SAFETY DATA SHEET

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **Apparent Diquat 200 Herbicide**

Other Names:	Diquat dibromide, Group L herbicide.
Use:	A liquid 'knockdown' agricultural herbicide.
Company:	Apparent Pty Ltd
Address:	Suite G.08, 762 Toorak Rd, Hawthorn East, Vic. 3123. PO Box 3092, Cotham PO, Kew, Vic 3101
ACN/ABN:	143 724 136
Telephone Number:	03 9822 1321
Email:	enquiries@apparentag.com.au
Emergency Contact:	0411 227 338

SECTION 2 HAZARDS IDENTIFICATION

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

Globally Harmonised System (GHS) classification of the substance/mixture:

Corrosive to Metals: Hazard Category 1.
Acute Toxicity – Oral: Hazard Category 4.
Acute Toxicity – Dermal: Hazard Category 3.
Skin Corrosion/Irritation: Category 2.
Sensitisation – Skin: Hazard Category 1, 1A, 1B.
Acute Toxicity – Inhalation: Hazard Category 1.
Specific Target Organ Toxicity (Single Exposure): Hazard Category 3.
Specific Target Organ Toxicity (Repeated Exposure): Hazard Category 1.
Eye Damage/Irritation: Hazard Category 2A.
Hazardous to the Aquatic Environment – Long-Term Hazard: Hazard Category 1.

Signal Word: DANGER.

Hazard statements:

H290 May be corrosive to metals.
H302 Harmful if swallowed.
H311 Toxic 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.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

Prevention:

P260 Do not breathe mist, vapours or spray.
P264 Wash hands, arms and face thoroughly after handling.
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.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P284 Wear respiratory protection.

SECTION 2 HAZARDS IDENTIFICATION

Response:

P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if feel unwell.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position 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 or doctor/physician.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P314	Get medical advice/attention if you feel unwell.
P321	Specific treatment (see Safety Directions on the product label).
P322	Specific measures (see First Aid Instructions on the product label).
P330	Rinse mouth.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P337 + P313	If eye irritation persists: Get medical advice/attention.
P361	Remove/Take off immediately all contaminated clothing.
P362	Take off contaminated clothing and Wash before reuse.
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material-damage
P391	Collect spillage.

Storage:

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P406	Store in corrosive resistant container with a resistant inner liner.

Disposal:

P501	Dispose of contents/container in accordance with national regulations.

Pictograms:

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

CHEMICAL	***CAS NUMBER***	***PROPORTION***
Diquat (present as Diquat Dibromide Monohydrate)	85-00-7	200 g/L
Other ingredients (including water) determined not to be hazardous		Balance

SECTION 4 FIRST AID MEASURES

FIRST AID

Ingestion: If swallowed, seek medical advice immediately. DO NOT induce vomiting.

Eye contact: Immediately hold eyes open and flood with copious quantities of clean water until chemical is removed.

Skin contact: Immediately take off all contaminated clothing. Wash skin immediately with water followed by soap and water. If symptoms persist, call a physician. Contaminated clothing should be laundered before reuse.

Inhalation: Remove from exposure. If breathing is irregular or stopped, administer artificial respiration. Keep patient warm and at rest. Call a physician or Poisons Information Centre immediately.

SECTION 4 FIRST AID MEASURES (Continued)

Advice to Doctor: *Symptoms:* Inflammation of the mouth, throat and oesophagus, gastrointestinal discomfort, diarrhoea. *Medical Advice*: 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. *Eye contact* - Severe damage may be caused by apparently trivial contact and healing may be delayed. Medical supervision should continue until complete healing has occurred.

SECTION 5 FIRE FIGHTING MEASURES

Specific Hazard: Not combustible.

Extinguishing media: Extinguish fire using water fog (or if unavailable fine water spray), foam or dry agent (carbon dioxide, dry chemical powder). Contain all runoff.

