

MATERIAL SAFETY DATA SHEET



Emergency Phone: 1800-033-882 (24 hrs)
Dow AgroSciences Australia Ltd.
Frenchs Forest NSW 2086

PRODUCT: GRAZON* EXTRA HERBICIDE

Effective Date: 8 August 2007
Product Code: 268991

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Grazon* Extra Herbicide

PURPOSE: Broadleaf herbicide

COMPANY IDENTIFICATION:

Dow AgroSciences Australia Ltd.
ABN 24 003 771 659
Level 5, 20 Rodborough Road,
Frenchs Forest NSW 2086

Customer Service Toll Free Number:

1800 700 096

(Mon-Fri, 8am–5pm EST)

Emergency Telephone Number:

1800 033 882

(24 hours) (EMERGENCIES ONLY)

Transport Emergency Only Dial 000

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Classified as hazardous according to the criteria of
NOHSC

Not Classified as Dangerous Goods for Land
Transport (see Section 14)

Potential Health Effects:

RISK PHRASES:

R22: Harmful if swallowed
R36/38: Irritating to eyes and skin
R50: Very toxic to aquatic organisms

SAFETY PHRASES:

S2: Keep out of reach of children
S20/21: When using do not eat, drink or smoke
S24/25: Avoid contact with skin and eyes
S37/39: Wear suitable gloves and eye/face
protection
S28: After contact with skin, wash immediately
with plenty of water
S3/9/49: Keep only in the original container in a cool,
well-ventilated place

S35: The material and its container must be
disposed of in a safe way
S29: Do not empty into drains
S61: Avoid release to the environment. Refer to
special instructions in Section 6, 7 and 13
below.

3. COMPOSITION/INFORMATION ON INGREDIENTS:

Ingredient	CAS #	Content
Triclopyr Butoxyethyl ester	64700-56-7	36.4%
Picloram as the hexyloxypropylamine salt	1918-02-1	8.7% ¹
Aminopyralid as the hexyloxypropylamine salt	150114-71-9	0.7% ¹
Balance not contributing to the hazard		54.2%
¹ Salt		

4. FIRST AID:

Consult the Poisons Information Centre (Australia 131126) or a doctor in every case of suspected chemical poisoning. Never give fluids or induce vomiting if a patient is unconscious or convulsing regardless of cause of injury. If breathing difficulties occur seek medical attention immediately.

EYE: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, and then continue rinsing eyes. Call the Poisons Information Center or doctor for treatment advice.

SKIN: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call the Poisons Information center or doctor for treatment advice.

INGESTION: Call the Poisons Information Center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

INHALATION: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, and then give artificial respiration; if by mouth-to-mouth use rescuer protection (pocket mask etc.). Call a the Poisons Information Center or doctor for treatment advice.

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NOTE TO DOCTOR: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 82 °C (PMCC)

COMBUSTIBLE: C1

FLAMMABLE LIMITS

LFL: Not determined

UFL: Not determined

EXTINGUISHING MEDIA: Alcohol-resistant foam, water fog, CO₂, and/or dry chemical.

FIRE AND EXPLOSION HAZARDS: Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Toxic irritating gases may be formed under fire conditions.

FIRE-FIGHTING EQUIPMENT: Wear positive-pressure, self-contained breathing apparatus and full protective clothing and equipment.

HAZCHEM: 1X

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS:

: DO NOT touch or walk through spilled material. Wear a face shield or goggles, overalls buttoned to neck and wrist, chemical resistant gloves and boots. Stop leak when safe to do so. Dike area and prevent entry into waterways, and drains. **Small spills/leaks:** Absorb with material such as sand, soil or sawdust. Collect spilled product and place in sealable container for disposal. Spill residues may be cleaned using water and detergent. Contain and absorb wash water for disposal. Absorb and collect washings and place in the same sealable container for disposal. Dike the area of large spills and report them to Dow AgroSciences at 1800-033-882.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

HANDLING: Keep out of reach of children. Harmful if swallowed. Causes eye and skin irritation. Avoid contact with eyes, skin and clothing. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

STORAGE: Store in tightly closed original container in a cool, dry well-ventilated area out of direct sunlight when not in use. Do not store with food, feedstuffs, fertilizers and seeds. See product label for further handling/storage precautions relative to the end use of this product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

EXPOSURE GUIDELINES:

Triclopyr BEE: Dow AgroSciences Industrial Hygiene Guide is 2 mg/M³ as acid equivalent, Skin.

