SAFETY DATA SHEET

Section 1: IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND SUPPLIER

Product Name:	**GRAMOXONE 250**
Design Code:	A12983A
Recommended Use:	For weed control in Clover seed crops, Drains, Forestry, Industrial Sites, Lucerne, Streets, Waterways and the control of Barley Grass.
Company Details:	**Syngenta Crop Protection Limited**
Address:	**Tower II, Level 7, 110 Symonds Street** **Private Bag 92618,** **Symonds Street** **AUCKLAND** **NEW ZEALAND**
Telephone number:	**(weekdays) 09 - 306 1500**
Emergency Telephone number:	**(24 Hours) 0800 734 607**
National Poisons & Hazchem Information Centre :	**0800 POISON (0800 764 766)**
Date of Preparation:	**11 November 2015**

Section 2: HAZARDS IDENTIFICATION

Hazard classification:	6.1A, 6.3A, 6.4A, 6.9A, 9.1A, 9.3B, 9.4B
Priority Identifier:	DANGER KEEP OUT OF REACH OF CHILDREN
Secondary Identifiers:	6.1A = May be fatal / harmful if swallowed, inhaled or absorbed through the skin. 6.3A = May cause skin irritation 6.4A = May cause eye irritation 6.9A = May cause organ damage from repeated oral exposure at high doses. 9.1A = Very toxic to aquatic organisms. 9.3B = Toxic to terrestrial vertebrates. 9.4B = Toxic to terrestrial invertebrates.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Pure Substance:	
Chemical Identity of pure substance:	1,1'-dimethyl-4,4'-bipyridinium dichloride
Common Name:	Paraquat dichloride
Synonyms:	PP148
CAS number:	1910-42-5

Mixture:

Chemical Identity of ingredients:

Ingredient	CAS no.	Content (% w/v)
Paraquat (present as paraquat dichloride	1910-42-5	25
other ingredients determined not to be hazardous	-	to 100%

Section 4: FIRST AID MEASURES

Necessary First Aid measures:

For advice contact the National Poisons Centre on 0800 POISON (0800 764 766) or a doctor immediately. Begin artificial respiration if the victim is not breathing. Use mouth to nose rather than mouth to mouth. Obtain medical attention.

Swallowed:	**SPEED IS ESSENTIAL.** Get to a doctor or hospital immediately. **DO NOT** induce vomiting. If available, give an adsorbent such as activated charcoal, bentonite or Fuller's Earth.
Eye:	If concentrate or spray solution enters the eyes wash it out immediately with water. Remove contact lenses.
Skin:	If skin contact occurs remove contaminated clothing and wash affected areas thoroughly with running water.
Inhaled:	If inhaled move the victim to fresh air immediately

Poisoning symptoms:

Symptoms include inflammation of mouth, throat and oesophagus, gastrointestinal discomfort and diarrhoea.
Mild poisoning occurs at < 20 mg paraquat ion/kg body weight and the effects are vomiting and diarrhoea.
Moderate to severe poisoning occurs at 20 – 30 mg paraquat ion/kg body weight and the effects are vomiting, abdominal discomfort, soreness and inflammation of the mouth, throat and oesophagus, difficulty in swallowing and, later, diarrhoea. Ulceration of the lips, mouth, throat and intestine may follow within 24 – 48 hours. Kidney and liver damage may appear 1 – 3 days after exposure. Can cause death by a delayed proliferating fibrosis of the lung within 1 – 3 weeks.
Lethal poisoning occurs at > 30 mg paraquat ion/kg body weight and the effects are nausea and vomiting, and can cause death by multi-organ failure and circulatory collapse within 48 hours.

Workplace facilities:

No specific facilities required. Standard emergency equipment must be available.

Hygiene Practices:

Avoid contact with skin and eyes and inhalation of concentrate or spray mist. When mixing or applying, wear protective clothing, including face shield, impervious gloves and footwear. If clothing becomes contaminated with product, remove clothing immediately. DO NOT eat, drink or smoke while using. Wash hands and exposed skin thoroughly with soap and water before meals and after work. Wash protective clothing daily after work.

