SAFETY DATA SHEET

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **Apparent Weedshot 200 Herbicide**

Other Names:	Glufosinate-Ammonium, N-(phosphonomethyl)glycine, Group M Herbicide.
Use:	A non-selective, systemic, liquid herbicide.
Company:	Apparent Pty Ltd
Address:	Suite G.08 762 Toorak Road, 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.
Not classified as a Dangerous Good according to the ADG Code.
Combustible Liquid (C1).

Global Harmonization System (GHS) classification:

Acute Toxicity – Dermal: Category 4.
Acute Toxicity – Inhalation: Category 4.
Specific Target Organ Toxicity (Single Exposure): Category 3.
Toxic to Reproduction: Category 1.
Specific Target Organ Toxicity (Repeated Exposure): Category 2.

Signal Word: DANGER.

Hazard statements:

H312	Harmful in contact with skin.
H332	Harmful if inhaled.
H336	May cause drowsiness and dizziness.
H360	May damage fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements:

Prevention:

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe mist, vapours or spray.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.

Response:

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.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P314	Get medical advice/attention if you feel unwell.
P322	Specific measures see First Aid Instructions on the product label.
P308 + P313	IF exposed or concerned: Get medical advice/ attention:
P363	Wash contaminated clothing before reuse.

SECTION 2 HAZARDS IDENTIFICATION (Continued)

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal:

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

Pictograms:



SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

CHEMICAL	***CAS NUMBER***	***PROPORTION***
Glufosinate-ammonium.	77182-82-2	200 g/L
1-Methoxy-2-propanol	107-98-2	5-15%
Other ingredients (including water) determined not to be hazardous		Balance

SECTION 4 FIRST AID MEASURES

FIRST AID

Ingestion: If swallowed do NOT induce vomiting. Give a glass of water. If poisoning occurs, contact a Doctor or Poisons Information Centre. Phone 131 126.

Eye contact: Immediately hold eyes open and flood with clean water. Ensure irrigation under eyelids by occasionally lifting them. Do not try to remove contact lenses unless trained. If irritation persists, seek medical advice.

Skin contact: Immediately remove contaminated clothing and wash skin with soap and water. If skin is irritated, seek medical advice.

Inhalation: Remove to fresh air and observe until recovered. If effects persist, seek medical advice.

Advice to Doctor: The active ingredient in this product, Glufosinate-ammonium, is a glutamine synthetase inhibitor and can interfere with neurotransmitter function.
Symptoms: Local - irritation of eyes, skin, respiratory tract.
Systemic - Shivering, cramps, gastrointestinal complaints, hyperthermia, dyspnoea, bradycardia/ tachycardia, convulsions, respiratory depression, amnesia, drowsiness and/or loss of consciousness. These symptoms may be delayed from a few hours to up to 48 hours after exposure. Therefore, regardless of the amount ingested, the patient must be admitted to hospital for at least 36 hours and treated immediately as outlined below.

Treatment
Emergency measures: Symptomatic treatment and administration of antidotes, decontamination.
If ingested, endotracheal intubation and gastric lavage should be performed as soon as possible, followed by administration of charcoal and sodium sulphate solution.
Anticonvulsant therapy: Phenobarbital-sodium, 1 mg/kg intramuscularly or subcutaneously until maximum 5 mg/kg daily; when necessary, 10 mg diazepam slowly intravenously. Repeat as necessary until fully sedated.

Elimination by dialysis (forced alkaline diuresis) and/or haemo-perfusion. It is essential that this be done soon after ingestion to be effective. ECG (EKG) (electrocardiogram) monitoring. EEG (electroencephalogram) monitoring. Apply artificial respiration as necessary. If necessary give oxygen.
Monitor respiratory, cardiac, central nervous system, electrolyte balance (especially for hypokalemia) and signs of increased intracranial pressure.

If a large amount has been ingested, keep under medical supervision for at least 48 hours.

SECTION 5 FIRE FIGHTING MEASURES

Specific Hazard: Combustible liquid (C1). Flashpoint 65°C.

Extinguishing media: Extinguish fire using carbon dioxide, foam or dry agent. If not available, use waterfog or fine water spray. If containers are ruptured contain all runoff.

Hazards from combustion products: Product is likely to decompose after heating to dryness and continued strong heating and will emit toxic fumes (oxides of phosphorous, sulphur, carbon and nitrogen). Firefighters to wear self-contained breathing apparatus and suitable protective clothing if risk 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 / Material and methods for containment and cleanup procedures:
Accidental release: In the event of a major spill, prevent spillage from entering drains or water courses. Eliminate all sources of ignition. As a minimum, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and a washable hat, elbow length PVC or nitrile gloves and face shield or goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, the use of a respirator is recommended.

