

FARM-AG INTERNATIONAL (Pty) Ltd

P.O. Box 1523, Durban 4000

Head Office : 61 Marshall Dr., Old Mill Industrial Park, Mount Edgecombe **South Africa**

Registration Number: 2005/011761/07

Tel + 27 31 003 3486 • Fax + 27 31 502 5825

SECTION 1 - PRODUCT & COMPANY IDENTIFICATION

Substance: bromoxynil octanoate
Product Name: **BROMOXYNIL 225 EC**
Product Use: Herbicide
Creation Date: August 2013

24 Hr Emergency Number: 082 771 2712**In case of Poisoning:**

Poison Information Centre 082 446 8946
 Tygerberg Hospital: (021) 931 6129
 Poison Emergency Enquiries (021) 689 5227

In case of Spillage:

HAZMAT: 0800 147 112

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Common Name: Bromoxynil octanoate
Chemical Name: 2,6-dibromo-4-cyanophenyl octanoate (IUPAC)
CAS No.: 1689-99-2
Chemical Family: hydroxybenzotrile
Chemical Formula: C₁₅H₁₇Br₂NO₂
Molecular weight: 403.0

Use: Bromoxynil is a nitrile herbicide that is used for post-emergence control of annual broadleaf weeds. The compound works by inhibiting photosynthesis in the target plants. It is a selective contact herbicide with some systemic activity. It is absorbed by the foliage, with limited translocation.

Formulation: bromoxynil as octanoate: 225 g/l
 Emulsifiable Concentrate

Hazardous Ingredient:

<u>Inert:</u>	<u>concern:</u>	<u>% present:</u>
Bromoxynil octanoate	Toxic, Irritant Environmentally dangerous	> 38 %
solvent	Irritant, Flammable	> 55 %

SYMBOLS: T, F, N**RISK-PHRASE(S):** R11, R20, R24/25, R36/38, R50/53, R63**SECTION 3 - HAZARD IDENTIFICATION****Toxicity class:** A moderate toxic herbicide.**Likely routes of exposure:** Ingestion, inhalation and skin contact.**Eye contact:** May cause moderate eye irritation.**Skin contact:** Toxic by skin contact. May cause moderate skin irritation.**Ingestion:** Toxic by ingestion.**Inhalation:** Harmful by inhalation.**Fire and explosion hazard:** Product is highly flammable.**SECTION 4 - FIRST AID MEASURES AND PRECAUTIONS**

If swallowed and aspirated into the lungs, chemical pneumonia can occur.

Swallowing may cause sweating, raised temperature, rapid breathing, and muscle rigidity. Breathing vapours may cause listlessness, raspy breathing, and lung injury. High concentrations may have an anaesthetic effect.

FIRST AID:

The airway should be kept clear to maintain respiration, particularly when the patient is unconscious or has vomited. The mouth and pharynx should be cleared and dentures removed. The jaw should be supported and the patient placed in a face down position with the

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head down and turned to one side, with the tongue drawn forward. First aid should be performed by qualified medical personnel and should include, if necessary, mouth-to-nose respiration and cardiac massage.

Inhalation:

Immediately remove source of contamination or move patient to fresh air. Keep affected person warm and at rest. If breathing has stopped, perform artificial mouth-to-nose respiration and administer oxygen. **Obtain medical advice immediately.**

Skin contact:

Remove contaminated clothing, shoes and leather goods immediately. Gently wipe of excess chemical. Wash skin gently and thoroughly with clean water and non-abrasive soap or mild detergent until no evidence of chemical remains (approximately 15 to 20 minutes). Persons who become sensitised may require specialised medical management with anti-inflammatory agents. **Obtain medical advice immediately.**

Eye contact:

Flush eyes immediately with large amounts of gently flowing cold water, occasionally lifting upper and lower lids, until no evidence of chemical remains (approximately 15 to 20 minutes). Obtain medical advice.

Ingestion:

Do not induce vomiting, due to aromatic solvent present in product. **Obtain medical advice immediately** and make the container, or label or this Data Sheet available.

Never give anything by mouth to a semi-conscious or unconscious person.