Notes for Medical Personnel:

RAPID TREATMENT IS ESSENTIAL.
Refer to the booklet 'Paraquat Poisoning. A Practical Guide to Diagnosis, First Aid and Hospital Treatment. (www.syngenta.com/)

Treatment: Ensure airway, breathing and circulation are intact.
Administer either: activated charcoal (100 g for adults or 2 g/kg body weight in children) OR
Fuller's Earth (15% solution - 1 litre for adults or 15 mL/kg body weight in children)

NOTE: The use of gastric lavage without administration of an adsorbent has not shown any clinical benefit.

DO NOT give supplemental oxygen.
Eye splashes from concentrated material should be treated by an eye specialist after initial treatment. With the possibility of late onset of corneal ulceration it is advised that patients with paraquat eye injuries are reviewed by a specialist the day after first presentation.

Section 5: FIRE-FIGHTING MEASURES

Type of Hazard:	This product is non-combustible.
Fire Hazard Properties:	Combustion products are toxic and or irritant. Measures have to be taken to prevent the contaminated extinguishing agent from seeping into the ground or from spreading uncontrollably.
Regulatory Requirements:	not required
Extinguishing Media and methods:	*Small fires*: Use alcohol-resistant foam, dry chemical, carbon dioxide extinguisher or fine-water spray. DO NOT use direct jet of water. *Large fires*: Use alcohol-resistant foam or water spray. DO NOT use direct jet of water. Do not allow run-off from fire fighting to enter drains or water courses.
Hazchem Code:	2X
Recommended Protective Clothing:	When fighting a major fire wear an air-supplied respirator. Wear protective clothing and self-contained breathing apparatus.

Section 6: ACCIDENTIAL RELEASE MEASURES

	Emergency Procedures:
Personal Precautions:	Ensure suitable personal protection during removal of spillages. This means wearing eye protection, chemically resistant gloves, boots and overalls.
Environmental Precautions:	Washings must be prevented from entering surface water drains or waterways.
Procedure for spill:	(1) Keep all bystanders away. (2) Wear goggles, half face-piece respirator with combined dust and vapour cartridge, full length clothing and PVC gloves. (3) Reposition any leaking containers so as to minimise further leakage. (4) Dam and absorb spill with an absorbent material (e.g. sand or soil). (5) Shovel the absorbed spill into drums. (6) Decontaminate the spill area with detergent and water and rinse with the smallest volume of water practicable.
Procedure for Disposal:	Disposal of the absorbed material will depend upon the extent of the spill. Contaminated material must be disposed of in accordance with all local authority requirements. It is suggested: • For quantities up to 50 litres of product bury in a secure approved landfill site. • For quantities greater than 50 litres seek advice from the manufacturer (use emergency contact number below) before attempting disposal. Contain in a secure location until disposal method is established.

Section 7: HANDLING AND STORAGE

Handling:

Precautions for safe handling:	Avoid skin and eye contact and the inhalation of vapour and mist. Wear overalls, face shield, elbow-length impervious gloves, splash apron and rubber boots. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using. If inhalation risk of vapour or spray exists wear organic vapour respirator meeting the requirements of Standards Australia/New Zealand.
Regulatory Requirements:	This product must be tracked.
Handling practices:	Avoid contact with skin and eyes and inhalation of concentrate or spray mist. When using, do not eat, drink or smoke. Wash face and hands before eating, drinking or smoking.
Approved Handlers:	This product must be under the control of an Approved Handler.

Storage:

Conditions for Safe Storage:	Keep out of reach of children. Keep in original containers and tightly closed. Keep away from food, drink and animal feeding stuffs. Store in a cool, dry, well ventilated place and protect from sunlight.
Store Site Requirements:	Signage will be required at sites holding 50 litres or more of any product classified as 6.1A/9.1A (eg GRAMOXONE) Sites with 100 litres or more require secondary containment
Packaging:	Store in original container, tightly closed, away from foodstuffs.

