

Section 1 - Identification of The Material and Supplier

Turf Culture Pty Ltd
Unit 9, 57-59 Horne St
Sunbury, Vic 3429 Australia

Phone: +61 3 9553 3121
Fax: +61 3 8888 9991
www.turfculture.com.au

Chemical nature: Oryzalin is a 2,6-dinitroaniline derivative, presented as a water suspension

Trade Name: **Turf Culture Embargo NZ Herbicide**

EPA Approval No: HSR100936

Product Use: Agricultural herbicide for turf use as described on the product label.

Creation Date: **October, 2013**

This version issued: **November, 2017** and is valid for 5 years from this date.

New Zealand Supplier: PGG Wrightson Turf Ltd
31 Allright Place, Mt Wellington, Auckland, New Zealand
Ph: +64 09 570 2570, Fax: +64 09 570 4064
www.pggwrightsonturf.co.nz

Section 2 - Hazards Identification

Statement of Hazardous Nature.

This substance is classified as hazardous according to the HSNO (Minimum Degrees of Hazard) Regulations 2001.

This substance is classified as a dangerous good for Land Transport in New Zealand according to NZS5433: 2012

EPA Approval Code: HSR100936

HSNO Classification: 6.1E (oral), 6.4A, 6.5B, 6.9B, 9.1A, 9.3C, 9.4C

Signal Word: **WARNING**

Label Pictograms



Hazard Code

Hazard Statement

GHS Category

H303

May be harmful if swallowed.

Acute oral Toxicity
Category 5

H320

Causes eye irritation.

Eye irritation
Category 2B

H317

May cause an allergic skin reaction.

Skin sensitisation
Category 1

H373

May cause damage to organs through prolonged or repeated exposure.

STOT
Category 2

H410

Very toxic to aquatic life with long lasting effects.

Aquatic Toxicity
Category 1

H433

Harmful to terrestrial vertebrates.

Ecotoxic to terrestrial
vertebrates

H443

Harmful to terrestrial invertebrates.

Ecotoxic to terrestrial
invertebrates

Hazard Code

Hazard Statement

H303

May be harmful if swallowed.

SAFETY DATA SHEET

Issued by: Turf Culture Pty Ltd

Phone: +61 3 9553 3121

Poisons Information Centre: 0800 764 766 from anywhere in New Zealand

H320	Causes eye irritation.
H317	May cause an allergic skin reaction.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.
H433	Harmful to terrestrial vertebrates.
H443	Harmful to terrestrial invertebrates.

Prevention Code	Prevention Statement
P102	Keep out of reach of children.
P103	Read label before use.
P260	Do not breathe mist or spray.
P264	Wash hands and face thoroughly after handling.
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.

Response code	Response Statement
P101	If medical advice is needed, have product container or label at hand.
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 first aid instructions on this label).
P331	Do NOT induce vomiting.
P363	Wash contaminated clothing before reuse.
P391	Collect spillage.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P305 + P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P337 + P313	If eye irritation persists: Get medical advice/attention.

Storage Code	
P402+P404	Store in a dry place. Store in a closed container.
P403+P235	Store in a well-ventilated place. Keep cool.

Disposal Code	
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.
Product Disposal	Disposal of this product only by using according to this label, or at an approved landfill or other approved facility.

SAFETY DATA SHEET

Section 3 - Composition/Information on Ingredients

Ingredients (mg/m ³)	CAS No.	Conc. %	TWA (mg/m ³)	STEL
Oryzalin	19044-88-3	400 g/L	not set	not set
Hexahydro-1,3,5-tris (2-hydroxy-ethyl)-sym-triazine	4719-04-4	20g/l	not set	not set
Other non-hazardous ingredients	various	5-15	not set	not set
Water	7732-18-5	to 100	not set	not set

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

The SWA TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8-hour working day for a 5-day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term 'peak' is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 - First Aid Measures

General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 0800 764 766 in New Zealand and is available at all times. Have this SDS with you when you call.

Inhalation: First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Skin Contact: Wash gently and thoroughly with water (use non-abrasive soap if necessary) for 5 minutes or until chemical is removed. If rash or irritation occurs seek medical advice/attention.

