

Rygel Pre-Seed 250 Herbicide

1. IDENTIFICATION OF THE CHEMICAL PRODUCT AND COMPANY

Supplier: Rygel Australia Pty Ltd
ACN: 106 839 007
Street Address: 103 Ordish Road, Dandenong South, Vic 3175
Telephone: (03) 9768 2803
Facsimile: (03) 9768 2804
Emergency telephone number: National Poisons Information Centre: Dial 13 1126.

Product name: Rygel Pre-Seed 250 Herbicide
Product Use: Herbicide for the control of a wide range of grasses and broadleaf weeds.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Formulation Type: Aqueous concentrate
Active Ingredients: paraquat dichloride and diquat dibromide

Chemical Entity	CAS NO.	Proportion (% weight/weight)
Paraquat (present as paraquat dichloride)	1910-42-5	11.5% (135 g/L)
Diquat (present as diquat dibromide)	85-00-7	9.8% (115 g/L)
Water	7732-18-5	30 – 60%
Emulsifiers		10 – 29%
Other ingredients determined not to be hazardous		< 1%

3. HAZARDS IDENTIFICATION

Based on available information, classified as toxic according to health criteria of NOHSC Australia.

UN number: 3016
Dangerous goods class: 6.1 (toxic)
Subsidiary risk: none
Chemical type: bipyridilium
Hazchem code: 2X
Poisons schedule: 7
Packing group: III
EPG/IERG: 6B5

4. FIRST AID MEASURES

OBTAIN IMMEDIATE MEDICAL ATTENTION. SPEED IS ESSENTIAL.

Swallowed: If poisoning occurs get to a doctor or hospital quickly, warning by telephone of the estimated arrival time so that treatment is not delayed. If more than 15 minutes from a hospital induce vomiting, if this has not already occurred, by tickling back of throat with a clean, blunt instrument (eg spoon handle). DO NOT delay the start of treatment.

Eye: Immediately irrigate with copious quantities of water for at least 20 minutes. Eyelids to be held open. Remove clothing if contaminated and wash skin. Urgently seek medical assistance. Transport to hospital or medical centre. If splashed with the concentrate, patients should be reviewed after 24 hours. Referral to an ophthalmologist should be considered.

Skin: Immediately take off all contaminated clothing. Wash skin immediately with water followed by soap and water. If skin is broken, the component paraquat can be

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absorbed through the skin. Seek medical advice. Contaminated clothing should be laundered before reuse.

Inhaled: Remove victim from exposure. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Seek medical advice.

ADVICE TO DOCTOR

Rapid treatment is essential. Refer to "Paraquat Poisoning. A Practical Guide to Diagnosis, First Aid and Hospital Treatment" (2003 or later edition) – available at most major treatment hospitals, Poisons Information Centres and Rygel Australia Pty Ltd.

Treatment: Wash out stomach and test urine and gastric aspirate (if clear) for presence of paraquat. Give up to 1 litre of 15% aqueous suspension of Fuller's Earth orally or via gastric tube, together with a suitable purgative (200mL of an aqueous solution of mannitol). Repeat administration of absorbent plus purgative until absorbent is seen in stools. This should normally take between 4 and 6 hours after the start of treatment.

Do not use supplemental oxygen.

With the possibility of late onset conjunctival ulceration it is advised that patients with paraquat eye injuries are reviewed the day after first presentation. At the review, consideration should be given to treating the eyes with a local antibiotic preparation to prevent secondary infection. Local treatment with a suitable steroid will aid resolution of granulation tissue. Corneal oedema, which may persist for up to 3 – 4 weeks, may cause blurring of vision.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Use water fog (or if unavailable fine water spray), foam, dry agent, (carbon dioxide, dry chemical powder).

Hazards from combustion products

Not combustible, however, following evaporation of aqueous component residual material may burn. On burning will emit toxic fumes. Fire fighters must wear self contained breathing apparatus if there is risk of exposure to products of combustion.

Precautions for Firefighters and Special Protective Equipment

Firefighters to wear self-contained breathing apparatus if risk of exposure to vapour or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedure: Wash area down thoroughly with water or cover with absorbent (soil, sand, vermiculite). Collect and seal in properly labelled drums for disposal. Wash area down effected area with excess water. Spills are slippery.

If contamination of sewers or waterways has occurred advise the local emergency services.

7. HANDLING AND STORAGE

For use by licensed pest-control operators or primary producers only (Victorian requirement). Store in the closed original container in a dry, cool, well-ventilated locked room or place away from children, animals, food, feedstuffs, seed and fertilisers. Do not store for prolonged periods in direct sunlight. **Do not put into drink containers.**

This material is a Schedule 7 Poison and must be stored, maintained and used in accordance with the relevant regulations.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

National occupational exposure limits

EXPOSURE STANDARDS

There are no assigned values for this specific product; however, exposure standards for the active ingredients are as follows:

	TWA ppm mg/m3
Paraquat (respirable sizes)	0.1
Diquat	0.5

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Pyridine base

1.5 Can be absorbed by skin

As published by the National Occupational Health and Safety Commission –

TWA – the Time-Weighted Average airborne concentrations over an eight-hour working day, for a five-day working week over an entire working life.

