SKOFFEL® DUO 200 SL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **SKOFFEL® DUO 200 SL**
Other identifier: Paraquat 120 g/ℓ
Diquat 80 g/ℓ
Recommended use: Herbicide
Restrictions on use: Agriculture

Supplier: **Villa Crop Protection (Pty) Ltd.**
Co. Reg. No.:1992/002474/07
PO Box 10413
Aston Manor, 1630, South Africa
Telephone: (011) 3962233
Fax: (011) 3964666
Website: www.villacrop.co.za

Emergency telephone numbers:
24 Hr Transport / Spill emergency no:
(Hazcall24) +27 86 044 4411
(Client: Villa Crop Protection)
Griffon Poison Information Centre +27 82 446 8946
(Client: Villa Crop Protection)
Poisoning Emergency telephone numbers:
Griffon Poison Information Centre +27 82 446 8946
Poisons Information Centre +27 861 555 777

2. HAZARDS IDENTIFICATION

UN GHS, Regulation EC 1272/2008 [EU-GHS/CLP] EU & SANS 10234:2008		
Hazard classes	**Hazard categories**	**H-statements**
Health		
Oral	Acute Tox. 4	H302
Dermal	Acute Tox. 5 Skin irritation 2 Skin Sens. 1	H313 H315 H317
Eye	Eye Irrit. 2	H319
Inhalation	Acute Tox. 2	H330
Specific Target Organ Toxicity (Single Exposure)	STOT SE 3	H335
Specific Target Organ Toxicity (Repeated Exposure)	STOT RE 1	H372
Environment		
Aquatic acute	Aquatic acute 1	H400
Aquatic chronic	Aquatic chronic 1	H410

The most important adverse effects:
Physiochemical effects:
None known
Human health effects:
Fatal if inhaled.
Harmful if swallowed.
May be harmful in contact with skin.
Causes skin irritation.
Causes serious eye irritation.
May cause respiratory irritation.
Causes damage to organs through prolonged or repeated exposure.
Label elements:

Signal word: Danger
Hazard statements:
H302: Harmful if swallowed.
H313: May be harmful in contact with skin.
H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.
H330: Fatal if inhaled.
H335: May cause respiratory irritation.
H372: Causes damage to organs through prolonged or repeated exposure.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.
Precautionary statements:
P260: Do not breathe dust, fume, gas, mist, vapours, or spray.
P261: Avoid breathing dust, fumes, mists, gas, vapours or spray.
P264+P265: Wash hands and face thoroughly after handling. Do not touch eyes.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P272: Contaminated work clothing should not be allowed out of the workplace.
P280: Wear impervious rubber gloves and boots, protective clothing and chemical safety goggles.
P284: In case of inadequate ventilation wear respiratory protection.
P362/364: Take off contaminated clothing and wash it before reuse.
P264: Wash hands and face thoroughly after handling.
P273: Avoid release into the environment.
P280: Wear impervious rubber gloves and boots, protective clothing and chemical safety goggles.
P301+P317: IF SWALLOWED: Get medical help.
P302+P317: IF ON SKIN: Get medical help.
P302+P352: IF ON SKIN: Wash with plenty of water and non-abrasive soap.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER.

P316: Get emergency medical help immediately.
P319: Get medical help if you feel unwell.
P332+P317: If skin irritation occurs: get medical help
P333+P317: If skin irritation or rash occurs: Get medical help.
P337+ P317: If eye irritation persists: Get medical help.
P362+364: Take off contaminated clothing and wash it before reuse.
P391: Collect spillage.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P501: Dispose of content/container in accordance with local regulations.

Special labelling of certain mixtures:
None known.

Other hazards:
None known.

Toxicity:
Classification according to GHS: Category 2

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance/Mixture: Mixture
Composition:

Chemical Name	CAS	Conc. (m/v %)	Classification EC 1272/2008
Diquat bromide	85-00-7	< 15%	Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Skin Sens. 1 (H317) Acute Tox. 2 (H330) STOT SE 3 (H335) STOT RE 1 (H372) Aquatic acute 1 (H400) Aquatic chronic 1 (H410)
Paraquat dichloride	1910-42-5	< 15%	Acute Tox. 3 (H301) Acute Tox. 3 (H311) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Acute Tox. 2 (H330) STOT SE 3 (H335) STOT RE 1 (H372) Aquatic acute 1 (H400) Aquatic chronic 1 (H410)

4. FIRST AID MEASURES

Remove the victim from the area of exposure. Wash off remaining material with plenty of water. In the event of any complaints or symptoms, avoid further exposure and immediately consult a doctor.

