

CLEFANDIM 360 EC

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1. IDENTIFICATION

- Product identification: CLEFANDIM 360 EC.
- Product main recommended use: Used as an agricultural herbicide.
- Registry holder:
Proregistros Registros de Produtos Ltda.
Santa Catarina Street, 40, room 502, Porto Alegre, RS, Brazil.
Tel.: (51) 3062-2848.
- Emergency medical number: (51) 33420028
- E-mail: rosane@proregistros.com.br

2. HAZARD IDENTIFICATION

- Classification of mixtures:
Hazard classification system under the Global Harmonized System for the Classification and Labelling of Chemicals. Standard ABNT-NBR 14725:2023.

Acute toxicity - Oral: Category 5.
Acute toxicity - Dermal: Category 5.
Aspiration Hazard: Category 1.
Hazard to aquatic environment - acute: Category 3.
Flammable liquids: Category 4.
- GHS label elements, including prevention phrases:

Pictogram	
Signal word	Attention

Hazard statements:

H227 - Combustible liquid.

H303 + H313 - May be harmful if swallowed or in contact with skin.

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H304 - May be fatal if swallowed and enters airways.

H 402 - Harmful to aquatic life

Precautionary Statements:

Prevention:

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P273 - Avoid release to the environment.

P280 - Wear protective gloves / protective clothing / eye protection /face protection / hearing protection.

Response

P301+ P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.

P302 + P312 - IN CASE OF SKIN CONTACT: Call a POISON CENTER or doctor/physician if you feel unwell.

P370 + P378 - In case of fire: Use water mist, dirt, sand, dry powder or foam.

Storage:

P403 - Store in a well-ventilated place.

P405 - Store locked up.

Disposal:

P501 - Handle contents and containers in accordance with city, state, and federal laws.

3. COMPOSITION/INFORMATION ON INGREDIENTS

● Chemical properties: This product is a mixture.

Hazardous ingredients or impurities:

Components	CAS Number	Proportion (%)
Clethodim	99129-21-2	34.0-38.0%

4. FIRST AID MEASURES

● Description of necessary first aid measures: Take the injured person to a ventilated place. Remove contaminated clothing. Wash the affected body part with plenty of water and soap. If the injured person is unconscious and no longer breathing,

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practice oxygenation or rescue breathing. Take this form to the nearest medical center.

- Inhalation: Move people to a ventilated area. If you have difficulty breathing, seek medical attention immediately. If you're not breathing, give artificial respiration. Use an intermediate medium to execute the program.
- Skin contact: Skin contact: In case of contact, please remove clothing and accessories (belts, bracelets, glasses, watches, rings, etc.) contaminated, wash skin with plenty of running water and mild soap for at least 15 minutes. If you experience effects / symptoms, consult your doctor. The contaminated clothes should be cleaned before reuse.
- Eye contact: Immediately rinse with plenty of water for at least 15 minutes. Keep your eyelids open and ensure that you rinse your eye properly to prevent flushing water from getting into the other eye. If irritation occurs, consult your doctor.
- Ingestion: Do not cause vomiting, it may occur spontaneously and should not be avoided. Rinse your mouth with plenty of water. If spontaneous vomiting occurs, the head should be kept below the hips or on the side to avoid stomach contents being inhaled. See a doctor immediately. NOTE: Do not give anything orally to an unconscious person.
- Protection for first responders: Avoid mouth, skin, eyes and inhaled products during first aid.
- Notes for doctors: Avoid touching materials during disaster relief. If necessary, symptomatic treatment should include supportive measures such as correcting electrolyte disturbances, metabolic disturbances, and respiratory assistance. If in contact with skin, do not rub the affected area.

5. FIRE FIGHTING MEASURES

- Appropriate fire extinguishing methods: Use water, carbon dioxide or chemical powder fire extinguishers.
- Not recommended extinguishing method: Water is sprayed directly onto the burning material.
- Special hazards and special fire methods: Evacuate the area and extinguish the fire from a safe distance. Dikes were used to hold water used in combat. A position facing away from the wind. Use mist water to cool equipment that is exposed near a fire.
- Protection of firefighters: self-breathing equipment and appropriate firefighting clothing.

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- Special hazards of chemical combustion: combustion can produce toxic and irritating gases.

6. ACCIDENTAL RELEASE MEASURES

- Personal note: Wear waterproof overalls (PVC), goggles, rubber boots, nitrile gloves. Respiratory protection should be based on the concentration in the environment or the extent of leakage/leakage. In this case, you should select the mask associated with the filter.

Eliminate fire source: Turn off power and spark source. Remove any materials that may cause a fire (such as diesel).

Dust control: Not applicable because it is liquid.