Section 8: EXPOSURE CONTROL / PERSONAL PROTECTION

ALWAYS READ AND FOLLOW THE LABEL INSTRUCTIONS AND WARNINGS

Workplace Exposure Guidelines:

Workplace Exposure Standards:	Paraquat (respirable sizes) 8 hr TWA 0.1 mg/m^3 Emetic 8 hr TWA 0.02 mg/m^3 Pyridine Base (can be absorbed by skin) 8 hr TWA 1 ppm 5 mg/m^3
Application in the workplace:	Not required
Exposure standards outside the workplace:	Not required
Engineering controls:	No special requirements. Product is used outdoors. Containment and/or segregation is the most reliable technical protection measure if exposure cannot be eliminated. The extent of these protection measures depends on the actual risks in use. If airborne mists or vapours are generated, use local exhaust ventilation controls. Assess exposure and use any additional measures to keep airborne levels below any relevant exposure limit. Follow precaution statements on the label and the use and safety directions in Code of Practice for the Management of Agrichemical NZS8409.

Workplace Exposure Guidelines continued:

Personal Protection:	Use only protective equipment bearing the mark of the Standards Association with Australia/ New Zealand. In case of heavy exposure, wear half face-piece respirator with combined dust and vapour cartridge, chemical resistant gloves and heavy duty cotton overalls.
General Hygiene:	Change work clothes daily. May irritate the eyes and skin. Avoid contact with eyes and skin. Do not inhale spray mist. If product gets on skin immediately wash area with soap and water. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear dark blue liquid
Odour:	Characteristic of pyridine base
Boiling / Melting Point:	100°C
Specific Gravity:	1.1 g/cm^3 at 20°C
Flash point:	Not applicable (aqueous)
Flammability:	Not applicable
Combustibility:	Non combustible
Solubility in water:	Soluble
Volatility:	Not volatile
Vapour Pressure:	10^{-9} mmHg (for the active ingredients)
pH value:	4-8
Corrosiveness:	Corrosive in contact with metals

Section 10: STABILITY AND REACTIVITY

Stability of the Substance:	Stable under standard conditions.
Conditions to Avoid:	None known
Material to Avoid:	aluminium, mild steel, iron
Hazardous decomposition products	Following evaporation of aqueous component, combustion or thermal decomposition will evolve toxic and irritant vapours.
Hazardous polymerisation	not known
Specific Data	not applicable

Section 11: TOXICOLOGICAL INFORMATION

HSNO Classifications:

6.1A = May be fatal / harmful if swallowed, inhaled or absorbed through the skin.
6.3A = May cause skin irritation
6.4A = May cause eye irritation
6.9A = May cause organ damage from repeated oral exposure at high doses.

Acute Effects (similar formulation)	
Swallowed:	LD_{50} 612 mg/kg (female rat) LD_{50} 707 mg/kg (male rat)
Dermal absorption:	LD_{50} 735 mg/kg (female rat) LD_{50} 590 mg/kg (male rat)
Inhaled:	**No data**
Irritation Eye: Skin:	**IRRITANT** (rabbit) **IRRITANT** (rabbit)
Sensitization	**NOT A SENSITISER** (guinea pigs)

Chronic / Long Term Effects *(Active Ingredient)*

Paraquat technical has been extensively tested on laboratory mammals and in test-tube systems. Studies in animals have shown that repeated doses of paraquat do not produce carcinogenic nor teratogenic effects or adverse reproductive effects. The dietary no effect level in the rat was 25 ppm of paraquat over 2 years. The ADI (Acceptable Daily Intake) for humans (paraquat cation) is 0.004 mg/kg/day.

Section 12: ENVIRONMENTAL INFORMATION

HSNO Classifications:

9.1A = Very toxic to aquatic organisms.
9.3B = Toxic to terrestrial vertebrates.
9.4B = Toxic to terrestrial invertebrates.