Inhalation: Remove person from contaminated area to fresh air. Keep warm and at rest. **Seek medical attention immediately.**

Skin: Remove contaminated clothing and wash before re-using. Flush skin with water and then wash with soap and water. Seek medical attention if skin irritation persists.

Eyes: Flush eyes with clean water for at least 15 minutes. Lift eyelids to facilitate irrigation. If present, remove contact lenses after 5 minutes and continue rinsing. Seek medical attention if irritation persists.

Ingestion: Seek medical attention or call a poison control centre for treatment advice. Induce vomiting if person has not vomited as expected. Wash mouth with water and give water to drink.

Anticipated acute effects: Fatal if inhaled.
Causes skin irritation. May cause an allergic skin reaction. Harmful if swallowed. Harmful in contact with skin.

Anticipated delayed effects: May cause respiratory irritation or may cause drowsiness or dizziness.
Causes damage to organs through prolonged or repeated exposure.

Most important symptoms/effects: None known.

Advice to physician: To be effective, treatment for ingestion must begin IMMEDIATELY. Treatment consists of binding the active ingredient, Diquat, in the gut with suspensions of activated charcoal or bentonite clay, administration of cathartics to enhance elimination and removal of Diquat from the blood by charcoal hemoperfusion or continuous hemodialysis.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Use carbon dioxide, dry chemical powder or foam.

Unsuitable Extinguishing Media: Water jet. Use a water jet only to cool heated containers.

Specific hazards: None known.

Special Fire Fighting Procedures: Remove spectators from surrounding area. Isolate the fire area and evacuate all personnel downwind of the fire. Fight fire from maximum distance and use unmanned hose holder or monitor nozzles. Keep upwind. Avoid inhaling hazardous vapours and fumes from burning materials. Remove container from fire area if possible and without risk. Do not use high volume water jet, due to contamination risk. Do not scatter the burning material. Water can be used to

cool unaffected containers but must be contained for later disposal. Contain fire control agents for later disposal. Avoid pollution of waterways by run-off from the site.
Personal protective equipment: Wear NIOSH/MSHA approved self-contained breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Avoid contact with skin and eyes. Do not breathe in fumes.
Protective equipment: Refer to Section 8 for personal protective equipment to be worn during containment and clean-up of a spill involving this product.
Emergency procedures: Alert firefighting personnel, evacuate unprotected personnel and animals.
Environmental Precautions: Keep spilled product from entering sewers, waterways or ground water.
Methods and Materials for Containment: Contain spilled product by diking area with sand or earth.
Methods and Materials for Clean-up: Cover contained spill with an inert absorbent material such as sand, vermiculite, earth or other appropriate material. Vacuum, scoop, or sweep up material and place the material into a clean, dry, sealable container. Label containers with the contents and dispose of according to local regulations. Do not place spilled material back in original container. Do not re-use spilled material. Collect washings and add to the drums already collected. Do not flush spilled material or washings into drains or waterways. To decontaminate the spill area, tools and equipment, wash with water and suitable detergent. See section 13 for disposal considerations.

7. HANDLING AND STORAGE

Handling:
Precautions for safe handling: Harmful if swallowed. Avoid contact with skin and eyes. Ensure adequate ventilation during handling and use. Do not handle broken packages without protective equipment. Immediately clean up spills that occur during handling. Keep containers closed when not in use. In the case of contact with the product refer to First Aid Measures – Section 4.
General occupational hygiene: Practice good hygiene when using this material. Wash hands before eating, drinking, chewing gum, smoking, using the toilet or applying cosmetics. Worker should shower at the end of each workday. Launder all clothing before it is re-used again.
Storage:
Conditions for safe storage: Store in its original container in dry, cool, well-ventilated area. Avoid excess heat. Not to be stored next to foodstuffs, feed and water supplies. Keep out of reach of children, uninformed persons and animals. Do not contaminate other pesticides and fertilizers.
Incompatible substances and mixtures: Refer to product label.
Packaging material: Non-fluorinated plastic drums or pails and/or fluorinated containers/drums or pails.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Permissible concentration

Components	Exposure limits	Type of exposure limit	Source
Paraquat, respirable dust	0.1 mg/m^3	8-hour TWA (ST) STEL (C) Ceiling	OSHA PEL

Engineering Controls:
It is essential to provide adequate ventilation. The measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. Local Exhaust: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs or other specified exposure limits. Local exhaust ventilation is preferred. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.

