SAFETY DATA SHEET

Issue No: 1.4	Revision date: 2 May 2023 First print date: 10 June 2011

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:	**DIFLUFENICAN 500 SC**
Other names:	Diflufenican 500 g/ℓ
Recommended Use:	Agricultural Herbicide
Supplier:	ICA International Chemicals (Pty) Ltd
Address:	28 Planken Street Plankenbrug Industrial STELLENBOSCH · 7600 · SOUTH AFRICA
Telephone No:	+27-21 886 9812
Fax No:	+27-21 886 8209
Emergency Tel No:	Griffon Poison Information Centre: +27-82 446 8946 Human Poison Helpline: +27-861 555 777

2. HAZARD IDENTIFICATION

GHS Classification of product	Acute Aquatic Toxicity – Category 1 Chronic Aquatic Toxicity – Category 1
Label Elements Classification and Labelling of Chemicals (GHS) Rev 9, 2021; Regulation EC No. 1272/2008 [EU-GHS/CLP]	
Signal word	**WARNING**
Hazard Statements	H410 – Very toxic to aquatic life with long lasting effects.
General Precautionary Statements	P101: If medical advice is needed, have product container or label at hand. P102: Keep out of reach of children. P103: Read carefully and follow all instructions.
Prevention Precautionary Statements	P261: Avoid breathing mist and spray. P264 + P265: Wash hands and exposed skin thoroughly after handling. Do not touch eyes. P270: Do not eat, drink, or smoke when using this product. P273: Avoid release to the environment.
Response Precautionary Statements	P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P391: Collect spillage.
Storage Precautionary Statements	P401: Store in closed, original container.
Disposal Precautionary Statements	P501: Dispose of contents and container in accordance with national regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT(S)	CAS NO:	CONCENTRATION % (w/v)	CLASSIFICATION EC 1272/2008
Diflufenican	83164-33-4	50	Aquatic Acute Category 1, H400; Aquatic Chronic Category 1, H410
Ammonium nonylphenoxy polyethoxy sulfate	68649-55-8	< 10	Skin Irritation Category 2, H315; Eye Irritation Category 2, H319; Aquatic Chronic Category 2, H411
Ethylene glycol	107-21-1	< 5	Acute Oral Toxicity Category 4, H302

There are no additional ingredients present which, within the current knowledge of the provider of this SDS, and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. See section 16 for legend of additional H-phrases not in section 2.

4. FIRST AID MEASURES

Show this SAFETY DATA SHEET to a doctor.

INHALATION:	· Remove the victim from source of exposure and move to fresh air, if it can be done safely, and keep comfortable. · Get medical help if you feel unwell.
SKIN:	· Remove and isolate contaminated clothing, shoes, and leather goods and take a shower. · Rinse affected areas with non-abrasive soap or mild detergent and water. Wash contaminated clothing before reuse. · Get medical help if irritation develops and persists.
EYES:	· Rinse eyes with clean running water for at least 15 minutes, while holding eyelids apart. · Remove contact lenses after 5 minutes if present and easy to do. · Continue rinsing while holding eyelids apart. · Seek medical help if irritation continues.
INGESTION:	· If swallowed, DO NOT induce vomiting, unless instructed to do so by poison control center or doctor. · Rinse mouth and have person sip a glass of water if able to swallow. · Never give anything by mouth to an unconscious person. · If vomiting does occur, keep on giving fluids. Get medical help if feeling unwell.
NOTE TO PHYSICIAN:	· There is no specific antidote. All treatments should be based on observed signs and symptoms of distress in the patient.
POTENTIAL HEALTH EFFECTS, ACUTE AND DELAYED:	· No adverse effects expected.

5. FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA:	**Small fires:** Dry chemical powder, carbon dioxide (CO_2) or water spray. **Large fires:** Dry-chemical, CO_2, water spray, or alcohol-resistant foam
FIRE INVOLVING TANKS:	Cool containers with flooding quantities of water until well after fire is out. Always stay away from tanks engulfed in fire.
UNSUITABLE EXTINGUISHING MEDIA:	DO NOT use high volume water jet, due to contamination risk.
SPECIFIC EXTINGUISHING METHODS:	Fight fire from maximum distance. For massive fire, use unmanned hose holder or monitor nozzles. Collect contaminated extinguishing water separately; do not allow contaminated water to reach the sewage or effluent systems.
SPECIFIC HAZARDS ARISING FROM COMBUSTION PRODUCTS:	In case of fire, the formation of irritating, corrosive and/or toxic gases can be expected.
PRECAUTIONS FOR FIRE FIGHTERS:	Fire fighters should wear full protective gear including self-contained breathing apparatus (SCBA). Fight fire from safe distance. Contact with the fumes and vapours should be avoided by staying upwind. Clean all clothing before reuse. Severely contaminated clothing cannot be adequately decontaminated and must be disposed as a hazardous waste. Shower with soap and water after contact with chemical product.
FURTHER INFORMATION:	· If possible, safely move undamaged intact containers away from the area around the fire. · Keep containers cool by spraying with water if exposed to fire. · Dispose of fire debris and contaminated extinguishing water in accordance with official regulations. · In case of fire and/or explosion do not breathe fumes.

6. ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK:

PERSONAL PRECAUTIONS:	Avoid contact with skin and eyes. Do not touch or walk through spilled material. Do not inhale spray or fumes.
PROTECTIVE EQUIPMENT:	Wear personal protective clothing and equipment (see section 8).

EMERGENCY PROCEDURES:	Keep people and animals away. Eliminate all ignition sources (no smoking, flares, sparks, or flames) from immediate area. All equipment used when handling the product must be grounded. Use water spray to reduce vapours or divert vapour cloud drift.
ENVIRONMENTAL PRECAUTIONS:	PREVENT spilled material from entering waterway and sewer systems, basements, and confined areas. If the product contaminates rivers and lakes or waterways immediately inform respective authorities.
METHODS AND MATERIALS FOR CONTAINMENT:	Collect spills by scoop or vacuum. Use approved industrial vacuum cleaner for removal and place in clearly marked waste containers.
METHODS AND MATERIALS FOR CLEANING UP:	Contain spillage, and then collect and place in container for disposal according to local / national regulations (see section 13). Use clean, non-sparking tools to collect absorbed material.
SECONDARY DISASTER PREVENTION MEASURES:	NA

7. HANDLING AND STORAGE

7.1: PRECAUTIONS FOR SAFE HANDLING: - Suitable Technical Measures - Suitable Precautions - Prevention of contact	· Always store in their original containers, which include the label listing ingredients, directions for use, and first aid steps in case of accidental poisoning. · Never transfer to soft drink bottles or other food containers. Children or others may mistake them for something to eat or drink. · Wear suitable protective clothing which include chemical-resistant overalls, footwear, socks, dust mask, eye shields and gloves. · Wash hands before eating, drinking, chewing gum, smoking, or using the toilet. Wash hands, arms, and face after application. Wash gloves and contaminated protective clothing daily before reuse.
7.2: CONDITIONS FOR SAFE STORAGE: - Suitable Technical Measures - Separation measures from incompatible substances and mixtures	· Keep out of reach of unauthorized persons, children, and animals. Always store in original container, closed with original cap and the original label, in a cool, dry, and well-ventilated area out of direct sunlight. · Segregate from foods and animal feeds. · DO NOT reuse the container for any other purpose.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