Prevent inhalation and contact with skin, mucous membranes and eyes: Use clothing and accessories described under Personal Precautions above.

- Environmental considerations: Close the stormwater inlet to prevent pollution of the waterway. Prevent spilled product residue from reaching the water collection.
- Cleaning method: Eliminate all fire or heat sources. Avoid curious people and signal danger to traffic. Avoid contact with skin and clothing. The spilled product cannot be used again. Please call the registrant for your return and final destination. **Laid floor**: Absorb the product with wood chips or sand, collect the material with a shovel, put it in an airtight container, and correctly identify. **Soil**: Remove contaminated soil layers until uncontaminated soil is reached, collect this material, and place it in an airtight container, appropriately labeled. Contact a registered company. **Water body**: Immediately stop human or animal consumption, contact the nearest environmental agency and company emergency center, the measures taken depend on the proportion of accidents, the characteristics of the water bodies involved and the quantity of products involved.
- Prevent secondary hazards: prevent products from polluting rivers, lakes, water sources, wells, rainwater and sewage.

7. HANDLING AND STORAGE

- Appropriate technical measures:

Safety handling precautions: Dispose in a ventilated area or where there is a general local ventilation/exhaust system. Prevents steam from forming. Do not handle the product without the recommended PPE. Avoid contact with skin, eyes and mucous membranes. Avoid splashing when opening the package. Handle products in a well-ventilated area, away from fire or heat sources. Do not use the unclog nozzles, holes,

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and valves. Do not use this product when it is windy or during the hottest part of the day. Read and follow the recommended instructions on package flyers and labels. Use only the recommended dose. Pay attention to the expiration date. Do not reuse empty packaging. Do not wash packaging in lakes, fountains, rivers and other bodies of water. Use the personal protective equipment described in Section 8. Avoid contact with incompatible materials.

Sanitary measure: Wash your hands and face thoroughly after handling and before eating, drinking, smoking or going to the toilet. Do not eat, drink or smoke while handling this product. Remove contaminated protective clothing and equipment before entering the feeding area. When you're done, take off your protective clothing and take a shower. Wash protective clothing separately from household clothing with gloves and a waterproof apron. After each use of this product, keep away from drinking water sources, maintain and clean the protective equipment. Contaminated clothing should be changed and washed before reuse.

● Secure storage conditions, including any incompatibilities:

Fire and explosion prevention: Keep away from heat sources, sparks, open flames, and hot surfaces. No smoking. Keep the container sealed. Use only anti-glare tools. Prevent static electricity buildup. Use explosion-proof electrical, ventilation and lighting equipment.

Applicable conditions: Store in a dry, well-ventilated place away from sunlight. Store the product in its original packaging, always unopened. Avoid storage near fire and heat sources. The site should be dedicated to toxic/chemical products and isolated from food, beverages, feed or other materials. The building must be of masonry or non-oxidized material. The site shall be covered and have a waterproof floor. Place warning signs that say: Beware of poison. Prevent unauthorized persons from entering the site. Appropriate packaging should always be provided to pack broken packaging or to collect leaking products.

Suitable materials for packaging: Similar to the original packaging.

Materials not suitable for packaging: There are no known unsuitable materials.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

- Engineering controls: Adequate ventilation and/or exhaust systems are provided. Even if good ventilation is provided, the operator should always wear respiratory protection. Keep the package tightly closed.

- Secure Specific control parameter:

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Occupational exposure limits: It's not established.

Biological indicators: It's not established.

● Personal Protective Equipment:

Respiratory protection: Mask with combined filter (chemical filter for organic vapors and mechanical filter for level P2), covering nose and mouth.

Hand protection: Wear nitrile or neoprene gloves.

Eye protection: Safety glasses or face shield with side protection.

Skin and body protection: waterproof cotton overalls with long sleeves pressed, usually above the cuff of gloves, and pant legs above boots, rubber boots, and arab caps.

Special note: The recommended Personal Protective equipment (ppe) should be removed in the following order: Arab hat, glasses, apron, boots, overalls, gloves and face mask. Keep personal protective equipment clean and in proper condition, regular inspection and possible maintenance and/or replacement of damaged equipment. Store and wash personal protective equipment separately from other clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

● Physical state: Liquid, transparent.

Color: Yellowish brown

Odor: Characteristic

pH: 4.37 (20°C).

Melting point: Not available

Flash point : 62.26°C(closed container test)

Boiling point or initial boiling point and boiling point range: Not available

Flammability (solid; liquid and gas): Combustible liquid

Lower/upper limit of flammability or explosive: Not available

Vapor pressure: Not available

Vapor density: Not available

Particle (solid) characteristics: Not applicable

Density: 1.0010g /cm³ at 20°C

Solubility: Not available Homogeneous in water, n-hexane and solvent oil NO.200.

