

MATERIAL SAFETY DATA SHEET

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MSDS No. FMC/PARDIQ/1

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: FMC Paraquat + Diquat Herbicide

Other Names: Paraquat + Diquat, a Group L Herbicide.
Use: Agricultural herbicide for the control of a wide range of weeds.
Company: FMC Crop Protection Pty Ltd.
Address: Unit 26, 8 Metroplex Avenue, Murarrie, Qld 4172
Telephone Number: 07 3908 9222 **Fax Number:** 07 3908 9221
Emergency Telephone Number: 1800 033 111 (All hours - Australia wide).

SECTION 2 HAZARDS IDENTIFICATION

**Classified as Hazardous according to criteria of the Safe Work Australia.
Classified as a Dangerous Good according to the ADG Code.**

Risk Phrases: R21/22 Harmful in contact with skin and if swallowed.
R26 Very toxic by inhalation.
R37/38 Irritating to respiratory system and skin.
R41 Risk of serious damage to eyes.
R43 May cause sensitization by skin contact.
R48/25 Toxic: danger of serious damage to health by prolonged exposure if swallowed.

Safety Phrases: S1/2 Keep locked up and out of reach of children.
S13 Keep away from food, drink, and animal feeding stuffs.
S23 Do not breathe vapour or spray.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28 After contact with skin, wash immediately with plenty of water
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S38 If insufficient ventilation, wear suitable respiratory equipment.
S45 In case of accident or if you feel unwell, seek medical advice immediately.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

CHEMICAL	CAS NUMBER	PROPORTION
Paraquat (present as paraquat dichloride)	1910-42-5	600 g/L
Diquat (present as diquat dibromide)	85-00-7	115 g/L
Other ingredients (including water) determined not to be hazardous		Balance

SECTION 4 FIRST AID MEASURES

FIRST AID

Swallowed: RAPID TREATMENT IS ESSENTIAL IN CASE OF PARAQUAT POISONING.

If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label, or contact the Poisons Information Centre phone Australia 13 11 26. Make every effort to prevent vomit from entering the lungs by careful placement of the patient.

SECTION 4 FIRST AID MEASURES (Continued)

Swallowed: The above first aid instructions are mandated by the Commonwealth Department of Health and Ageing via the National Drugs and Poisons Schedule. These instructions are suitable for ingestion of spray solution and small amounts of concentrate; however, if SUBSTANTIAL AMOUNTS of the concentrate have been swallowed (more than about 5 mL) AND if medical assistance is more than 30 minutes away, the induction of vomiting should be CONSIDERED, preferably based on MEDICAL ADVICE if a physician can be contacted by phone. All care must be taken to prevent vomit from being inhaled. Do not give anything by mouth to a semi-conscious or unconscious person.

Immediately transfer patient to nearest hospital or medical centre, warning by telephone of the estimated time of arrival so that the start of treatment is not delayed.

Eye: If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes. Seek medical advice immediately.

Skin: Contact of the concentrate with abraded skin or skin with cuts must be avoided. Wash affected areas thoroughly with soap and water. Remove contaminated clothing and laundry before re-use. Seek medical advice, but only after the exposed skin has been thoroughly washed.

Inhaled: Remove patient from exposure, keep warm and at rest. Obtain medical attention urgently.

Advice to Doctor: Rapid treatment for PARAQUAT poisoning is essential. SPEED IS ESSENTIAL. Evacuation of the stomach and stomach washout should be carried out as quickly as possible. A booklet entitled 'Paraquat Poisoning, a practical guide to diagnosis, first aid and hospital treatment' (prepared by Syngenta) or 'The Treatment of Paraquat Poisoning: a guide for doctors' (prepared by Orica Australia) is available at major hospitals or Poison Information Centres.

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 (200 mL of an aqueous solution of mannitol). A 7% suspension of bentonite in 10% glycerol in water should be used if Fuller's Earth is unavailable. Repeat administration of absorbent plus purgative until absorbent is seen in the stools. This should normally take between 4 and 6 hours after the start of treatment. Do not use supplemental oxygen.

SECTION 5 FIRE FIGHTING MEASURES

Specific Hazard: Not flammable. Choose extinguishing media to suit the burning material. Contain all runoff. Hazchem 2XE.