ADI – Acceptable Daily Intake	0,2 mg kg^{-1} bw day^{-1}
AOEL –Accepted Operator Exposure Level	0,11 mg kg^{-1} bw day^{-1} No unacceptable risk for operators or other workers identified
NATIONAL EXPOSURE STANDARDS:	Not available.
BIOLOGICAL LIMIT VALUES:	Not available
ENGENEERING CONTROLS:	Containment and/or segregation is the most reliable technical protection measure if exposure cannot be eliminated. If airborne dust are generated use local exhaust ventilation controls. Facilities should be equipped with an eyewash station and a safety shower. Where necessary, seek additional occupational hygiene advice.
PERSONAL PROTECTIVE EQUIPMENT:	**Respiratory Protection:** Where exposure through inhalation may occur when handling and/or when preparing the application mixture, wear a face mask. If the product is used in confined spaces a respirator suitable for protection from dusts and mists of pesticides is adequate. **Hand Protection:** Wear chemical-resistant gloves made of any waterproof material such as nitrile rubber. Glove thickness: 0.5 mm **Eye Protection:** The use of safety goggles (full-face shield) is recommended. **Skin and Body Protection:** Wear suitable protective clothing which include chemical-resistant overalls, footwear, socks, dust mask, eye shields and gloves. Remove and wash contaminated protective clothing daily.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
COLOUR:	Off-white

ODOUR:	Chemical
MELTING POINT / FREEZING POINT °C:	Not applicable
BOILING POINT:	Not available
DECOMPOSITION TEMPERATURE (a.i):	Not available
FLAMMABILITY:	Not available
EXPLOSIVE LIMITS:	Not expected
FLASH POINT:	Not available
AUTO-IGNITION TEMPERATURE:	Not available
PH (1% IN WATER):	6.0 – 9.0
KINEMATIC VISCOSITY: $\text{Kinematic viscosity} = \frac{\text{Dynamic viscosity (mPa/s)}}{\text{Density (g/cm}^3\text{)}}$	Not available
VISCOSITY:	Not available
DENSITY / RELATIVE DENSITY:	~1,16 g/mℓ
SOLUBILITY - WATER (a.i):	0,05 mg/ℓ
N-OCTANOL / WATER PARTITION COEFFICIENT (a.i):	Log P_{ow} = 4,2
VAPOUR PRESSURE (a.i):	4.25 X 10^{-03} mPa
RELATIVE VAPOUR DENSITY:	Not available

10. STABILITY AND REACTIVITY

REACTIVITY:	Stable under normal conditions, will dissolve in fire-fighting water, forming acidic solution.
CHEMICAL STABILITY:	Stable under normal use and storage conditions for at least 2 years.
HAZARDOUS REACTION:	Hazardous polymerization is not expected to occur.
CONDITIONS TO AVOID: **(e.g. – heat, pressure, static discharge, shock, or vibration)**	Avoid storage in moist or hot conditions, near to heat or ignition sources. Keep away from food, drink and open bodies of water.
INCOMPATIBLE MATERIALS:	Strong acids, strong oxidizers, strong bases, reducing agents, oxidizing agents.
HAZARDOUS DECOMPOSITION PRODUCTS:	When heated to decomposition, irritant or dangerous fumes/vapours may be emitted. See section 5.

11. TOXICOLOGICAL INFORMATION

	ATE ACUTE TOXICITY DATA	
ORAL:	LD_{50} (rat) > 5000 mg/kg bw	Not Classified
DERMAL:	LD_{50} (rat) = 2000 mg /kg bw	Not Classified
INHALATION:	LC_{50} (4h) rat > 5,12 mg/ℓ	Not Classified
SKIN IRRITATION / CORROSION:		Not Classified
SERIOUS EYE IRRITATION / DAMAGE:		Not Classified
RESPIRATORY OR SKIN SENSITIZATION:		Not Classified
GERM CELL MUTAGENICITY:		Not Classified
CARCINOGENICITY:		Not Classified
REPRODUCTIVE TOXICITY:		Not Classified
SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE:		Not Classified
SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE:		Not Classified
ASPIRATION HAZARD:		Not Classified

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

DIFLUFENICAN	Birds: LD_{50} (oral)	*Colinus virginianus*
		Acute LD_{50} > 2150mg/kg bw/day
	Fish: LC_{50}	*Cyprinus carpio* (Rainbow trout)
		Acute (96h) LC_{50} > 0,099= mg a.i./ℓ

