SAFETY DATA SHEET

Section 1. Identification of the material and the supplier

Product:	**Turf Culture Smackdown NZ Moss & Broadleaf Herbicide**
Product Use:	Agricultural herbicide for use as described on the product label.
Restriction of Use:	Refer to Section 15
Manufacturer:	**Turf Culture Pty Ltd** 43 Gap Road, Sunbury, Vic 3429 Australia Phone: +61 1300 11 8873 Fax: +61 3 8888 9991 www.turfculture.co.nz
New Zealand Supplier:	**PGG Wrightson Turf Ltd** 3/118 Savill Drive, Mangere East, Auckland 2024, New Zealand Phone: +64 09 570 2570 www.pggwrightsonturf.co.nz
Emergency No:	**0800 764 766 (National Poison Centre)**
Date of SDS Preparation:	25 October 2022

Section 2. Hazards Identification

This substance is hazardous according to the EPA Hazardous Substances (Classification) Notice 2020

EPA Approval No: HSR000436

Pictograms

Signal Word: **DANGER**

GHS Classification and Category	Hazard Code	Hazard Statement
Flammable Liquids Cat. 4	H227	Combustible liquid.
Aspiration hazard Cat. 1	H304	May be fatal if swallowed and enters airways.
Eye irritation Cat. 2	H319	Causes serious eye irritation.
Specific target organ toxicity – repeated exposure Cat. 2	H373	May cause damage to liver through prolonged or repeated exposure.
Hazardous to the aquatic environment Acute Cat. 1	H400	Very toxic to aquatic life.
Hazardous to soil organisms	H421	Hazardous to soil organisms

Prevention Code	Prevention Statement
P102	Keep out of reach of children.
P103	Read label before use.
P210	Keep away from heat, sparks, open flames or hot surfaces. No smoking.
P260	Do not breathe mist, vapours or spray.
P264	Wash hands thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective clothing as detailed in Section 8.
S77A	Do not apply onto or into water.

Response Code	Response Statement
P101	If medical advice is needed, have product container or label at hand.
P314	Get medical advice/attention if you feel unwell.
P331	Do NOT induce vomiting.
P391	Collect spillage.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P305 + P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice/attention.
P370 + P378	In case of fire: Use carbon dioxide, dry chemical, foam, water fog for extinction.

Storage Code	Storage Statement
P405	Store locked up.
P403 + P235	Store in a well-ventilated place. Keep cool.

Disposal Code	Disposal Statement
P501	Ensure the container is empty. Triple rinse empty container and add reinstate to spray tank. Recycle punctured container without caps 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. Disposal of this product only by using according to this label, or at an approved landfill or other approved facility.

Section 3. Composition / Information on Hazardous Ingredients

Ingredients	Conc%	CAS NUMBER.
Carfentrazone ethyl	240g/L	128639-02-1
Aromatic hydrocarbons	756g/L	64742-94-5
Other non-hazardous ingredients	To 100	

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non-hazardous ingredients are also possible.

Section 4. First Aid Measures

Routes of Exposure:

If in Eyes — Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

If on Skin — Wash gently and thoroughly with water (use non-abrasive soap if necessary) for 5 minutes or until chemical is removed.

If Swallowed	If swallowed, do NOT induce vomiting. Wash mouth with water: **Immediately** call a POISON CENTER or doctor/physician.
If Inhaled	First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Most important symptoms and effects, both acute and delayed

Symptoms:

Ingestion:	If accidentally swallowed, small amounts of liquid may be aspirated into the lungs during ingestion or from vomiting, this may cause severe lung inflammation and lung oedema (an accumulation of fluid in the lungs). This is a medical emergency which must be immediately and properly treated. Do not induce vomiting
Inhalation:	inhalation of hydrocarbons may cause drowsiness, headaches, dizziness and lung irritation
Skin:	May cause drying of skin and slight irritation on prolonged contact.
Eye:	Causes eye irritation

Section 5. Fire Fighting Measures

Hazard Type	The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. There is little risk of an explosion from this product if commercial quantities are involved in a fire. Violent steam generation or eruption may occur upon application of direct water stream on hot liquids. Vapours from this product are heavier than air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures. They may also flash back considerable distances. Fire decomposition products from this product are likely to be toxic and corrosive if inhaled. Take appropriate protective measures.
Hazards from decomposition products	No data available.
Suitable Extinguishing media	In case of fire, use carbon dioxide, dry chemical, foam, water fog.
Precautions for firefighters and special protective clothing	Use breathing apparatus. Contain spillage.
HAZCHEM CODE	**3Z**

Section 6. Accidental Release Measures

Accidental release: In the event of a major spill, prevent spillage from entering drains or watercourses. As a minimum, wear overalls, goggles and gloves. Suitable materials for protective clothing include rubber. Eye/face protective equipment should comprise as a minimum, protective goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator. It should be fitted with a type A cartridge, suitable for organic vapours.
Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area-preventing runoff from entering drains. If a

significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this SDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

Section 7. Handling and Storage

Precautions for Handling:

- Read label before use.
- Combustible liquid - Keep away from heat, sparks, open flames or hot surfaces. No smoking.
- Do not breathe mist, vapours or spray.
- Wash hands thoroughly after handling.
- Avoid release to the environment.
- Wear protective clothing as detailed in Section 8.
- Do not apply onto or into water.
- Keep exposure to this product to a minimum, and minimise the quantities kept in work areas.
- The measures detailed below under 'Storage' should be followed during handling in order to minimise risks to persons using the product in the workplace.