Hazards from combustion products: Not combustible as formulated, but residue left after evaporation of water may burn. Fumes are toxic. Firefighters **must** wear full protective equipment and self-contained breathing apparatus if risk to of exposure to vapour or smoke.

Precautions for fire-fighters and special protective equipment: Isolate fire area. Evacuate downwind residents. Wear full protective clothing and self contained breathing apparatus. DO NOT breathe smoke or vapours generated.

SECTION 6 ACCIDENTAL RELEASE MEASURES

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

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

Evacuate unprotected and unnecessary personnel from area of spill. Keep all bystanders away. Wear full length clothing and elbow length PVC gloves and face shield or goggles to prevent skin and eye contamination. If safe to do so, re-position any leaking containers so as to minimise further leakage.

Wear protective equipment to prevent skin/eye contamination. In the case of spillage, contain and absorb spilled material with absorbent material such as sand, clay, cat litter or material such as vermiculite and dispose of waste as per the requirements of Local or State Waste Management Authorities. Wear full prescribed protective clothing and equipment. Keep out animals and unprotected persons. If product on skin, immediately wash area with soap and water. If clothing becomes contaminated with product remove clothing immediately. If product in eyes, wash it out immediately with water.

Material and methods for containment and cleanup procedures: To clean spill area, tools and equipment, wash with a solution of soap, water and acetic acid/vinegar. Follow this with a neutralisation step of washing the area with a bleach or caustic soda ash solution. Finally, wash with a strong soap and water solution. Absorb, as above, any excess liquid and add both solutions to the drums of waste already collected.

SECTION 7 HANDLING AND STORAGE

Precautions for Safe Handling: Very dangerous. Poisonous if absorbed by skin contact, inhaled or swallowed. Will irritate the eyes, nose, throat and skin. Avoid contact with eyes and skin. DO NOT inhale spray mist. When preparing spray and using the prepared spray, wear cotton overalls buttoned to the neck and wrist, washable hat, elbow-length PVC gloves and face shield or goggles and half-face respirator or disposable respirator. If clothing becomes contaminated with product or wet with spray remove clothing immediately. If product 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. After each day's use, wash gloves, face shield or goggles, respirator and if rubber wash with detergent and warm water, face shield and contaminated clothing.

Conditions for Safe Storage: KEEP OUT OF REACH OF CHILDREN. Store in the closed, original container in a dry, well- ventilated area. DO NOT store for prolonged periods in direct sunlight. This product is classified as a Dangerous Good.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines:
The following Exposure guideline has been established for this product by Safe Work Australia.

Atmospheric Contaminant	Exposure Standard (TWA)	STEL (mg/m³)
Diquat dibromide	0.5 mg/m³	Not set

TWA = Time-Weight Average

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):
When preparing spray and using the prepared spray, wear cotton overalls buttoned to the neck and wrist, washable hat, elbow-length PVC gloves and face shield or goggles and half-face respirator or disposable respirator. If clothing becomes contaminated with product or wet with spray remove clothing immediately. If product 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. After each day's use, wash gloves, face shield or goggles, respirator and if rubber wash with detergent and warm water, face shield and contaminated clothing.

Personal Hygiene: Poisonous if absorbed by skin contact, inhaled or swallowed. Will irritate the eyes, nose, throat and skin. Avoid contact with eyes and skin. DO NOT inhale spray mist. Clean water should be available for washing in case of eye or skin contamination. Wash skin before eating, drinking or smoking. Shower at the end of the workday.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear dark brown coloured liquid.
Odour:	No data available.
Boiling point:	No specific data (~ 100°C).
Freezing point:	No data.
Specific Gravity:	Approximately 1.2 g/L.
Solubility in Water:	Soluble in water.
pH:	No data available.
Flammability:	Not flammable.
Flashpoint (°C):	Not flammable.
Poisons Schedule:	This product is a Schedule 6 (S6) Poison
Formulation type:	Aqueous Concentrate (AC).

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: Product is considered stable in ambient conditions for a period of at least 2 years after manufacture. Corrosive in contact with metals.