Spontaneous combustion temperature: Not available

Octanol/water partition coefficient (Kow): Not available

Decomposition temperature: Not available

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Viscosity: 9.6 mPa at 20°C; 4.9 mPa at 40°C

Corrosion: The corrosion rate of copper is 0.18654 mm/ year. Aluminum: 0.00242mm/year; Stainless steel: 0.00033mm/year; Iron :0.00155 mm/year; Brass :0.05286 mm/year.

Surface tension: 51.0mN /m at 20°C

Thermal and air stability: Degradation : 4.29%.

10. STABILITY AND REACTIVITY

- Chemical stability: The product is stable under normal temperature and pressure.
- Reactivity: The expected product is not highly reactive
- Possibility of hazardous reactions: There are no known dangerous reactions to this product.
- Conditions to avoid: It's high temperature. Ignition sources and contact with incompatible materials.
- Incompatible materials: Strong oxidizing agent.
- Hazardous decomposition products: The decomposition of the product will produce toxic gases.

11. TOXICOLOGICAL INFORMATION

- Acute toxicity: May be harmful if ingested and in contact with skin. It is not toxic to inhalation routes.
Tests performed on formulated products:
LD₅₀ Oral (rats): > 2000- < 5000 mg/kg (OECD 423).
LD₅₀ Dermal (rats): > 2000 mg/kg (OECD 402).
LC₅₀ Inhalation (rats) (4h): >5.04 mg/L (OECD 403).
- Skin corrosion/Irritation: The product is not expected to cause skin irritation.
Tests performed on formulated products: The test was negative for skin irritation in rabbits exposed to the product (OECD 404).
- Severe eye damage/irritation: The product is not expected to cause eye irritation.
Testing with formulated products:The test was negative for eye irritation in rabbits exposed to the product (OECD 405).
- Skin sensitization: The product is not expected to cause skin irritation.
Tests performed on formulated products:Tests conducted in guinea pigs did not cause skin sensitization in exposed animals (OECD 406).
- Mutagenicity of germ cells: The product is not expected to have mutagenic potential.
Tests performed on formulated products:
The reverse gene mutation test (Ames test - Salmonella Typhimurium) is considered non-mutagenic (OECD 471).

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Micronucleus tests in mouse bone marrow did not cause genotoxic reactions (OECD 474).

- Carcinogenicity: The product is not expected to cause cancer.
- Reproductive toxicity: The product is not expected to be toxic to reproduction.
- Toxicity to specific target organs - Single exposure: The product is not expected to cause toxicity to specific target organs in a single exposure.
- Toxicity to specific target organs - Repeat exposure: The product is not expected to cause toxicity to specific target organs due to repeated exposure.
- Aspiration Hazard: It can be fatal if ingested and penetrated the respiratory tract.

12. ECOLOGICAL INFORMATION

- Ecological: Harmful to aquatic organisms, long-lasting effects.

Tests performed on formulated products:

Acute toxicity to fish: *Danio rerio*: LC₅₀ (96h): 13,41 mg/L (OECD 203).

Acute toxicity to microcrustaceans: *Daphnia magna*: EC₅₀ (48h): >100 mg/L (OECD 202).

Acute toxicity to algae: *Raphidocelis subcapitata*: ErC₅₀ (72h): 33,68 mg/L and EyC₅₀ (72h): 13,26 mg/L (OECD 201).

Chronic toxicity to algae: *Raphidocelis subcapitata*: NOEC (72h): 4,4 mg/L.

- Persistence and degradability: The product is not expected to last long and will degrade rapidly.
- Mobility in soil: Not available.
- Potentially bioaccumulative: It is expected that the bioaccumulation potential of this product in aquatic organisms is low.
- Other side effects:

Microbial carbon cycle: According to the results of this study, the product has no significant effect on the soil (OECD 217).

Microbial nitrogen cycle: According to the results of this study, the product has no significant effect on the soil (OECD 216).

Soil biology (*Eisenia foetida*): LC50(14 days):> 1,000 mg/kg (OECD 207).

Honeybees (*Apis mellifera*): LD50(48 hours) Contact :> 100 µg /bee(OECD 214).

Oral LD50(48 hours):> 100 µg /bee (OECD 213).

Quail (*Coturnix Coturnix japonica*):LD50(single dose):> 2.000 mg/kg (OECD 223).

13. DISPOSAL CONSIDERATIONS

- Treatment and disposal:

Product: If this product is not suitable for use or is no longer used, please consult the manufacturer via the phone on the label for return and final destination.