		Oncorhynchus mykiss
		Chronic 0.015 mg a.i./ℓ
	Aquatic invertebrates - *Daphnia*	*Daphnia magna* (Water flea)
		Acute (48h) EC_{50} = 0,024 mg a.i./ℓ
		Daphnia magna (Water flea)
		Chronic (48h) EC_{50} = 0,052 mg a.i./ℓ
	Algae - EC_{50} / NOEC	*Scenedemus subspicatus*
		Acute (72h) EC_{50} = 0,00025 mg a.i./ℓ
	Bees	*Apis mellifera*
		Acute contact 48-hour LD_{50} = >100 ($mg.bee^{-1}$)
		Acute oral 48-hour LD_{50} = >107,4 ($mg.bee^{-1}$)
	Earthworms: LC_{50} /NOEC	*Eisenia fetida*
		Acute (14-day) LC_{50} =>500 mg a.i./kg d.w. soil
		Eisenia fetida
		Chronic (14-day) LC_{50} =>500 mg a.i./kg d.w. soil
AQUATIC TOXICITY:	**Summation Method**	
	Aquatic Acute – Category 1	
	Aquatic Chronic – Category 1	
PERSISTENCE, DEGRADABILITY AND MOBILITY:	Diflufenican is moderately too persistent in the soil and non-mobile.	
	DT_{50} = 64.6 – 571 days	
	K_{oc} = 5504 (non-mobile)	
BIO-ACCUMULATIVE POTENTIAL:	BCF = 1276 ℓ/kg	Threshold for concern
SOIL MICRO-ORGANISMS:	Carbon transformation	No significant adverse/long-term effect
	Nitrogen transformation	No significant adverse/long-term effect

13. DISPOSAL CONSIDERATIONS

On site disposal of the concentrated product is not acceptable. Ideally, the product should be used for its intended purpose. If there is a need to dispose of the product, approach local authorities.

TRIPLE RINSE THE EMPTY CONTAINER AS FOLLOWS: Invert the empty container over the spray or mixing tank and drain for at least 30 seconds after the flow has slowed down to a drip. Thereafter, rinse the empty container three times in succession with one quarter of the container volume fresh water and decant the rinsate into the spray or mixing tank. Puncture the triple rinsed container and dispose of via an approved collector or recycler (www.croplife.co.za). Do not bury, burn or donate the container to any other parties that may use it as a container for food or beverages.

14. TRANSPORT INFORMATION

UN NUMBER:	3082
UN PROPER SHIPPING NAME:	ENVIROMENTALLY HAZARDOUS SUBSTANCE, LIQUID (50 % diflufenican)
TRANSPORT HAZARD CLASS(ES):	Class 9
PACKING GROUP:	III (low danger)
TRANSPORT PICTOGRAMS:	
ENVIROMENTAL HAZARD:	Marine Pollutant: Yes – Category 1
TRANSPORT IN BULK:	Not applicable, not to be transported in bulk.
SPECIAL PRECAUTIONS FOR USER:	Not applicable

15. REGULATORY INFORMATION

Conform to South African Regulation for Hazardous Chemical Agents, 2021.

Product: South African registration number L9275, Act 36 of 1947.

SDS valid for five years from date of issue.

16. OTHER INFORMATION

Legend: Full text of H-Statements referred to under sections 3:
H315 – Causes skin irritation
H319 – Causes serious eye irritation
H400 – Very toxic to aquatic life

Key literature references and sources of data: Occupational Health and Safety Act 1993. Regulation for Hazardous Chemical Agents, 2021. Globally Harmonized System of Classification and Labelling of Chemicals (GHS) Rev 9, 2021. UN Model Regulations Rev. 22 (2021). EU REGULATION (EC) No 1272/2008.

This Safety Data Sheet (SDS) summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this SDS and consider the information in the context of how to prevent accidents in the normal workplace including in conjunction with other products.

The information was obtained from sources which we believe are reliable. However, the information is provided in good faith. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and for these reasons we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used for this product only.

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END of SDS