Eye Contact: If irritation occurs, flush contaminated eye(s) with lukewarm, gently flowing water for 5 minutes or until the product is removed. Obtain medical advice if irritation becomes painful or lasts more than a few minutes. Take special care if exposed person is wearing contact lenses.

Ingestion: If product is swallowed or gets in mouth, do NOT induce vomiting; wash mouth with water and give some water to drink. If symptoms develop, or if in doubt contact a Poisons Information Centre or a doctor.

Section 5 - Fire Fighting Measures

Hazchem Code: 3Z Collect Spillage

Fire and Explosion Hazards: The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. There is no risk of an explosion from this product under normal circumstances if it is involved in a fire.

This product is likely to decompose only after heating to dryness, followed by further strong heating.

Fire decomposition products from this product are likely to be irritating if inhaled.

Extinguishing Media: In case of fire, use carbon dioxide, dry chemical, foam, water fog.

Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade. Cool closed, undamaged containers exposed to fire with water spray.

Flash point: Does not burn.

Upper Flammability Limit: Does not burn.

Lower Flammability Limit: Does not burn.

Autoignition temperature: Not applicable - does not burn.

Flammability Class: Does not burn.

Section 6 - Accidental Release Measures

Accidental release: Minor spills do not normally need any special cleanup measures. 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, PVC. 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. Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned below (section 8).

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

SAFETY DATA SHEET

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

Approved Handler: This Product must be under the control of an Approved Handler

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under 'Storage' should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage: Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight. Make sure that the product does not come into contact with substances listed under 'Incompatibilities' in Section 10. 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 and Personal Protection

The following Australian/ New Zealand Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

SWA Exposure Limits

TWA (mg/m³)

STEL (mg/m³)

Exposure limits have not been established by SWA for any of the significant ingredients in this product.

The ADI for Oryzalin is set at 0.1mg/kg/day. The corresponding NOEL is set at 12mg/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.

Ventilation: This product should only be used in a well-ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

Eye Protection: Eye protection such as protective glasses or goggles is recommended when this product is being used.

Skin Protection: You should avoid skin contact. Therefore you should wear suitable impervious elbow-length gloves and facial protection when handling this product. See below for suitable material types.

Protective Material Types: We suggest that protective clothing be made from the following materials: rubber, PVC.

Respirator: Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian/New Zealand Standard mentioned above.

Safety deluge showers should, if practical, be provided near to where this product is being handled commercially.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	Orange liquid.
Odour:	Mild odour.
Boiling Point:	Approximately 100°C at 100kPa.
Freezing/Melting Point:	No specific data. Liquid at normal temperatures.
Volatiles:	Water component.
Vapour Pressure:	2.37 kPa at 20°C (water vapour pressure).
Vapour Density:	As for water.
Specific Gravity:	1.16-1.17 at 25°C
Water Solubility:	Completely soluble in water.
pH:	6.0-8.0 (1% in water)
Volatility:	No data.
Odour Threshold:	No data.

SAFETY DATA SHEET

Evaporation Rate: As for water.
Coeff Oil/water Distribution: No data
Autoignition temp: Not applicable - does not burn.

Section 10 - Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

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.

Incompatibilities: strong acids, strong bases, strong oxidising agents.

Fire Decomposition: This product is likely to decompose only after heating to dryness, followed by further strong heating. 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 oxides of phosphorus and other phosphorus compounds. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Polymerisation: This product will not undergo polymerisation reactions.

Section 11 - Toxicological Information

Emergency Overview

Physical Description & Colour: Orange liquid.

Odour: Mild odour.

Major Health Hazards: Oryzalin is practically nontoxic by ingestion, with reported oral LD₅₀ values of greater than 5000 mg/kg in rats and mice, and greater than 1000 mg/kg in cats, dogs, and chickens. The dermal LD₅₀ for technical Oryzalin in rabbits is greater than 2000 mg/kg, indicating slight to practically no toxicity by this route. It is reported to cause slight skin and eye irritation in the rabbit, and no skin sensitization in the guinea pig. No significant risk factors have been found for this product.

Potential Health Effects

Inhalation:

Short Term Exposure: Available data indicates that this product is not harmful. In addition product is unlikely to cause any discomfort or irritation.

Long Term Exposure: No data for health effects associated with long-term inhalation.