In the case of spillage, stop leak if safe to do so, and contain spill. Absorb spilled material with absorbent material such as sand, clay or cat litter and dispose of waste as indicated below or according to the Australian Standard 2507 - Storage and Handling of Pesticides. Keep out animals and unprotected persons. 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

After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Thoroughly launder protective clothing before storage or re-use.

SECTION 7 HANDLING AND STORAGE

Precautions for Safe Handling: No smoking, eating or drinking should be allowed where material is used or stored. Harmful if absorbed by skin contact or swallowed. Will irritate the eyes and skin. Avoid contact with the eyes and skin. If product on skin, immediately wash area with soap and water. If product in eyes, wash out immediately with water. When opening the container, preparing spray and using the prepared spray, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and a washable hat, elbow length PVC or nitrile gloves and face shield or goggles. Wash hands after use.

Conditions for Safe Storage: Store in the closed, original container in a well ventilated area away from children, animals, food, feedstuffs, seed and fertilisers. Do not store for prolonged periods in direct sunlight. This product is classified as a C1 (Combustible Liquid) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Do not store or use near naked flame, or heat sources. Do not cut or weld container. Not classified as a Dangerous Good. This product is a Schedule 5 Poison (S5) and must be stored, transported and sold in accordance with the relevant Health Department regulations. Refer to state regulations for storage and transport requirements.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines:
No exposure guidelines have been established for this product by safe Work Australia. However the following is an ingredient in this product:

Atmospheric Contaminant	Exposure Standard (TWA)	STEL (mg/m³)
1-methoxy-2-propanol	369 mg/m³ (100 ppm)	553 mg/m³ (150 ppm)

TWA = Time-weight Average. STEL = Short Term Exposure Limit.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION (Continued)

Biological Limit Values:
No biological limit allocated.

Engineering controls:
Keep containers closed when not in use. No special engineering controls are required, however make sure that the work environment remains clean and that vapours and mists are minimised.

Personal Protective Equipment (PPE):
General: When opening the container and preparing spray and using the prepared spray wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and a washable hat and elbow-length PVC or nitrile gloves and face shield or goggles. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. Wash hands after use. After each days use, wash gloves, face shield or goggles and contaminated clothing.

Personal Hygiene: Harmful if absorbed by skin contact or swallowed. Will irritate the eyes and skin. Avoid contact with eyes and skin. 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:	Bluish-green liquid.
Odour:	Slight pungent odour.
Boiling point:	No data available - but expected to be approximately 100°C.
Freezing point:	No data available - but expected to be approximately 0°C.
Specific Gravity:	1.1 at 20°C.
Solubility in Water:	Soluble.
pH:	4.5 – 6.7.
Flashpoint (°C):	65°C.
Poisons Schedule:	This product is a Schedule 5 (S5) poison.
Formulation type:	Soluble Concentrate (SL)

SECTION 10 STABILITY AND REACTIVITY

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

Conditions to avoid: Avoid sources of ignition and extreme heat.

Incompatible materials: Avoid contact with strong oxidising agents, acids or bases.

Hazardous decomposition products: Product is likely to decompose after heating to dryness and continued strong heating and will emit toxic fumes (oxides of phosphorous, sulfur, carbon and nitrogen).

Hazardous reactions: Mixing with strong alkali (eg. Caustic soda) will cause the release of ammonia vapour. Polymerisation is unlikely.

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: Direct ingestion may produce shivering, cramps, stomach complaints, overheating, breathing difficulty, heart problems, convulsions, respiratory depression, loss of memory, drowsiness and/or loss of consciousness. These symptoms may be delayed from a few hours up to 48 hours after ingestion. Acute Oral LD_{50} = 2,000 mg/kg (similar formulation).

Eye: The concentrate may cause irritation of the eyes. Avoid eye contact.

SECTION 11 TOXICOLOGICAL INFORMATION (Continued)

Skin: Harmful if absorbed by skin contact. This product is irritating to the skin. Acute dermal LD_{50} = 1380 mg/kg (similar formulation). Avoid skin contact.

Inhaled: Harmful by inhalation. Symptoms of inhalation exposure are similar to that for ingestion. LC_{50} = 3.73mg/L/4 hours (similar formulation).