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Product residue: Keep any remaining products and/or valid products in their original packaging, sealed appropriately. If the product is not fully used within this period and is still within the expiry date, the packaging may be returned within 6 months of the expiry date. The user must keep the return certificate for at least one year for inspection purposes.

Packaging use: Empty packages should be cleaned three times and stored in a covered, ventilated, rain - and water-proof area where full packages are stored. Within one year from the date of purchase, the user must return the empty package with the lid to the place where the product was purchased or to the place indicated on the invoice issued at the time of purchase. Empty packaging cannot be transported with food, beverages, medicines, feed, animals and people. Do not reuse, bury, or burn packaging, and consult state and municipal environmental regulations or product registrations.

14. TRANSPORT INFORMATION

- The earth: National Land Transport Agency (ANTT) Resolution No. 6016 of 11 May 2023. Amending Resolution 5998 of 3 March 1998 In November 2022, the Regulation on the Road Transport of Dangerous Products and its supplementary notes were approved and other measures were taken.

UN number: Not a land transport hazard.

- Water: Port and Coast Council (Brazilian Waters Transport) Maritime Authority Standard (NORMAM)
 - NORMAM 01/DPC: Ships for high seas navigation
 - NORMAM 02/DPC: Inland vessels
 - IMO - International Maritime Organization (IMO)
 - International Maritime Dangerous Goods Code (IMDG Code)

UN number: Does not fall into the water transport hazard category.

- Air:
 - ANAC - National Civil Aviation Authority - Resolution No. 129 of 8 December 2009.
 - RBAC N175 -(Brazilian Civil Aviation Regulations)- Transport of dangerous goods on civil aircraft. IS n175-001 - Supplementary Instruction - IS
 - ICAO - "International Civil Aviation Organization" - Doc 9284-na /905
 - IATA - International Air Transport Association - "International Air Transport Association"
 - Dangerous Goods Regulations (DGR).

UN number: Does not fall into the air transport hazard category.

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15. REGULATORY INFORMATION

● Regulations for specific chemical product:

Federal Decree No. 10088 of November 5, 2019.

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Decree No. 2770 of September 5, 2022 - Amending Regulatory Standard No. 26

● Specific Regulations:

Law No. 7.802 of 11 July 1989 - Pesticide Law

Decree No. 4074 of 4 January 2002 - Decree on Pesticides

Law No. 10.603 of 17 December 2002 - Protection of Undisclosed Information

Law No. 9.294 of 15 July 1996 - Restrictions on use and advertising

Decree No. 2.018 of 1 October 1996 - Establishing Law No. 9.294/1996

Other.

16. OTHER INFORMATION

This document has been prepared on the basis of existing knowledge of the proper handling of the product under normal conditions of use for the application specified on the packaging. Any other forms of use of the product, including its combination with other materials, and different forms of use, are the responsibility of the user. It is important to note that handling any chemical requires the user to be aware of its hazards in advance. In the workplace, companies that use the product have a responsibility to promote training of their employees on the risks that may arise from exposure to the chemical.

Abbreviation:

ABNT - Associação Brasileira de Normas Técnicas

ACGIH - American Conference of Governmental Industrial Hygienists

ANTT - Agência Nacional de Transporte Terrestre

BCF - Fator de Bioconcentração

BEI - Índice Biológico de exposição

CAS - Chemical Abstracts Service

CL₅₀ - Concentração letal 50%

CE₅₀ - Concentração efetiva 50%

CE_{r50} - Concentração efetiva para inibição de 50% do crescimento

CE_{y50} - Concentração efetiva para inibição de 50% da produção

DL₅₀ - Dose letal 50%

ETAm - Estimativa de toxicidade aguda da mistura

EPI - Equipamento de Proteção Individual

FDS - Ficha com Dados de Segurança

IARC - International Agency for Research on Cancer

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IATA - International Air Transport Association

ICAO - International Civil Aviation Organization

IMO - Internacional Maritime Organization

Koc - Coeficiente de partição carbono orgânico-água

Kow - Coeficiente de partição n-octanol-água

Log Kow - Logaritmo do coeficiente de partição n-octanol-água

MT - Ministério dos Transportes

NBR - Norma Brasileira

ND - Não disponível

NIOSH - National Institute for Occupational Safety and Health

NOEC - No Observed Effect Concentration (concentração de efeito não observado)

NTP - National Toxicology Program

ONU - Organização das Nações Unidas

OSHA - Occupational Safety & Health Administration

PEL - Permissible Exposure Limit

REL - Recommended Exposure Limit

SNC - Sistema Nervoso Central

STEL - Short Term Exposure Limit

TLV - Threshold Limit Value

TWA - Time Weighted Average