Personal Protective Equipment:
Respiratory Protection: Use a NIOSH approved air-purifying respirator with cartridges/canisters approved for organic vapours.
Hand Protection: The use of chemically protective gloves is recommended to prevent against skin contact.
Eye Protection: The use of chemical safety goggles is recommended to prevent against eye contact. Contact lenses are not protective eye devices.
Skin and Body Protection: Employee must wear appropriate protective (impervious) clothing; boots, hat and equipment to prevent repeated or prolonged skin contact with this substance.
Emergency eyewash: 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Dark green liquid.
Odour: Nonspecific.
pH (1% aqueous dilution): 4.0 – 7.0
Melting point: Not available.
Freezing Point: Not available.
Boiling Point: 100 °C.
Flash Point: Not available.
Flammability: Not flammable.

Upper/lower explosion limits: Not available.
Vapour Pressure (mm Hg): Not available.
Relative Vapour Density: Not available.
Density: 1.114 g/cm^3.
Solubility: Soluble in water.
n-octanol/water partition coefficient: Not available.
Auto-ignition temperature: Not available.
Decomposition temperature: Not available.
Viscosity: Not available

10. STABILITY AND REACTIVITY

Chemical Stability: The product is stable for two years at ambient temperature and pressure, under normal storage and handling conditions. Avoid storage under extreme temperatures and conditions. Store below 50 °C, preferably below 30 °C, and not for prolonged periods in direct sunlight.
Reactivity: None known.
Possibility of Hazardous Reactions: Will not occur.
Conditions to Avoid: Extreme heat or exposure to flames.
Incompatible Materials: Compatible with most herbicides except for strong acid and alkaline formulations.
Hazardous Decomposition Products: None known.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:
Calculated according to GHS
Oral LD_{50} > 370 mg/kg
Dermal LD_{50} > 3400 mg/kg
Inhalation LC_{50} 0.07 mg/ℓ
Skin Irritation: Causes skin irritation.
Eye Irritation: Causes serious eye irritation.
Skin Sensitization: May cause an allergic skin reaction.
Respiratory Sensitization: Product is not a respiratory sensitizer.
Reproductive cell mutagenicity: Not available.
Carcinogenicity: Not available.
Reproductive toxicity: Not available.
Specific target organ toxicity – single exposure: May cause respiratory irritation.
Specific target organ toxicity – repeated exposure: Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard: Not classified.
Chronic Effects (other targets e.g. developmental)**:** Not classified.
POTENTIAL ADVERSE EFFECTS:
Inhalation: Fatal if inhaled.
Skin contact: Causes skin irritation. May cause an allergic reaction.
Eye contact: Causes serious eye irritation.
Ingestion: Harmful if swallowed.

12: ECOLOGICAL INFORMATION

This product is considered a marine pollutant.

ECOTOXICITY DATA:

Fish:		
(Diquat dibromide) LC_{50} (96 h)	Rainbow trout	6.1 mg ion/ℓ
(Paraquat dichloride) LC_{50} (96 h)	Rainbow trout	18.6 mg ion/ℓ
	Mirror carp	98.3 mg ion/ℓ
Daphnia:		
(Diquat dibromide) LC_{50} (48 h)		5.9 mg ion/ℓ
(Paraquat dichloride) EC_{50} (48 h)		4.4 mg ion/ℓ
Algae:		
(Diquat dibromide) EC_{50} (96 h)	*Pseudokirchneriella subcapitata*	1 ug ion/ℓ
(Paraquat dichloride) E_bC_{50} (96h)	Green algae	0.075 mg ion/ℓ
Birds:		
(Diquat dibromide)		
Acute oral LD_{50} (12 d)	Mallard ducks	83 mg ion/kg
Acute oral LD_{50} (14 d)	Partridges	158 mg ion/kg
Dietary LC_{50}	Japanese quail	721 mg ion/kg diet
	Bobwhite quail	1570 mg ion/kg diet
	Ring-necked pheasants	2004 mg ion/kg diet
	Mallard duck	> 2677 mg ion/kg diet
(Paraquat dichloride) Acute oral LD_{50}	Bobwhite quail	127 mg ion/kg
	Mallard ducks	54 mg ion/kg
LC_{50} (5+3d)	Bobwhite quail	711 mg ion/kg
	Japanese quail	698 mg ion/kg
	Mallard ducks	2932 mg ion/kg

	Ring-necked pheasants	1063 mg ion/kg
Worms:		
(Diquat dibromide)		
LC_{50} (14 d)		94 mg ion/kg dry weight
(Paraquat dichloride)		
LC_{50} (14 d)		> 1000 mg ion/kg