Picloram: NOHSC TWA is 10 mg/m³. OSHA PEL is 15 mg/m³ total dust, 5 mg/m³ respirable.

A "skin" notation following the exposure guideline refers to the potential for dermal absorption of the material. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

EYE/FACE PROTECTION: Use chemical goggles. Eye wash fountain should be located in the immediate work area.

SKIN PROTECTION: When prolonged or frequently repeated contact could occur, use chemically protective clothing resistant to this material. Selection of specific items such as face shield, gloves, boots, apron, or full-body suit will depend on operation.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guidelines. When respiratory protection is required for certain operations, use an approved air-purifying respirator. For emergency

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conditions, use an approved positive-pressure self-contained breathing apparatus.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Liquid
ODOUR: Ester
SPECIFIC GRAVITY: 1.148 g/mL
VAPOR PRESSURE: Not available for substance (triclopyr BE = 3.60×10^{-6} mmHg @ 25 °C ; Picloram acid = 6.16×10^{-7} mm Hg at 35 °C), aminopyralid acid = 19×10^{-5} mm Hg
SOLUBILITY IN WATER: Emulsifiable
pH: 6.9 (1% solution)

10. STABILITY AND REACTIVITY:

STABILITY: Stable under normal storage conditions.
INCOMPATIBILITY: (specific materials to avoid): Avoid strong acids, bases, and oxidizing materials.
HAZARDOUS DECOMPOSITION PRODUCTS: Nitrogen oxides, hydrogen chloride, and phosgene may result under fire conditions.
HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.
EYE: May cause moderate eye irritation. May cause slight temporary corneal injury.
SKIN: Prolonged or repeated skin contact may cause skin irritation. Prolonged skin contact is unlikely to result in absorption of harmful amounts.
INGESTION: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling

operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

INHALATION: Prolonged exposure is not expected to cause adverse effects.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:

Repeated excessive exposures to high amounts of picloram may cause liver effects. For triclopyr BEE, in animals, effects have been reported on the following organs: blood, kidney and liver. For aminopyralid, in animals, effects have been reported on the following organs: gastrointestinal tract.

CANCER INFORMATION:

The active ingredients did not cause cancer in laboratory animals.

TERATOLOGY (BIRTH DEFECTS): The active ingredients did not cause birth defects.

REPRODUCTIVE EFFECTS: Picloram and aminopyralid, in laboratory animal studies, did not interfere with reproduction. For triclopyr acid, in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

MUTAGENICITY: For triclopyr, in-vitro and animal genetic toxicity studies were negative. The preponderance of data shows picloram to be non-mutagenic in in-vitro and animal test systems. For aminopyralid, in-vitro genetic toxicity studies were predominantly negative. Animal genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL DATA:

MOVEMENT & PARTITIONING: Based largely or completely on information for triclopyr BEE.
Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Measured log octanol/water partition coefficient (Log Pow) is 4.09-4.49.
Based largely or completely on information for picloram.
Bioconcentration potential is moderate (BCF is between 100 and 3000 or Log Pow between 3 and 5).

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Potential for mobility in soil is very high (Koc is between 0 and 50).

Log octanol/water partition coefficient (Log Pow) is estimated using a structural fragment method to be 2.27.

Log soil organic carbon/water partition coefficient (Log Koc) is 1.23.

Bioconcentration factor (BCF) in fish is between 31 - 135.

Based largely or completely on information for aminopyralid.

Bioconcentration potential is low (BCF is <100 or Log Pow <3).

Log octanol/water partition coefficient (Log Pow) is estimated using a structural fragment method to be 0.72.

DEGRADATION & PERSISTENCE:

Based largely or completely on information for triclopyr BEE.

Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Biodegradation reached in CO₂ Evolution Test (Modified Sturm Test, OECD Test No. 301B) after 28 days: 18%.

The photolysis half-life in water is 6.6 days.

Under aerobic soil conditions the half-life is 6-52 days.

The hydrolysis half-life is 12 hours.

Theoretical Oxygen Demand (ThOD) is calculated to be 1.39 p/p.

Based largely or completely on information for picloram.

In the atmospheric environment, material is estimated to have a tropospheric half-life of 12.21 days.