STEL (Short Term Exposure Limit) – the average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour work day. According to current knowledge these concentrations should neither impair the health of nor cause undue discomfort to nearly all workers.

These exposure standards are not applicable to field use.

All atmospheric contamination should be kept to as low a level as is workable. Exposure Standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals.

They are not a measure of relative toxicity.

If the directions for use on the product label are followed, exposure of individuals using the product should not exceed the above standard. The standard was created for workers who are routinely, potentially exposed during manufacture of the product.

Re-entry Period - Do not enter treated areas without protective clothing (waterproof footwear, clothing and gloves) until spray has dried.

Engineering Controls

In the workplace – ensure ventilation is adequate to maintain air concentrations of components below quoted Exposure Standards. Avoid generating and inhaling mists. Keep containers closed when not in use.

Personal Protection

Wear overalls, rubber boots, face shield, safety shoes, gloves (L), apron.

Manufacture, Packaging and Transport: Avoid skin and eye contact and the inhalation of vapour and mist. Wear overalls, face shield or goggles, 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 AS/NZ 1715 and AS/NZ 1716.

Preparation and Use of Product: Avoid contact with eyes, skin and clothing. When opening the container and preparing product for use wear cotton overalls buttoned to the neck and wrist, washable hat, elbow-length PVC gloves, face shield or goggles and half face-piece respirator or disposable respirator. Do not work in spray mist.

When there is a risk of exposure to spray mist wear a face mask or respirator covering nose and mouth and capable of filtering spray droplets. A high efficiency type particulate respirator is recommended, but in any event use a respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash contaminated clothing, gloves and face shield or goggles. Avoid contacting vegetation wet with spray, but if necessary to do so, wear waterproof footwear and waterproof protective clothing and gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	dark green/blue liquid
Flash Point:	not applicable (aqueous)
Odour:	Characteristic of pyridine base
Flammability:	non combustible
Boiling/Melting point:	100°C approx.
Combustibility:	non combustible
Vapour pressure:	not available
Solubility in water:	soluble
Specific gravity:	1.16 g/cm ³ at 20°C
Volatility:	not volatile
pH (1% aqueous):	5 – 6.5
Corrosiveness:	corrosive

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10. STABILITY AND REACTIVITY

Stability: Avoid strong oxidising agents.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

This product is **toxic** according to NOHSC Australia.

Ingestion: HARMFUL

Rapid treatment is essential. The immediate effects of poisoning depend on the dose of paraquat and diquat absorbed into the blood. Mild poisoning occurs at < 20 mg paraquat ion/kg body weight and the effects are vomiting and diarrhea.

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, diarrhea. Ulceration of 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. The lethal dose of diquat dibromide for man is approximately 4 – 6 g of diquat (equivalent to approx. 60 mg/kg body weight).

The following acute oral toxicity results have been determined for the active ingredients of the product:

Paraquat dichloride: LD50 (rat) = 283 mg/kg (93.4 mg paraquat ion/kg)

Diquat dibromide: LD50 (rat) = 1009 mg/kg, (214 mg diquat ion/kg)

Skin contact: IRRITANT

Contact with skin will result in irritation. The product is also a skin sensitiser. Can cause inflammation and in severe cases blistering of the skin. Contamination of the nails may cause white spots or in severe cases cracking and loss of the nail. Normal growth follows without delay. Intact skin is a very effective barrier to paraquat. Broken skin removes the barrier and paraquat may be absorbed with effects as outlined above under "Swallowed". Repeated or prolonged skin contact may lead to allergic contact dermatitis.

Modelling predicted for intact human skin and diluted solutions that systemic toxicity would be unlikely, but the risk increased significantly with damaged skin or concentrated solutions.

The following acute dermal toxicity results have been determined for the active ingredients of the product:

Paraquat dichloride: LD50 (rat) = > 2000 mg/kg (> 660 mg paraquat ion/kg)

Diquat dibromide: LD50 (rat) = > 2000 mg/kg (> 424 mg diquat ion/kg)

Eye contact: IRRITANT

Eye irritation may be delayed. May lead to severe, painful irritation and ulceration of corneal and conjunctival epithelium which may give rise to secondary infection. Loss of corneal and conjunctival epithelium and even mild iritis can occur with the risk of secondary infection and consequent residual corneal scarring.

Corneal oedema may persist for up to 3-4 weeks with temporary blurring of vision, permanent damage to eyes is a possibility.

Inhalation: TOXIC

Highly toxic if inhaled. However, unlikely to be hazardous by inhalation because of low vapour pressure of the material at ambient temperature. Nose bleeding and soreness of the throat may result from spray mist or dust trapped on the nasal mucosa. Irritating to the respiratory system. Pulmonary oedema may occur up to 48 hours after exposure and could prove fatal.

