoyltaurine:**

Toxicity to fish : LC50 (*Danio rerio* (zebra fish)): 1.32 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 5.76 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (*Desmodesmus subspicatus* (green algae)): 197 mg/l  
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (*Daphnia magna* (Water flea)): 2 mg/l  
Exposure time: 21 d

### **Quartz:**

Toxicity to fish : Remarks: Not expected to be acutely toxic to aquatic organisms.

### **Ecotoxicology Assessment**

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

### **Persistence and degradability**

#### **Components:**

#### **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

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### **florasulam (ISO):**

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

Biodegradation: 2 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B or Equivalent  
Remarks: 10-day Window: Fail

Biochemical Oxygen Demand (BOD) : 0.012 kg/kg  
Incubation time: 5 d

ThOD : 0.85 kg/kg

Stability in water : Degradation half life: > 30 d

Photodegradation : Rate constant: 7.04E-11 cm<sup>3</sup>/s  
Method: Estimated.

### **Sodium lignosulfonate:**

Biodegradability : Remarks: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

Biodegradation: < 5 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301E  
Remarks: 10-day Window: Fail

Photodegradation : Rate constant: 1.089E-10 cm<sup>3</sup>/s  
Method: Estimated.

### **citric acid:**

Biodegradability : Remarks: Material is expected to be readily biodegradable. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).

aerobic  
Result: Readily biodegradable.  
Biodegradation: 97 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B or Equivalent  
Remarks: 10-day Window: Pass

aerobic  
Biodegradation: 98 %  
Exposure time: 7 d  
Method: OECD Test Guideline 302B or Equivalent  
Remarks: 10-day Window: Not applicable

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**Sodium N-methyl-N-oleoyltaurine:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 80 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B or Equivalent  
Remarks: 10-day Window: Pass  
Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

**Quartz:**

Biodegradability : Remarks: Biodegradation is not applicable.

**Bioaccumulative potential****Components:****Halauxifen-methyl:**

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)  
Bioconcentration factor (BCF): 233  
Exposure time: 42 d  
Temperature: 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).

**florasulam (ISO):**

Bioaccumulation : Species: Fish  
Bioconcentration factor (BCF): 0.8  
Exposure time: 28 d  
Temperature: 13 °C  
Method: Measured

Partition coefficient: n-octanol/water :  
log Pow: -1.22  
pH: 7.0  
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Sodium lignosulfonate:**

Bioaccumulation : Species: Fish  
Bioconcentration factor (BCF): 3.2

Partition coefficient: n-octanol/water :  
log Pow: -3.45  
Method: Estimated.  
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

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### **citric acid:**

Bioaccumulation : Species: Fish  
Bioconcentration factor (BCF): 0.01  
Method: Measured

Partition coefficient: n-octanol/water : log Pow: -1.72 (20 °C)  
Method: Measured  
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

### **Sodium N-methyl-N-oleoyltaurine:**

Partition coefficient: n-octanol/water : Pow: 1.36 (20 °C)  
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

### **Quartz:**

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

### **Balance:**

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

### **Mobility in soil**

#### **Components:**

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

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

##### **florasulam (ISO):**

Distribution among environmental compartments : Koc: 4 - 54  
Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

Stability in soil : Dissipation time: 0.7 - 4.5 d

##### **Sodium lignosulfonate:**

Distribution among environmental compartments : Koc: > 99999  
Method: Estimated.  
Remarks: Expected to be relatively immobile in soil (Koc > 5000).

### **citric acid:**

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

### **Quartz:**

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

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### **Balance:**

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

### **Other adverse effects**

### **Components:**

#### **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.

#### **florasulam (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.

#### **Sodium lignosulfonate:**

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.

#### **Kaolin:**

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.

#### **citric acid:**

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.

#### **Sodium N-methyl-N-oleoyltaurine:**

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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### Quartz:

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

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

### Balance:

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

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

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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 regulations.  
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 3077  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(Florasulam, Halauxifen-methyl)  
Class : 9  
Packing group : III  
Labels : 9

#### IATA-DGR

UN/ID No. : UN 3077  
Proper shipping name : Environmentally hazardous substance, solid, n.o.s.  
(Florasulam, Halauxifen-methyl)  
Class : 9  
Packing group : III  
Labels : Miscellaneous  
Packing instruction (cargo aircraft) : 956  
Packing instruction (passenger aircraft) : 956

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### IMDG-Code

UN number : UN 3077  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(Florasulam, 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.

### National Regulations

#### TDG

UN number : UN 3077  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(Florasulam, Halauxifen-methyl)  
Class : 9  
Packing group : III  
Labels : 9  
ERG Code : 171  
Marine pollutant : yes(Florasulam, Halauxifen-methyl)

### Further information

Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code, IATA Special provision A197, and ADR/RID special provision 375.

For Canadian Ground transportation TDG Exemption: 1.45.1 Marine Pollutants (Part 3, Documentation, and Part 4, Dangerous Goods Safety Marks, do not apply if they are in transport solely on land by road vehicle or railway vehicle).

### 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

### The components of this product are reported in the following inventories:

DSL : This product contains components that are not listed on the Canadian DSL nor NDSL.

Pest Control Products Act ( PCPA ) Registration Number : 34180

Read the PCPA label, authorized under the Pest Control Products Act, prior to using or handling this pest control product.



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This chemical is a pest control product registered by Health Canada Pest Management Regulatory Agency and is subject to certain labelling requirements under the Pest Control Products Act (PCPA). There are Canada-specific environmental requirements for handling, use, and disposal of this pest control product that are indicated on the label. These requirements differ from the classification criteria and hazard information required for GHS-consistent safety data sheets. Following is the hazard information required on the pest control products label:

PCPA Label Hazard Communications:

Read the label and booklet before using. Keep out of reach of children.

### POTENTIAL SKIN SENSITIZER

This product is toxic to:

Aquatic organisms

Non-target terrestrial plants

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## 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)
CA AB OEL	:	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
CA BC OEL	:	Canada. British Columbia OEL
CA ON OEL	:	Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act.
CA QC OEL	:	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
ACGIH / TWA	:	8-hour, time-weighted average
CA AB OEL / TWA	:	8-hour Occupational exposure limit
CA BC OEL / TWA	:	8-hour time weighted average
CA ON OEL / TWA	:	Time-Weighted Average Limit (TWA)
CA QC OEL / TWA	:	Time-weighted average exposure value

AIIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; 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; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New

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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; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECl - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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Date format : mm/dd/yyyy

Product code: GF-2687

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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