If vomiting occurs, take care to prevent vomit from being inhaled.

Establish and maintain airway. Treat respiratory difficulty with artificial respiration and oxygen.

Advice to physician:

If product is aspirated into the lungs during ingestion or vomiting, mild to severe chemical pneumonia may be caused. There is no known antidote. Treat symptomatically and supportively as and when required. Gastric lavage or the administration of activated charcoal with water may be indicated.

SECTION 5 - FIRE-FIGHTING MEASURES**Flammable properties:**

Highly flammable: Flash point: 23 °C

Extinguishing agents:

Extinguish fires with carbon dioxide, dry powder, or alcohol-resistant foam. Water spray as a fog can be used for cooling of unaffected stock, but avoid water coming in contact with the product. Contain water used for fire-fighting for later disposal.

Avoid the accumulation of polluted run-off from the site.

Fire fighting:

Remove spectators from surrounding area. Remove container from fire area if possible without risk. Eliminate all ignition sources in immediate area. Fight fire from maximum distance. For massive fire, use unmanned hose holder or monitor nozzles. Contain fire control agents for later disposal. Use a recommended extinguishing agent for the type of surrounding fire. Avoid inhaling hazardous vapours. Keep upwind.

Hazardous combustion products:

This product will emit toxic fumes when burned, including bromide, oxides of nitrogen, cyanides and other bromine compounds. May produce irritating or poisonous mists or other products of combustion.

Personal protective equipment:

Fire-fighters and others that may be exposed should wear full protective impervious clothing, including gloves and eye protection, and self-contained breathing apparatus. Contact with the fumes and vapours should be avoided by staying upwind.

Clean all clothing before re-use. Severely contaminated clothing cannot be adequately decontaminated, and must be disposed as a hazardous waste. Shower with soap and water after contact with this product.

SECTION 6 - ACCIDENTAL RELEASE MEASURES (SPILLAGE)**Personal precautions:**

Do not inhale fumes. Avoid contact with skin, eyes or clothes. Ventilate area of spill or leak, especially confined areas. For personal protection see Section 8.

Environmental precautions:

Do not allow entering drains or watercourses. Spillage or uncontrolled discharges into water courses (or public waters) to be reported immediately to the Police and to the Department of Water/Environmental Affairs.

Occupational spill:

Keep out unprotected persons and animals. Do not touch spilled material; stop leak if you can do it without risk.

Earth all equipment used when handling the product. Do not touch or walk through spilled material. Stop leak if possible without risk. Avoid runoff of product into sewers, water systems, basements or confined areas as it may cause fire/explosion. A vapour-suppressing foam could be used to reduce vapours. Thoroughly wash body areas, which come into contact with the product.

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For spills: Use clean, non-sparking tools to collect absorbed material. Soak up with absorptive material such as damp earth or sand or other suitable non-combustible absorbent material. Place the material into a clean, dry container and cover for subsequent disposal. In situations where product comes in contact with water, contain contaminated water for later disposal. Prevent material from spreading by damming in with absorptive material. Do not flush spilled material into drains. Keep spectators away and upwind.

To decontaminate spill area, tools and equipment, wash with a suitable solution (i.e. organic solvent, detergent bleach or caustic). Add the solution to the drums already collected. Label drums with its content and dispose it in accordance with local regulations.

Open burning or dumping of this material is prohibited.

SECTION 7 - HANDLING AND STORAGE REQUIREMENTS**Handling:**

Operator should not be alone during handling and application of product. Remove sources of naked flame or sparks. Toxic if swallowed and by skin contact, and harmful if inhaled. Avoid contact with eyes and skin and inhalation of fumes. Avoid exposure to spray. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking or using the toilet. Operators should change and wash clothing daily. Remove clothing immediately if the insecticide gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Do not apply directly to areas where surface water is present, or to intertidal areas below the mean high water mark. Water used to clean equipment must be disposed of correctly to avoid contamination.

Storage:

Store in its original container in isolated, dry, cool (avoid temperatures above 32 °C) and well-ventilated area. Avoid cross contamination with other pesticides and fertilizers. Keep under lock and key out of reach of unauthorized persons, children and animals. Store away from incompatible substances. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

Keep away from naked flames and other sources of ignition.