Plants:
(Diquat dibromide)
Metabolic breakdown of diquat bromide is very limited in plants. On plant surfaces, photochemical degradation occurs.
(Paraquat dichloride)
Photochemical degradation occurs. Degradation products which have been isolated include 1-methyl-4-carboxypyridinium chloride and methylamine hydrochloride.
ENVIRONMENTAL EFFECTS:
(Diquat dibromide)
Animals – In rats, following oral administration, only a small proportion was absorbed. The unabsorbed dose was excreted rapidly in faeces, and the absorbed dose extensively and rapidly excreted in urine.
(Paraquat dichloride)
Animals – In rats, following oral administration, 76-90% of the dose was excreted in the faeces, and 11-20% in the urine. Paraquat does not bio-accumulate, with > 90% of the dose eliminated in 72 hours.
Persistence and degradability:
(Diquat dibromide)
When adsorbed to soil, diquat is slowly degraded with DT_{50} values ranging from 1.2 to 41 y. When desorbed, it is quickly degraded by micro-organisms (DT_{50} of unadsorbed diquat ranged between 0.4 and 21 d.)
(Paraquat dichloride)
When adsorbed to soil, paraquat is slowly degraded with DT_{50} values ranging from 7 to 20 y. When desorbed, it is quickly degraded by micro-organisms (DT_{50} of unadsorbed paraquat <1 w).
Bio-accumulative Potential:
Not determined.
Mobility in soil:
(Diquat dibromide)
Diquat is rapidly and strongly adsorbed to soil and sediment (K_{OC} values between 2000 and 7 900 000 mℓ/g), resulting in complete deactivation. The potential risk to leach into groundwater is negligible.
(Paraquat dichloride)
Paraquat is rapidly and strongly adsorbed to soil and sediment (K_{oc} values between 8000 and 40 000 mℓ/g), resulting in complete deactivation. The potential risk to leach into groundwater is negligible.
Other adverse effects: Not determined.

13: DISPOSAL CONSIDERATIONS

Waste: Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product cannot be reused or re-processed. Never pour untreated waste or surplus product into public sewers or where there is any danger of run-off or seepage into water systems. Do not contaminate rivers, dams or any other water sources with the product or used containers. Comply with local legislation applying to waste disposal.
Container: Emptied containers retain product residues. Do not re-use the empty container for any other purpose. Triple rinse empty containers by inverting the empty container over the spray or mixing tank and allow draining 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 third of that of the container. Add the rinsings to the contents of the spray tank before destroying the container in the prescribed manner. 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. Observe all labelled safeguards until container is destroyed.

14: TRANSPORT INFORMATION

UN Number: 3016
Road Transport ADR/IRD:

Class:	6.1
Packaging group:	I
UN Proper Shipping Name:	bipyridilium pesticide, liquid, toxic. (**Paraquat** 120 g/ℓ + **Diquat** 80 g/ℓ)

Maritime Transport IMDG/IMO:

Class:	6.1
Packaging group:	I
UN Proper Shipping Name:	bipyridilium pesticide, liquid, toxic. (**Paraquat** 120 g/ℓ + **Diquat** 80 g/ℓ)

Marine Pollutant (Y/N): Yes.
Air Transport IATA/ICAO:

Class:	6.1
Packaging group:	I
UN Proper Shipping Name:	bipyridilium pesticide, liquid, toxic. (**Paraquat** 120 g/ℓ + **Diquat** 80 g/ℓ)

Special/Environmental Precautions: None known.
Transport in bulk (according to MARPOL 73/78, Annex II and the IBC code): Not available.

15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation for the mixture:
OHSA 1993 Regulations for Hazardous Chemical Substances.

Relevant information regarding restrictions: None.

EU regulation: Regulation EC1272/2008 (EU-GHS/CLP)

Other national regulations: None.

Chemical Safety Assessment carried out? No

16: OTHER INFORMATION

Packaging: Packed in 5, 10, 20, 25, 50 & 200 litres non-fluorinated plastic drums or pails and/or fluorinated containers/drums or pails and labelled according to South African regulations and guidelines.

Other hazard statements, abbreviations and explanations:

H301: Toxic if swallowed.
H311: Toxic in contact with skin.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H330: Fatal if inhaled.
H335: May cause respiratory irritation.
H372: Causes damage to organs through prolonged or repeated exposure.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.
IATA: International Air Transport Association.
IBC: International Bulk Chemical.
ICAO: International Civil Aviation Organization.
IMDG: International Maritime Dangerous Goods
IMO: International Maritime Organization.
LD_{50} value: The median lethal dose or the amount of a toxic agent that is sufficient to kill 50 percent of a population within a certain period of time.
OEL/RL: Occupational exposure limit-recommended limit.
TWA: Time-weighted average – The average exposure over a specified period, usually a nominal eight hours.
ST/STEL: Short-term exposure limits.
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 and 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.

END OF DOCUMENT
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For detailed information on revisions, contact the Registration holder