Skin Contact:

Short Term Exposure: Product may be irritating and may cause skin sensitisation

Long Term Exposure: No data for health effects associated with long-term skin exposure.

Eye Contact:

Short Term Exposure: This product may be irritating to eyes, but is unlikely to cause anything more than mild transient discomfort.

Long Term Exposure: No data for health effects associated with long-term eye exposure.

Ingestion:

Short Term Exposure: Significant oral exposure is considered to be unlikely. However, this product may be irritating to mucous membranes but is unlikely to cause anything more than transient discomfort.

Long Term Exposure: May cause damage to organs (liver, kidney, blood) through repeated exposure.

Carcinogen Status:

SWA: No significant ingredient is classified as carcinogenic by SWA.

NTP: No significant ingredient is classified as carcinogenic by NTP.

IARC: No significant ingredient is classified as carcinogenic by IARC.

Toxicity: Acute toxicity: Oryzalin is practically nontoxic by ingestion, with reported oral LD₅₀ values of greater than 5000 mg/kg in rats and mice, and greater than 1000 mg/kg in cats, dogs, and chickens. The dermal LD₅₀ for technical Oryzalin in rabbits is greater than 2000 mg/kg, indicating slight to practically no toxicity by this route. It is reported to cause slight skin and eye irritation in the rabbit, and no skin sensitization in the guinea

SAFETY DATA SHEET

pig. It is also slightly toxic when inhaled, with a 4-hour inhalation LC₅₀ of greater than 3 mg/L in rats. Formulated products may show moderate toxicity by either the oral or inhalation routes, and may show skin and eye irritation and skin sensitization properties. In dogs and cats, large oral doses cause nausea and vomiting.

Chronic toxicity: Rats fed a dietary level of about 2.5 mg/kg/day for 2 years exhibited blood changes, increased liver and kidney weights, inhibition of growth, and decreased survival. Repeated ingestion of large doses led to adverse changes in blood cell formation in dogs. Mice given dietary doses of about 200 mg/kg/day for 1 year exhibited decreased uterine and ovarian weights. Those exposed to doses of 75 mg/kg/day showed no observable effects.

Reproductive effects: There were no adverse effects on reproduction in a three-generation study of rats fed dietary concentrations of 12.5, 37.5, or 112.5 mg/kg/day, the highest dose tested. foetotoxic effects appeared at 12.5 mg/kg/day. It does not appear that Oryzalin causes reproductive effects.

Teratogenic effects: There were no birth defects in the offspring of pregnant rats fed dietary concentrations as high as 112 mg/kg/day for three generations, or in the offspring of pregnant rabbits given doses of 125 mg/kg/day, the highest dose tested. It appears that Oryzalin is unlikely to cause teratogenic effects.

Mutagenic effects: Oryzalin was not mutagenic in several tests, including tests on live rats and mice and on bacterial cell cultures. It does not appear that Oryzalin is mutagenic.

Carcinogenic effects: When Oryzalin was fed to rats in doses as high as 135 mg/kg/day for 2 years, there was an increase in the incidence of thyroid, mammary, and skin tumours. Thyroid tumours and benign skin and mammary tumours occurred in rats fed a dietary level of 45 mg/kg/day for 2 years. However, there were no tumours in mice fed doses as high as 548 mg/kg/day for 2 years. Because of these conflicting results, it is not possible to assess the carcinogenicity of Oryzalin.

Organ toxicity: Oryzalin has shown systemic effects on the thyroid, liver, and kidneys, as well as blood chemistry, in animal tests.

Fate in humans and animals: Oryzalin is moderately well absorbed from the gastrointestinal tract, and rapidly metabolized and eliminated following absorption. When Oryzalin was administered to male rats, 40% of the dose was excreted in the urine and 40% in the faeces within 3 days. Similar results were obtained in tests with rabbits, a steer, and with Rhesus monkeys.

There is no data to hand indicating any particular target organs.

Classification of Hazardous Ingredients

Oryzalin

Acute Toxicity: LD50(cat)= 1000 mg/kg bw

REFERENCE SOURCE: Lewis, R.J. Saxs Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996. 2537 **PEER REVIEWED** [HSDB]

Eye irritancy: Rabbit

RESULT: Oryzalin, in a 5% acacia suspension, produced slight corneal damage in the rabbit eye which cleared by day 7 (category III toxicity) .REFERENCE SOURCE: [REDS]

STOT: Primary Organ: Blood and the Hematopoietic system.