SECTION 8 - EXPOSURE CONTROL/PERSONAL PROTECTION**Engineering control measures:**

It is essential to provide adequate ventilation. Ensure that control systems are properly designed and maintained. . Only spark-resistant equipment should be used. Comply with occupational safety, environmental, fire and other applicable regulations.

PERSONAL PROTECTIVE EQUIPMENT:

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal equipment including approved respiratory protection.

Respirator:

If the product is used in dusty or confined conditions or spillage and fire conditions an approved full-face air-purifying respirator, equipped with organic vapour cartridges or canisters, suitable for protection from mists of pesticides is required. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

Respirator is not required in the case of normal application procedure of the product. When handling and/or using the product, wear a face mask and face shield.

Clothing:

Employee must wear appropriate protective (impervious) clothing (long sleeved cotton overalls, apron, rubber boots, face shield and hat or cap) and equipment to prevent skin contact with the substance.

Gloves:

Employee must wear appropriate chemical resistant protective gloves (PVC or neoprene gloves) to prevent contact with this substance.

Eye protection:

Employee must wear splash-proof safety goggles and face-shield to prevent contact with this substance.

Emergency eye wash: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	A clear brownish coloured liquid with an aromatic odour.
Flammability:	Highly flammable.
Flash point:	23 °C.
Specific gravity:	1.023 ± 0.05 g/ml
pH:	3 - 5
Solubility in water:	Forms an emulsion in water. Miscible.

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SECTION 10 - STABILITY AND REACTIVITY**Storage stability:**

Stable for up to 2 years under normal warehouse and field conditions. Avoid contact with strong acids, strong alkalis and oxidizing agents. Avoid heat and sources of ignition.

Incompatibility:

Product is relatively stable in neutral and weakly acidic media, but rapidly hydrolyzed in strong acids and alkalis. The product is compatible with various herbicides when used at normal rates. However, since it is not possible for Tsunami Plant Protection to test all possible combinations, the onus lies with the user to carry out a compatibility test, if tank mixtures are considered. Do not physically mix concentrate directly with other herbicides or pesticide concentrates; always dilute first.

Hazardous decomposition:

Product undergoes decomposition at temperatures higher than the flash point and will cause toxic fumes of bromide, oxides of nitrogen, cyanides and other bromine compounds.

Polymerization:

This product will not polymerize.

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute oral LD₅₀ rats: *Technical:* 240 - 400 mg/kg

Formulation calculated: 977 mg/kg

Acute dermal LD₅₀ rats: *Technical:* >2000 mg/kg

Formulation calculated: > 2000 mg/kg

Inhalation LC₅₀ rats: *Technical:* > 0,72 mg/l (4hours)

Acute eye irritation: Moderate irritant

Acute skin irritation: Moderate irritant

May cause dermatitis from long-term skin contact.

Reproductivity:

No changes in reproduction were noted in female rats fed 15 mg/kg/day of bromoxynil over three generations. This suggests that bromoxynil does not cause reproductive effects. Reproductivity Category: 3.

Teratogenicity:

Bromoxynil is a suspected teratogen. The compound produced birth defects in rats at oral doses above 35 mg/kg. Toxic effects included abnormal rib formation and reduced fetal weight. Newborn rabbits had birth defects when bromoxynil was administered to pregnant mothers at doses above 30 mg/kg. In the rabbit, birth defects included changes in bone formation in the skull and hydrocephaly.

Mutagenicity: Not mutagenic.

Carcinogenicity:

Rats fed bromoxynil at low levels of 5 mg/kg and below did not develop any cancer related effects. EPA classification: Group C.

ADI: 0.003 mg/kg/day

SECTION 12 - ECOLOGICAL INFORMATION**Degradability:**

Bromoxynil has a low persistence in soil. In sandy soil, the half-life is about 10 days. Degradation in clay was slower, with half of the bromoxynil degraded to its metabolites in about a 2-week period at 25 °C. The persistence of the compound is also slightly longer in peat field soils than in the sandy soils. The evidence suggests that, while bromoxynil is broken down by some soil bacteria, it may inhibit the action of other bacteria that promote the formation of nitrite by a process called nitrification.