This product contains a stenching agent to give an offensive smell. This has been done to reduce the likelihood of accidental ingestion. This stenching agent may cause headaches and nausea in some people when inhaled. The presence of this offensive smell in the air does not necessarily indicate the presence of paraquat.

The following acute inhalation toxicity results have been determined for the paraquat dichloride:

LC50 = 0.5 – 1.5 µg/L/4hrs

CHRONIC TOXICITY

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. Ingestion studies in animals have shown that repeated doses of diquat produce

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cataracts in test animals (dog, rat). These effects have not been seen in occupationally exposed humans.

The ADI (Acceptable Daily Intake) for humans (paraquat ion) is 0.004 mg/kg/day.

The ADI (Acceptable Daily Intake) for humans (diquat ion) is 0.002 mg/kg/day.

12. ECOLOGICAL INFORMATION

Ecological information: The active ingredients paraquat and diquat are toxic to aquatic organisms. 96hr LC50 (rainbow trout): 55 mg/L (static) for paraquat and 21 mg/L for diquat. The 96 hr LC50 (brown trout): 2.5 – 13 mg/L for paraquat and 96 hr LC50 (mirror carp): 67 mg/L for diquat. ErC50 72 hours for green algae is 0.34 mg/L.

Paraquat and diquat are both highly toxic to birds. The oral LD50 for hens is 262 – 380 mg/kg for paraquat and 200 – 400 mg/kg for diquat.

Environmental fate: Distribution and persistence - paraquat and diquat are both rapidly absorbed and deactivated by soil. There is no mobility in soil or into ground water. There is evidence of photo-degradation in water and plants.

13. DISPOSAL CONSIDERATIONS

SPILLS AND DISPOSAL

In case of spillage it is important to take all steps necessary to:

- Avoid eye and skin contact.
- Avoid contamination of waterways and drains.

Procedure for spill:

- (1) Keep all bystanders away.
- (2) Wear full length clothing and PVC gloves to prevent skin and eye contamination.
- (3) Re-position 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) Disposal of the absorbed material will depend upon the extent of the spill.
 - For quantities up to 50L of product bury in a secure landfill site.
 - For quantities greater than 50L seek advice from the manufacturer (use emergency contact number below) before attempting disposal. Contain in a secure location until disposal method is established.
- (7) Decontaminate the spill area with detergent and water and rinse with the smallest volume of water practicable.
- (8) For large spills clear area of all unprotected personnel. Rapid decontamination of paraquat is essential. Crystalline material from dried concentrate may become suspended in air causing irritation and nose bleeds. Wear protective equipment to prevent skin and eye contamination and inhalation of mists and dust. If contamination of crops, sewers or waterways has occurred advise emergency services or State Department of Agriculture.
- (9) Remove and wash all protective clothing and equipment. Change contaminated clothing immediately. Launder as soon as possible. Shower, using liberal quantities of soap and water on completion of the mopping up operations.

Dispose of empty, used containers by:

- (a) Triple rinsing or preferably pressure rinsing containers with water. Add the rinsings to the spray tank. DO NOT dispose of undiluted chemicals on site.
- (b) If recycling, replace cap and return clean containers to recycler or designated collection point.
- (c) If not recycling, break, crush or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

Returnable containers (110 L):

- (a) Empty contents fully into application equipment. Do not rinse.
- (b) Close all valves and return to designated collection point for re-use.

14. TRANSPORT INFORMATION

Transport Classification – Road and Rail:

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UN No.: 3016 **Proper Shipping Name:** BIPYRIDILIUM PESTICIDES LIQUID, TOXIC, N.O.S.

Class: 6.1 (CONTAINS PARAQUAT AND DIQUAT)

Packing Group: III **Hazchem:** 2X

Segregation of Dangerous Goods: Not to be loaded with explosives (class 1), nitro-methane, food and food packaging in any quantity, however, exemptions may apply.

15. REGULATORY INFORMATION

Regulatory information:

Hazard category: T Toxic

Xi Irritant

Risk phrases:

R24/25 Toxic in contact with skin and if swallowed.

R26 Very toxic by inhalation.

R36/37/38 Irritating to eyes, respiratory system and skin.

R43 May cause sensitization by skin contact.

R48/25 Toxic: danger of serious damage to health by prolonged exposure if Swallowed.

R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases:

S1/2 Keep locked-up and out of the reach of children.

S13 Keep away from food, drink and animal feeding stuffs.

S20/21 When using, do not eat, drink or smoke.

S23 Do not breathe spray.

S35 This material and its container must be disposed of in a safe way.

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection

S45 In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).

S57 Use appropriate containment to avoid environmental contamination.

16. OTHER INFORMATION

All information contained in this document is as accurate as possible based on information submitted by raw material suppliers. **Rygel Australia Pty Ltd** will not be responsible for any damages that may result from reliance on the information contained herein.

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