Although most herbicides are not nerve poisons, glufosinate can affect the nervous system. Glutamate is an "excitatory" neurotransmitter in the brain, and it appears to affect some of the processes in the nervous system that normally involve glutamate.

Long Term Exposure:

Chronic toxicity: In animal studies glufosinate-ammonium showed no teratogenic, carcinogenic, mutagenic or neurotoxic effects.

Glufosinate-ammonium competitively inhibits glutamine synthetise in mammals. However, even at high (sub-lethal) doses, glutamate, ammonia and glutamine levels in brain, liver and kidney tissues were unaffected. No effect was seen on enzymes which have glutamate as a substrate nor on the metabolism of amino acids, glutathione or carbohydrates. The substance did not impair the oxidative metabolism in mitochondria *in vitro.*

Exposure to glufosinate during pregnancy negatively impacts the developing foetus in rabbits. The highest dose tested (20 mg/kg of body weight per day) caused a decrease in the number of mother rabbits with live foetuses. The frequency of premature delivery and miscarriages increased. An increase in the number of dead foetuses per litter was found in all treated rabbits. After reviewing the available *in vitro* and *in vivo* genotoxicity data, it was concluded that there was no evidence of genotoxicity.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Toxicology: Glufosinate-ammonium 200 Herbicide has low toxicity to birds for example the 8 day dietary LC_{50} Japanese quail > 5000 mg/kg. Technical Glufosinate has low toxicity to fish and other aquatic organisms with LC_{50} (96 hour) rainbow trout 710 mg/L, LC_{50} (96 hour) carp, bluegill sunfish, golden orfe > 1000 mg/L. *Daphnia magna* EC_{50} (48 hour) 560 - 1000 mg/L and LD_{50} for *Scenedesmus subspicatus* > 1000 mg/L. LD_{50} for *Scenedesmus capricornutum* 37 mg/L. However formulated products are moderately toxic with LC_{50} (96 hour) rainbow trout 34 mg/L, *Daphnia magna* EC_{50} (48 h) 26.8 mg/L and LD_{50} (72 hour) for *Desmodesmus subspicatus* 36 mg/L.

Environmental Fate: Glufosinate-ammonium is very soluble in water and is hydrolytically and photolytically stable. It is rapidly degraded in surface levels of soils and in water. Half-life (DT_{50}) in soil is typically 8 days. This product is considered to be readily biodegradable. The potential for groundwater contamination with glufosinate-ammonium is minimal. Glufosinate-ammonium does not accumulate in the fatty tissues of fish or other animals.

SECTION 13 DISPOSAL CONSIDERATIONS

Spills and Disposal: Persons involved in cleanup require adequate skin protection - see section 8. In case of spillage, contain and absorb spilled material with absorbent material such as clay, sand or cat litter and dispose of waste as indicated below or in accordance to the Australian Standard 2507-Storage and Handling of Pesticides. Keep out animals and unprotected persons. Keep material out of streams and sewers. Vacuum, shovel or pump waste into an approved drum.

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

Road & Rail Transport: Apparent Weedshot 200 Herbicide is not classified as a Dangerous Goods under the Australian Code for the Transport of Dangerous Goods by Road and Rail.

Marine and Air Transport: Apparent Weedshot 200 Herbicide is a not classified as a Dangerous Good according to International Maritime Dangerous Goods (IMDG) Code and the International Air Transport Association (IATA).

SECTION 15 REGULATORY INFORMATION

Under the Standard for Uniform Scheduling of Medicines and Poisons (SUSMP), this product is a schedule 5 poison.
This product is registered under the Agricultural and Veterinary Chemicals Code Act 1994. Product Registration No. 67152.
This product is classified as a Hazardous Substance under the criteria of Safe Work Australia. T: Toxic; Xn Harmful.
This product is not classified as a Dangerous Good according to the ADG Code (7th Ed).
This product is not classified as a Dangerous Good according to International Maritime Dangerous Goods (IMDG) Code and the International Air Transport Association (IATA).
This product is classified as a C1 Combustible liquid.
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: 27 November 2015. Valid for 5 years till 27 November 2020. (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).
Carcinogen:	An agent which is responsible for the formation of a cancer.
Genotoxic:	Capable of causing damage to genetic material, such as DNA.
HSIS:	Hazardous Substances information System.
Lacrimation:	The production, secretion, and shedding of tears.
Lavage:	A general term referring to cleaning or rinsing.
Mutagen:	An agent capable of producing a mutation.
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).

References

1. “Search Hazardous Substances”. Safe Work Australia website. (2015).
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 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 SDS