Conditions to avoid: Do not store for prolonged periods in direct sunlight or in contact with metals.

Incompatible materials: Diquat is corrosive to most metals eg. Aluminium, zinc, iron.

Hazardous decomposition products: Should not decompose unless heated further after reaching complete dryness. May then produce toxic and irritant vapours.

Hazardous reactions: Keep away from metals. This product is unlikely to undergo polymerisation processes.

SECTION 11 TOXICOLOGICAL INFORMATION

No specific data is available for this product as no toxicity tests have been conducted on this product. Information presented is our best judgement based on similar products and/or individual components. As with all products for which limited data is available, caution must be exercised through the use of protective equipment and handling procedures to minimise exposure.

Potential Health Effects:

ACUTE EFFECTS

Swallowed: Harmful. Acute LD_{50} ~ 550 mg/kg (rat). Test animals (rats, mice, guinea pigs, rabbits, dogs, cows, and hens) given lethal doses of Diquat dibromide showed a delayed pattern of illness, with onset approximately 24 hours following dosing, subsequent lethargy, pupil dilation, respiratory distress, weight loss, weakness and finally death over the course of 2 to 14 days after dosing.

Eye: Slight eye irritant. Eye irritation may be delayed. Several cases of severe eye injury in humans have occurred after accidental splashing. In each case, initial irritation was mild, but after several days, serious burns and sometimes scarring of the cornea developed.

Skin: Contact with skin will result in moderate irritation. There have been reports of workers who have had softening and colour changes in one or more fingernails after contact with concentrated Diquat dibromide solutions. In some instances, the nail was shed, and did not grow in again.

Inhaled: Toxic if inhaled. Direct or excessive inhalation of Diquat dibromide spray mist or dust may result in oral or nasal irritation, nosebleeds, headache, sore throat, coughing, and symptoms similar to those from ingestion of Diquat.

Long Term Exposure:

Chronic toxicity: Chronic effects of Diquat dibromide are similar to those of paraquat. Cataracts occurred in rats and dogs given 2.5 mg/kg/day and 5 mg/kg/day of Diquat dibromide, respectively. Cataracts increased in proportion to the dose given in test animals (cats and dogs). Chronic exposure is necessary to produce these effects. Rats fed dietary doses of 2.5 mg/kg/day over 2 years did not exhibit signs of toxicity other than reduced food intake and decreased growth. In another study using rats, oral doses of 4 mg/kg/day over 2 years produced no behavioural or other changes in general condition. At this dose level no evidence of change in the kidneys, liver, or myocardium (heart muscle) were seen. This dosage (but not 2 mg/kg/day) caused changes in lung tissues. Repeated or prolonged dermal contact may cause inflammation of the skin, and, at high doses, systemic effects in other parts of the body. These may include damage to the kidneys. Chronic exposure may damage skin, which may increase the permeability of the skin to foreign compounds.

Reproductive effects: Diquat dibromide generally did not reduce fertility when tested in experimental animals. Based on the available evidence it is unlikely that Diquat dibromide will cause reproductive effects in humans under normal circumstances.

Teratogenic effects: No deformities were found in the unborn offspring of pregnant rats that were injected intraperitoneally with 0.5 mg/kg/day of Diquat daily during organogenesis, the stage of foetal development in which organs are formed. It is unlikely that Diquat dibromide will cause teratogenic effects in humans under normal circumstances.

Mutagenic effects: There is no evidence that Diquat dibromide causes permanent changes in genetic material.

Carcinogenic effects: Based on the evidence, it appears that Diquat dibromide is not carcinogenic.

Organ toxicity: In animals, Diquat dibromide may affect the gastrointestinal tract, eyes, kidneys or liver, and the lungs.