Hazards from combustion products: There is no risk of an explosion from this product under normal circumstances if involved in a fire. Product is unlikely to decompose until heated to dryness. On further heating will emit toxic fumes. Firefighters to wear self-contained breathing apparatus and suitable protective clothing if risk to of exposure to vapour or smoke.

Precautions for fire-fighters and special protective equipment: Isolate fire area. Evacuate downwind. Wear full protective clothing and self-contained breathing apparatus. Do not breathe or contact smoke, gases or vapours generated.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Emergency procedures: Isolate and post spill area. Wear as a minimum, cotton overalls buttoned to the neck and wrist, a washable hat, elbow-length PVC gloves, face shield or goggles, and half facepiece respirator or disposable respirator. Large spills should be dyked or covered to prevent dispersal. Vacuum, shovel or pump spilled material into an approved container and dispose of as listed below. Keep out unprotected persons and animals.

Material and methods for containment and cleanup procedures: To decontaminate spill area, tools and equipment, wash with detergent and water and add the solution to the drums of wastes already collected and label contents. Absorb, as above, any excess liquid and add both solutions to the drums of waste already collected. Dispose of drummed wastes, including decontamination solution in accordance with the requirements of Local or State Waste Management Authorities. Do NOT allow spilled product or wash solution to enter sewers, drains, dams, creeks or any other waterways.

SECTION 7 | HANDLING AND STORAGE

Precautions for Safe Handling: Ensure containers are kept closed until using product. Very dangerous, particularly the concentrate. Product is poisonous if absorbed by skin contact, inhaled or swallowed. Will irritate the eyes, nose, throat and skin. Attacks eyes. Protect eyes while using. Avoid contact with eyes, skin and clothing. DO NOT inhale spray mist. When opening the container, preparing product for use and using the prepared spray, wear cotton overalls buttoned to the neck and wrist, a washable hat, elbow-length PVC gloves, face shield or goggles, and half facepiece respirator or disposable respirator. If clothing becomes contaminated with product, or wet with spray, remove contaminated clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. Avoid contact with spray mist. DO NOT inhale spray mist. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.

Do not continue to use if skin irritation or nose bleed occurs. This may be caused by exposure to stray mist as the result of incorrect use of equipment or adverse climatic conditions. Stop and review handling and spraying techniques before further spraying. If symptoms persist seek medical advice.

When there is a risk of exposure to spray mist, wear waterproof footwear and waterproof protective clothing, impervious gauntlet length gloves (rubber or PVC), goggles and a face mask and 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 which complies with the requirement of AS1716 (Standards Association of Australia). Further advice on safety equipment should be obtained from a safety equipment manufacturer.

Avoid contacting vegetation wet with spray, but if necessary to do so, wear waterproof footwear and waterproof protective clothing and gloves.

Conditions for Safe Storage: KEEP OUT OF REACH OF CHILDREN. Store in the closed, original container in a dry, cool, well-ventilated, locked room or a place away from children, animals, food, feedstuffs, seed and fertilisers. DO NOT store for prolonged periods in direct sunlight. This product is a Schedule 7 Poison (S7) and must be stored, transported and sold in accordance with the relevant Health Department regulations. This product is a Dangerous Good - Class 6.1.

SECTION 8 | EXPOSURE CONTROLS / PERSONAL PROTECTION**National Exposure Standards:**

No exposure guidelines have been established for this product by Safe Work Australia, but exposure guidelines have been established for the active ingredients (Paraquat dichloride and Diquat dibromide) and are presented below:

Atmospheric Contaminant	Exposure Standard (TWA)	STEL (mg/m ³)
Paraquat dichloride	0.1 mg/m ³	Not set
Diquat dibromide	0.5 mg/m ³	Not set

TWA = Time-Weight Average STEL = Short Term Exposure Limit

Biological Limit Values:

No biological limit allocated.

Engineering controls:

Use in ventilated areas adequate to keep exposure below the TWA. Keep containers closed when not in use. Some people who are extremely sensitive to the product may develop nose bleeds when handling the concentrate. If possible, these people should not handle the material; if they must, provide effective local ventilation.

Personal Protective equipment (PPE):

General: When opening the container, preparing product for use and using the prepared spray, wear cotton overalls buttoned to the neck and wrist, a washable hat, elbow-length PVC gloves, face shield or goggles, and half facepiece respirator or disposable respirator. If clothing becomes contaminated with product, or wet with spray, remove contaminated clothing immediately.