Environmental Risk and Safety Phrases:	Avoid contamination of any water supply with chemical or empty container

The information presented below is for the active ingredient, paraquat. A thorough review of environmental information is not possible in this document.

Ecotoxicity Effects	
Toxicity to Birds:	LD_{50} (8 d) = 262-380 mg/kg (hens)
Acute toxicity to fish:	LC_{50} (96 h) = 55 mg/L (Rainbow trout) LC_{50} (96 h) = 2.5-13 mg/L (brown trout)
Growth inhibition, Algae:	ErC_{50} (72 h)= 0.34 mg/L (green algae)
Toxicity to aquatic Invertebrates:	LC_{50} (48h) = 6.1 mg/L (Daphnia magna (water flea))
Toxicity to soil dwelling organisms:	LC_{50} (14 days) = >1380 mg/kg (earthworms)
Toxicity to Bees:	LD_{50} (72 h, oral) = 36 µg/bee LD_{50} (72 h, contact) = 150 µg/bee

Environmental Fate

The information presented here is for the active ingredient, paraquat.
Distribution and Persistence: paraquat is rapidly absorbed and deactivated by soil. There is no mobility in soil or leaching into ground water; K_d >10,000. K_{ow} logP = -4.5 (20°C). There is rapid photodegradation in water and on plants. Paraquat is rapidly degraded by soil organisms (DT_{50} of unadsorbed paraquat <1 week). Strong binding in soil increases persistence.

Section 13: DISPOSAL CONSIDERATIONS

Product Disposal:	Dispose of this product only by using according to the label, or at an approved landfill or other approved facility.
Container Disposal:	Triple rinse empty container and add rinsate to the spray tank. Recycle empty container through Agrecovery (0800 247 326, www.agrecovery.co.nz). Otherwise crush and bury in a suitable landfill. DO NOT reuse this container for any other purpose.

Section 14: TRANSPORT INFORMATION

Rail / Road (RID/ADR)	UN-No:	2922
	Class:	8
	Subsidiary Class:	6.1 (toxic)
	Packaging Group:	III
	Proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S. (Paraquat dichloride)
Sea (IMDG-Code)	UN-No:	2922
	Class:	8
	Subsidiary Class:	6.1 (toxic)
	Packaging Group:	III
	Proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S. (Paraquat dichloride))
	MARINE POLLUTANT:	Yes
Air (ICAO/IATA)	UN-No:	2922
	Class:	8
	Subsidiary Class:	6.1 (toxic)
	Packaging Group:	III
	Proper shipping name:	CORROSIVE LIQUID, TOXIC, N.O.S. (Paraquat dichloride)

Section 15: REGULATORY INFORMATION

HSNO Approval Number:	HSR000828
HSNO Controls (inc. Tracking and Record Keeping):	See http://www.epa.govt.nz/search-databases/Pages/controls-search.aspx for controls.
ACVM Registration:	P 110
ACVM Controls:	See www.foodsafety.govt.nz/industry/acvm for registration conditions.

Section 16: OTHER INFORMATION

Note: **This product is a registered agricultural chemical and must therefore be used in accordance with the container label directions. A comprehensive package of toxicological and environmental data for the active ingredients of this product has been submitted to the Government health and environment authorities and has been evaluated by expert toxicologists and environmental scientists.**

CONTACT POINT: Business Manager - Crop Protection: (09) 306 1503
24 HOURS EMERGENCY CONTACT: **0800 734 607**

This Material Safety Data Sheet 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 MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

DISCLAIMER

This product complies with the specifications in its statutory registration. Implied terms and warranties are excluded. Syngenta's liability for breach of the express or any non-excludable implied warranty is limited to product replacement or purchase price refund. The purchaser must determine suitability for intended purpose and take all proper precautions in the handling, storage and use of the product including those on the label and/or safety data sheet failing which Syngenta shall have no liability.