Precautions for Storage:

- Store away from incompatible materials listed in Section 10.
- Keep out of reach of children.
- Store locked up.
- Store in a well-ventilated place. Keep cool.
- Protect this product from light.
- Store in the closed original container out of direct sunlight.
- Some liquid preparations settle or separate on standing and may require stirring before use.
- Check packaging - there may be further storage instructions on the label.

Section 8 Exposure Controls / Personal Protection

WORKPLACE EXPOSURE STANDARDS (provided for guidance only)

	TWA		STEL	
Substance	**ppm**	**mg/m³**	**ppm**	**mg/m³**

The ADI for Carfentrazone ethyl ester is set at 0.03mg/kg/day. The corresponding NOEL is set at 3mg/kg/day. ADI means Acceptable Daily Intake; NOEL means No-observable-effect-level. Data from Australian ADI List, June 2013.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

Workplace Exposure Standard – Time Weighted Average (WES-TWA). The time-weighted average exposure standard designed to protect the worker from the effects of long-term exposure. Workplace Exposure Standard – Short-Term Exposure Limit (WESSTEL). The 15-minute average exposure standard. Applies to any 15- Minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both the short-term and time-weighted average exposures apply. Workplace Exposure Standards and Biological Exposure Indices APRIL 2022 13TH EDITION.

Engineering Controls

This product should only be used in a well-ventilated area. If natural ventilation is inadequate,

use of a fan is suggested.

Personal Protection Equipment

Eyes	Eye protection such as protective glasses or goggles is recommended when this product is being used.
Skin & hands	You should avoid contact even with mild skin irritants. Therefore you should wear suitable impervious elbow-length gloves and facial protection when handling this product. See below for suitable types. We suggest that protective clothing be made from the following materials: rubber.
Respiratory	Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian/New Zealand Standard mentioned above.
General	Safety deluge showers should, if practical, be provided near to where this product is being handled commercially.

Section 9 Physical and Chemical Properties

Appearance	Yellow orange liquid
Odour	Characteristic odour.
Odour Threshold	Not available
pH	Not available
Boiling Point	220-290°C at 100kPa (solvent)
Melting Point	No specific data. Liquid at normal temperatures.
Freezing Point	No specific data. Liquid at normal temperatures.
Flash Point	88^0C
Flammability	Combustible
Upper and Lower Explosive Limits	Not available
Vapour Pressure	Negligible at normal ambient temperatures.
Vapour Density	>1 (solvent)
Specific Gravity	1.074
Water Solubility	Emulsifiable.
Partition Coefficient:	Not available
Auto-ignition Temperature	$>450^0$C
Decomposition Temperature	Not available
Kinematic Viscosity	Not available
Particle Characteristics	Not available
Coeff Oil/water Distribution	3.36 (log P octanol/water)

Section 10. Stability and Reactivity

Stability of Substance	This product is stable under normal conditions.
Reactivity	No significant decomposition products. Hydrolyses at pH >7.
Conditions to Avoid	Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.
Incompatible Materials	Strong oxidising agents.
Hazardous Decomposition Products	Combustion forms carbon dioxide, and if incomplete, carbon monoxide and possibly smoke. Water is also formed. May

	form nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas in reducing atmospheres. May form hydrogen fluoride gas and other compounds of fluorine. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Section 11 Toxicological Information

Acute Effects:

Swallowed	Significant oral exposure is considered to be unlikely. Because of the low viscosity of this product, it may directly enter the lungs if swallowed, or if subsequently vomited. Once in the lungs, it is very difficult to remove and can cause severe injury or death. However, this product may be irritating to mucous membranes but is unlikely to cause anything more than transient discomfort.
Dermal	Not triggered.
Inhalation	Not triggered.
Eye	This product may be irritating to eyes, but is unlikely to cause anything more than mild transient discomfort.
Skin	Available data indicates that this product is not harmful. It should present no hazards in normal use. However product may be irritating, but is unlikely to cause anything more than mild transient discomfort.

Chronic Effects:

Carcinogenicity	Not applicable.
Reproductive Toxicity	Not applicable.
Germ Cell Mutagenicity	Not applicable.
Aspiration	May be fatal if swallowed and enters airways.
STOT/SE	Not applicable.
STOT/RE	May cause damage to liver through prolonged or repeated exposure.

Ingredient: Carfentrazone Ethyl Ester

LD_{50} Oral, Rat >5000mg/kg
LD_{50} Dermal, Rabbit = >5000mg/kg
LC_{50} Inhalation, Rat = >5.72mg/L/4hr

SKIN: Non-irritant. Not a skin sensitiser (guinea pig).