Precautions: If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. Avoid contact with spray mist. DO NOT inhale spray mist.

SECTION 8 | EXPOSURE CONTROLS / PERSONAL PROTECTION (Continued)

Personal Hygiene: After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water, face shield or goggles and contaminated clothing. Clean water should be available for washing in case of eye or skin contamination. Shower at the end of the workday.

SECTION 9 | PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear dark blue liquid.
Odour: Obnoxious odour.
Boiling Point: ~100°C
Solubility in Water: Soluble in water.
Specific Gravity: 1.1
pH Value: 5.0 – 6.5
Flammability: Non combustible material.
Poison Schedule: Schedule 7 (S7) poison.

SECTION 10 | STABILITY AND REACTIVITY

Chemical Stability: Product is considered stable in ambient conditions for a period of at least 2 years after manufacture. Paraquat and diquat are inactivated by adsorption onto clay.

Conditions to avoid: Do not store for prolonged periods in direct sunlight.

Incompatible materials: Paraquat and diquat are highly corrosive to most metals, e.g. aluminium, zinc and iron.

Hazardous decomposition products: Product is unlikely to decompose until heated to dryness. On further heating will emit toxic fumes.

Hazardous reactions: Keep away from strong oxidising agents.

SECTION 11 | TOXICOLOGICAL INFORMATION

Swallowed: TREATMENT OF PARAQUAT POISONING MUST COMMENCE AS RAPIDLY AS POSSIBLE.

Rapid treatment is essential. The immediate effects of poisoning depend on the dose of paraquat absorbed into the blood. 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. 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.

Eye: Eye irritation may be delayed. May lead to ulceration of corneal and conjunctival epithelium giving rise to secondary infection. Although healing may be slow, the injury is superficial and with proper medical care will be complete, even in severe cases

Skin: Contact with concentrate on skin will result in moderate irritation. 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. Damaged skin removes the barrier and paraquat may be absorbed with effects as outlined above under ingestion.

Inhaled: 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. If the concentrate is allowed to dry out, solid paraquat dust can be created. Paraquat dust is highly toxic (TLV 0.1 mg/m³) and should not be handled without full respiratory protection.

SECTION 11 TOXICOLOGICAL INFORMATION (Continued)

Inhaled (Cont): This product contains a stanching agent to give an offensive smell. This stanching 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.

Acute Toxicity-

Oral: LD₅₀ (rat) = 129 - 157 mg/kg for paraquat dichloride.
LD₅₀ (guinea pig) 30 - 58 mg/kg.

Dermal: LD₅₀ (rat) = 911 mg/kg for paraquat dichloride.
LD₅₀ (rat) > 793 mg/kg for diquat dibromide.
May cause temporary damage to nails and a delay in the healing of cuts and wounds.

Inhalation: LC₅₀ (rat) 0.5 – 1.5 µg/L/4 hr for paraquat dichloride.
LC₅₀ (rat) 571 – 673 µg/L/4hr for diquat dibromide.

Eye Irritation: This product is a severe eye irritant.

Skin Irritation: Moderate skin irritant.

Respiratory Irritation: This product is a moderate respiratory irritant.

Skin Sensitisation: Product is not a skin sensitiser.

Other Information: Studies in animals have shown that repeated doses of paraquat do not produce carcinogenic nor teratogenic effects or adverse reproductive effects. Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

SECTION 12 ECOLOGICAL INFORMATION**Environmental Toxicology:**

Test/Species	Paraquat dichloride	Diquat dibromide
LC ₅₀ (96hr) for Rainbow trout	55 mg/L	21 mg/L
EC ₅₀ (48hr) for Daphnia magna	6.1 mg/L	1.3 mg/L
EC ₅₀ (72hr) for algae	0.60 mg/L	0.34 mg/L
LD ₅₀ for Mallard duck	199 mg/kg	155 mg/kg
LD ₅₀ for Bobwhite quail	175 mg/kg	-
LD ₅₀ for bees	36 µg/bee	-

Considered to be non-toxic to bees.

Environmental Properties: Paraquat and diquat are rapidly absorbed and inactivated by contact with soil. There is evidence of photodegradation in air.