Fate in humans and animals: Absorption of Diquat dibromide from the gut into the bloodstream is low. Oral doses are mainly metabolized within the intestines, with metabolites being excreted in the faeces. Rat studies showed only a small percentage of the applied oral dose (6%) was absorbed into the bloodstream and then excreted in the urine.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Toxicology: No data is available on this product. The active ingredient, diquat dibromide has low to moderate toxic to fish and aquatic invertebrates. 96hr LC_{50} (rainbow trout) is > 100 mg/L. The 48 hr EC_{50} (*Daphnia magna*) is 7 mg/L. Highly toxic to algea. LC_{50} 72 hours for green algae is 0.66 µg/L. Diquat dibromide is moderately toxic to birds. The oral LD_{50} for hens is 200 - 400 mg/kg; Mallard duck LD_{50} = 564 mg/kg; Japanese quail LD_{50} = 1300 ppm. Not toxic to bees.

Environmental Fate: Diquat dibromide is highly persistent, with reported field half-lives of greater than 1000 days. Diquat dibromide is rapidly absorbed and deactivated by soil. There is little mobility in soil or ground water. Studies on the erosion of Diquat-treated soils near bodies of water indicate that Diquat dibromide stays bound to soil particles, remaining biologically inactive in surface waters, such as lakes, rivers, and ponds. When Diquat dibromide is applied to open water, it disappears rapidly because it binds to suspended particles in the water. Diquat dibromide's half-life is less than 48 hours in the water column, and may be on the order of 160 days in sediments due to its low bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Spills and Disposal: On site disposal of the concentrated product is not acceptable. Ideally the product should be used for its intended purpose. Keep material out of streams and sewers. Dispose of drummed wastes, including decontamination solution in accordance with the requirements of Local or State Waste Management Authorities. In rural areas contact ChemClear http://www.chemclear.com.au for help with collection of unwanted rural chemicals.

Disposal of empty containers: Triple-rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and deliver empty packaging to an approved waste management 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

Transport: This product is classified as a Dangerous Goods under the Australian Code for the Transport of Dangerous Goods by Road and Rail, the International Maritime Dangerous Goods (IMDG) Code and the International Air Transport Association (IATA). UN 3016. BIPYRIDILIUM PESTICIDE, LIQUID, TOXIC (CONTAINS DIQUAT). Packaging Group III. Class 6.1. Hazchem 2X. Hazard Identification number (HIN) 80. Australian Standards Initial Emergency Response Guide No. 34.

SECTION 15 REGULATORY INFORMATION

Under the Standard for Uniform Scheduling of Medicines and Poisons (SUSMP), this product is a Schedule 6 poison.
This product is registered under the Agricultural and Veterinary Chemicals Code Act 1994. Product Registration No. 83557.
This product is classified as a Hazardous Substance under the criteria of Safe Work Australia.
This product is classified as a Dangerous Good according to the ADG Code (7th Ed).
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: 22 June 2017. Valid for 5 years till 22 June 2022 (Correcting DG information).

SECTION 16 OTHER INFORMATION (Continued)

Key to abbreviations and acronyms used in this SDS:

ADG Code: Australian Dangerous Goods Code (for the transport of dangerous goods by Road and Rail).
Ataxia: Inability to control the coordinate movements of the muscles.
Bradycardia: Is a resting heart rate of under 60 beats per minute (adults).
Carcinogen: An agent which is responsible for the formation of a cancer.
Genotoxic: Capable of causing damage to genetic material, such as DNA.
Lavage: A general term referring to cleaning or rinsing.
LD_{50}: Median Lethal Dose. A statistically derived single dose of a substance that can be expected to cause death in 50% of dosed animals.
Mutagenic: Capable of inducing a genetic mutation in an organism.
Oedema: Accumulation of fluid in tissues.
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).

References

1. "Search Hazardous Substances". Safe Work Australia website. (2017).
2. "Approved Criteria for Classifying Hazardous Substances" 3rd Ed. NOHSC Australia. [NOHSC:1008 (2004)]. October 2004.
3. Globally Harmonized System of Classification and Labelling of Chemicals (GHS). United Nations, 2009.

This 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 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 SDS.