In a combined chronic toxicity/carcinogenicity study, oryzalin was fed to Fischer 344 rats for two years at doses of 0, 300, 900, or 2700 ppm. The study resulted in a systemic toxicity NOEL of 300 ppm (13.82 mg/kg/day for females; z). The systemic LOEL for females was 900 ppm (42.89 mg/kg/day) based upon hematologic changes (decreased red cells, haemoglobin and haematocrit) and organ weight changes (increased liver and kidney weights) seen in both sexes at 900 ppm (42.89 mg/kg/day for females; 36.86 mg/kg/day for males). There were also, at the high dose, reduced survival, reduced body weight and weight gain, reduced feed efficiency in the females, increased thyroid weight, and histopathological changes in the thyroid (satisfies guidelines 83-1 and 83-2; MRID# 00044332). [REDS]

Hexahydro-1,3,5-tris (2-hydroxy-ethyl)-sym-triazine

Contact skin sensitisation (6.5B)

Section 12 - Ecological Information

Very toxic to aquatic life with long lasting effects. Harmful to terrestrial vertebrates. Harmful to terrestrial invertebrates.

SAFETY DATA SHEET

Breakdown in soil and groundwater: Oryzalin is of low to moderate persistence in the field, with reported field half-lives ranging from 20 to 128 days. A representative value for soil half-life is estimated to be 20 days.

Microbial degradation is mainly responsible for the breakdown of Oryzalin in soils, but it may undergo photodecomposition near the soil surface. Volatilization is not appreciable. Oryzalin is slightly soluble in water and it does not have a strong tendency to adsorb to soil particles. It is bound to a greater extent with increasing soil organic matter and clay content. In soils with low proportions of these, high water tables and increased rainfall, Oryzalin may be mobile, and thus present a risk of contamination to groundwater.

Breakdown in water: No breakdown of Oryzalin by hydrolysis was observed at pH 5, 7, and 9. Based on its behaviour in soil, breakdown by microbial processes is probably slow in the aquatic environment due to low levels of oxygen and low microbial activity. Photodegradation may be significant in the upper portions of the water column.

Breakdown in vegetation: Oryzalin is readily absorbed via the roots, and plant metabolism of Oryzalin is minimal.

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.

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.

Section 14 - Transport Information

New Zealand

Classified as a Dangerous Good for transport in accordance with the Land Transport Rule Dangerous Goods 2005 and NZS 5433:2012.

Transport Pictogram



Road and Rail Transport

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

Marine Transport

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

Air Transport

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

Section 15 - Regulatory Information

New Zealand:

SAFETY DATA SHEET

Issued by: Turf Culture Pty Ltd

Phone: +61 3 9553 3121

Poisons Information Centre: 0800 764 766 from anywhere in New Zealand

EPA Approval No: HSR100936 See www.epa.govt.nz for controls.

HSNO Classification: 6.1E (oral), 6.4A, 6.5B, 6.9B, 9.1A, 9.3C, 9.4C

HSNO Controls

Approved Handler	This product must be under the control of an approved handler.
Additional Controls s77A	The substance must not be applied onto or into water.
Location Certificate	Not applicable
Tracking	Not Tracked
Signage Trigger Quantities	100L (9.1A)
Emergency Response Plan trigger Quantities	100L (9.1A)
Secondary Containment	100L (9.1A)

Section 16 - Other Information

This SDS contains only safety-related information. For other data see product literature.

Acronyms:

CAS number	Chemical Abstracts Service Registry Number
Hazchem Code	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
IARC	International Agency for Research on Cancer
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
UN Number	United Nations Number

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD STATEMENT: 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.

Please read all labels carefully before using product.

This SDS is prepared in accordance with the NZ Code of Practice (HSNOCOP8) Preparation of Safety Data Sheets.

Issue Date 17/09/14

Review Date 17/09/19

SAFETY DATA SHEET

Issued by: Turf Culture Pty Ltd

Phone: +61 3 9553 3121

Poisons Information Centre: 0800 764 766 from anywhere in New Zealand