Keep domestic pets and poultry away from treated areas. This formulation should not be applied on or near water which is used for livestock watering. Do not contaminate dams, waterways or sewers with this product or the containers which have held this product.

SECTION 13 DISPOSAL CONSIDERATIONS

Spills & Disposal: Isolate and post spill area. Persons involved in cleanup require complete skin protection - see section 8. In case of spillage, contain and absorb spilled material with absorbent material such as clay, sand or cat litter. Large spills should be dyked or covered to prevent dispersal. Keep out animals and unprotected persons. Keep material out of streams and sewers. Vacuum, shovel or pump waste into an approved drum. To decontaminate spill area, tools and equipment, wash with detergent and water and add the solution to the drums of wastes already collected and label contents. Dispose of drummed wastes, including decontamination solution in accordance with the requirements of Local or State Waste Management Authorities.

Disposal of empty containers: Triple or preferably pressure rinse containers before disposal. Add rinsings to tank mix. Do not dispose of undiluted chemicals on-site. If not recycling, break, crush, or puncture and deliver empty packaging for appropriate disposal to an approved waste management

SECTION 13 DISPOSAL CONSIDERATIONS (Continued)

facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots, in compliance with relevant Local, State or Territory government regulations. DO NOT burn empty containers or product.

SECTION 14 TRANSPORT INFORMATION

Road & Rail Transport: This product is classified as a Dangerous Goods under the Australian Code for the Transport of Dangerous Goods by Road and Rail. Classified as a Dangerous Good by the International Maritime Dangerous Goods (IMDG) Code and the International Air transport Association (IATA) with the following classification:

UN 3016 BIPYRIDILIUM PESTICIDE, LIQUID, TOXIC – (Contains Paraquat and Diquat).

Packaging Group III.

Class 6.1. Hazchem 2XE. Hazard Identification Number (HIN) 86.

This product is a Schedule 7 Poison (S7) and must be stored, transported and sold in accordance with the relevant Health Department regulations.

SECTION 15 REGULATORY INFORMATION

Classified as a hazardous substance according to criteria of the Safe Work Australia. (T⁺ - Very Toxic, T – Toxic, Xi - irritant).

Under the Standard for Uniform Scheduling of Medicines and Poisons (SUSMP), this product is a schedule 7 poison.

This product is registered under the Agricultural and Veterinary Chemicals Code Act 1994. Product Registration No. 67562.

Product is not classified as a Dangerous Good according to the ADG Code (7th Ed), IMDG and IATA.

Requirements concerning special training:

Check State or Territory regulations that require people who use pesticides in their job or business to have training in the application of the materials.

SECTION 16 OTHER INFORMATION

Issue Date: 28 September 2012. Valid for 5 years. (First issue).

Key to abbreviations and acronyms used in this MSDS:

ADG Code: Australian Dangerous Goods Code (for the transport of Dangerous Goods by Road and Rail).

ASCC: Australian Safety & Compensation Council (formally known as the National Occupational Health & Safety Commission (NOHSC)).

Carcinogen: An agent which is responsible for the formation of a cancer.

Genotoxic: Capable of causing damage to genetic material, such as DNA.

Lacrimation: The production, secretion, and shedding of tears.

Lavage: A general term referring to cleaning or rinsing.

NOHSC: National Occupational Health and Safety Commission.

Pneumonitis: A general term that refers to inflammation of lung tissue.

PPE: Personal protective equipment.

Teratogen: An agent capable of causing abnormalities in a developing foetus.

TWA: The Time Weighted Average airborne concentration over an eight-hour working day, for a five day working week over an entire working life.

Safe Work Australia: Formally known as Australian Safety & Compensation Council (ASCC) which was formally known as the National Occupational Health & Safety Commission (NOHSC).

SECTION 16 | OTHER INFORMATION (Continued)

References

1. "Search Hazardous Substances". Safe Work Australia Council website. (2012).
2. "Approved Criteria for Classifying Hazardous Substances" 3rd Ed. NOHSC Australia. [NOHSC:1008 (2004)]. October 2004.
3. Standard for the Uniform Scheduling of Medicines and Poisons. No. 3. Medicines and Poisons Scheduling Secretariat. June 2012.

This MSDS 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.

End of MSDS