The herbicide works by disrupting the plant's ability to produce energy for cell-related activities. It is not readily translocated throughout the plant once it has been absorbed.

Metabolism in plants and animals is by hydrolysis of the ester and nitrile groups, with some debromination occurring.

ECOTOXICOLOGY:**Birds: Moderately to highly toxic to birds.**

Oral LD₅₀: mallard ducks: 2350 mg/kg

bobwhite quail: 170 mg/kg

Dietary LC50 (5 days): mallard ducks: 2150 ppm

bobwhite quail: 1315 ppm

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Fish: Very highly toxic to moderately toxic to fish.

LC ₅₀ (96 hours):	rainbow trout:	0.041 mg/l
	bluegill sunfish:	0.06 mg/l

Daphnia: Highly toxic to Daphnia.

LC ₅₀ (48 hours):	<i>Daphnia magna</i>	0.046 mg/l
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Bees: Not toxic to honeybees.

LD ₅₀ (oral):	> 119.8 µg/bee
LD ₅₀ (contact):	> 100 µg/bee

Algae:

EC ₅₀ (96 hours):	<i>Scenedesmus subspicatus</i> :	1 mg/l
	<i>Selenastrum capricornutum</i> :	0.22 mg/l

Earthworms:

EC ₅₀ (14 days):	<i>Eisenia foetida</i> :	294 mg/kg.
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SECTION 13 - DISPOSAL CONSIDERATION**Pesticide disposal:**

Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product that cannot be reused or reprocessed should be disposed of in a landfill approved for pesticide disposal. Do not contaminate rivers, dams or any other water sources with the product or used containers. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Comply with local legislation applying to waste disposal.

Package product wastes:

Emptied containers retain vapour and product residues. Observe all labelled safeguards. TRIPLE RINSE empty containers in the following manner: Invert the empty container over the spray or mixing tank and allow to drain for at least 30 seconds after the flow has slowed down to a drip. Thereafter, rinse the container three times with a volume of water equal to a minimum of 10 % of that of the container. Add the rinsings to the contents of the spray tank before destroying the container.

Destroy the emptied containers by perforation and flattening. Bury in an approved dump site. Do not re-use the empty container for any other purpose.

Comply with any local legislation applying to disposal.

SECTION 14 - TRANSPORT INFORMATION

UN No.: 2903

Class: 6.1

Subsidiary risk: 3

Packing group: II

Shipping name: Pesticide, Liquid, Toxic, Flammable, N.O.S. (bromoxynil 225 g/l)

MARINE POLLUTANT**SECTION 15 - REGULATORY INFORMATION**

Symbol: T, F, N

Indication of Danger: Toxic substance, Flammable, Environmentally dangerous substance

Risk phrases:

R 11 Highly flammable.

R 20 Harmful by inhalation.

R 24/25 Toxic in contact with skin and if swallow.

R 36/38 Irritating to eyes and skin.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R 63 Possible risk of harm to the unborn child.

Safety phrases :

S 1/2 Keep locked up and out of reach of children.

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- S 3/9/14** Keep in a cool, well-ventilated place away from open flames and sparks.
- S 23** Do not breath fumes or vapour.
- S 24/25** Avoid contact with skin and eyes.
- S 27/28** After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water and non-abrasive soap.
- S 36/37/39** Wear suitable protective clothing, gloves and eye/face protection.
- S 45** In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S 61** Avoid release to the environment. Refer to special instructions / Safety data sheets.
- S 62** If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

SECTION 16 - OTHER INFORMATION

Packing and Labelling

Packed in 5, 10, 20 & 25 litre fluorinated plastic containers and labelled according to the South African regulations and guidelines

Disclaimer:

The information on this sheet is not a specification; it does not guarantee specific properties. The information is intended to provide general guidance as to health and safety based upon our knowledge of the handling, storage use of the product. It is not applicable to unusual or non-standard uses of the product nor where instructions or recommendations are not followed.

All information is given in good faith but without guarantee in respect of accuracy, and no responsibility is accepted for errors and omissions or the consequence thereof.