EYES: Mild irritant (rabbit).
In studies using laboratory animals Carfentrazone-ethyl did not cause reproductive, developmental nor carcinogenic effects.
Negative in *in vitro* tests for genotoxicity.
The ADI for Carfentrazone ethyl ester is set at 0.03mg/kg/day. The corresponding NOEL is set at 3mg/kg/day.

Section 12. Ecotoxicological Information

Very toxic to aquatic life.
Hazardous to soil organisms.

Persistence and degradability	This product is biodegradable.
Bioaccumulation	It will not accumulate in the soil or water or cause long-term problems.
Mobility in Soil	This product is unlikely to be mobile in soils.
Other adverse effects	No data available

Carfentrazone-ethyl is rapidly degraded in soils under aerobic and anaerobic conditions. The half-life in soil is 1-2 days. It is rapidly hydrolysed at pH 9 but stable at pH 5.
Field studies show that Carfentrazone-ethyl has low mobility in soil.

Aquatic toxicity:
Toxic to aquatic organisms. Bio-concentration factor in fish of 167.
Risk of bioaccumulation in an aquatic species is low.
Log Octanol/Water Partition Coefficient: 3.36
Birds: LD_{50} bobwhite quail: >1000mg/kg **Fish:** LC_{50} fish: 1.6-43mg/L
Bees: LD_{50} >100µg/bee (contact) **Daphnia:** EC_{50} 9.8mg/L

Do not allow to enter waterways.

Section 13. Disposal Considerations

Product Disposal Dispose of this product only by using according to this label, or at an approved landfill or other approved facility. Do not allow to enter waterways.

Container Disposal Ensure the container is empty. Triple rinse empty container and add rinsate to spray tank. Recycle punctured container without caps 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.

Precautions or methods to avoid: Avoid release to the environment.

Section 14 Transport Information

This product is classified as a Dangerous Good for transport in NZ; NZS 5433:2020

Road and Rail Transport

UN No:	3082
Class-primary	9
Packing Group	III
Proper Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Air Transport

UN No:	3082
Class-primary	9
Packing Group	III
Proper Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Marine Transport

UN No:	3082
Class-primary	9
Packing Group	III
Marine Pollutant	Yes

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Limited Quantities Statement:

If the product's individual container is below 5L/kg, it can be transported as a non-DG as long as the product packaging is still labelled as per DG requirements and the driver is given safety information in accordance with Chapter 3.4 of the UNRTDG.

Section 15 Regulatory Information

This substance is classified hazardous according to the EPA Hazardous Substances (Classification) Notice 2020

EPA Approval No: HSR000436 See www.epa.govt.nz for controls.

HSW (HS) Regulations 2017	**Trigger Quantity**
Signage Trigger Quantities (Schedule 3)	100L
Emergency Response Plan (Schedule 5)	100L
Secondary Containment (Schedule 5)	100L
Tracking (Schedule 26)	Not required
Restriction of Use	Only use for the intended purpose.
Hazardous Property Controls Notice 2017	
HPC Notice Part 1	Preliminary provisions
HPC Notice Part 3	Hazardous substances in a place other than a workplace
HPC Notice Part 4 Subpart A	Site and storage controls for class 9 substances
HPC Notice Part 4 Subpart B	Use of ecotoxic substances in any place
HPC Notice Part 4 Subpart C	Qualifications required for application of ecotoxic pesticides
ACVM Act and Regulations	
ACVM Approval No	NA
Tolerable Exposure Level (TEL)	No TEL set
Environmental Exposure Level (EEL)	No EELs are set for Malathion-treated wheat at this time and the default EEL values are deleted

Section 16 Other Information

Glossary

Cat	Category
EC_{50}	Median effective concentration.
EEL	Environmental Exposure Limit.
EPA	Environmental Protection Authority
HSNO	Hazardous Substances and New Organisms.
HSW	Health and Safety at Work.
LC_{50}	Lethal concentration that will kill 50% of the test organisms inhaling or ingesting it.
LD_{50}	Lethal dose to kill 50% of test animals/organisms.
LEL	Lower explosive level.
OSHA	American Occupational Safety and Health Administration.
TEL	Tolerable Exposure Limit.
TLV	Threshold Limit Value-an exposure limit set by responsible authority.
UEL	Upper Explosive Level
WES	Workplace Exposure Limit

References:

1. EPA Hazardous Substances (Safety Data Sheets) Notice 2017
2. Workplace Exposure Standards and Biological Exposure Indices Nov 2022 edition.
3. Assigning a hazardous substance to a HSNO Approval (Aug 2013).
4. Transport of Dangerous goods on land NZS 5433:2020
5. HSW (Hazardous Substances) Regulations 2017

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 MUST REVIEW THIS SDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS

OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

The information herein is given in good faith, but no warranty, express or implied is made.

Please contact the New Zealand distributor, if further information is required.

Issue Date:	25 October 2022	Review Date:	25 October 2027