The photolysis half-life in water is 2.3-9.58 days.

Under aerobic soil conditions the half-life is 167-513 days.

Under anaerobic soil conditions the half-life is >300 days.

The hydrolysis half-life is >1.8 years.

Theoretical Oxygen Demand (ThOD) is calculated to be 0.99 p/p.

Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Biodegradation reached in Manometric Respirometry Test (OECD Test No. 301 F) after 28 days: 0%.

Based largely or completely on information for aminopyralid.

Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however,

these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Biodegradation reached in Manometric Respirometry Test (OECD Test No. 301 F) after 28 days is 0%.

The rate constant for the vapor phase reaction with photochemically produced hydroxyl radicals at 25°C is estimated to be $1.6646 \text{ E}^{-12} \text{ cm}^3/\text{molecule-sec}$ at 25°C.

In the atmospheric environment, material is estimated to have a tropospheric half-life of 6.426 days.

ECOTOXICOLOGY:

Based largely or completely on information for triclopyr BEE.

Material is highly toxic to aquatic organisms on an acute basis (LC₅₀ between 0.1 and 1 mg/L in most sensitive species).

Material is slightly toxic to birds on an acute basis (LD₅₀ between 501 and 2000 mg/kg).

Material is practically non-toxic to birds on a dietary basis (LC₅₀ >5000 ppm).

Growth inhibition EC₅₀ in duckweed (*Lemna sp.*) is 2.2 mg/L.

Growth inhibition EC₅₀ for diatom (*Navicula sp.*) is 0.193 mg/L.

Growth inhibition EC₅₀ for marine diatom (*Skeletonema costatum*) is 1.17 mg/L.

Growth inhibition EC₅₀ for blue-green alga (*Anabaena flos-aquae*) is 2.27 mg/L.

Acute oral LD₅₀ in honeybee (*Apis mellifera*) is >110 µg/bee.

Acute contact LD₅₀ in honeybee (*Apis mellifera*) is >100 µg/bee.

Based largely or completely on information for picloram.

Material is moderately toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ between 1 and 10 mg/L in most sensitive species).

Material is practically non-toxic to birds on an acute basis (LD₅₀ is >2000 mg/kg).

Acute contact LD₅₀ in honeybee (*Apis mellifera*) is >0.100 mg/bee.

Acute oral LD₅₀ in honeybee (*Apis mellifera*) is >0.100 mg/bee.

The LC₅₀ for earthworm (*Eisenia foetida*) is >5000 mg/kg.

Based largely or completely on information for aminopyralid.

Material is slightly toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ is between 10 and 100 mg/L in the most sensitive species tested).

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Material is practically non-toxic to birds on an acute basis (LD₅₀ is >2000 mg/kg).

Material is practically non-toxic to birds on a dietary basis (LC₅₀ is >5000 mg/kg).

Acute oral LD₅₀ in honeybee (*Apis mellifera*) is >120 µg.

Acute contact LD₅₀ in honeybee (*Apis mellifera*) is >100 µg.

The LC₅₀ in earthworm (*Eisenia foetida*) is >1000 mg/kg.

Growth inhibition EC₅₀ in marine diatom (*Skeletonema costatum*) is 77 mg/L.

Growth inhibition EC₅₀ in diatom (*Navicula sp.*) is 18 mg/L.

Growth inhibition EC₅₀ in green alga (*Selenastrum capricornutum*) is 32 mg/L.

Growth inhibition EC₅₀ in duckweed (*Lemna sp.*) is >88 mg/L

SHIPPING NAME: ENVIRONMENTALLY HAZARDOUS
SUBSTANCE, LIQUID, N.O.S.
(triclopyr BEE, picloram) Marine
pollutant

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION:

ROAD AND RAIL TRANSPORT: Not classified as dangerous goods by the criteria of the Australian Dangerous Goods Code (ADG) for the transport by road and rail

MARINE TRANSPORT: Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG) for transport by sea.

UN No: 3082
Class: 9
Packing group: III

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15. REGULATORY INFORMATION:

APVMA APPROVAL NUMBER: 60830
POISON SCHEDULE: 6

16. OTHER INFORMATION:

Glossary

ACGIH: American Conference of Governmental Industrial Hygienists.

ASCC: Australian Safety and Compensation Council.

BCF: Bioconcentration Factor - a measure for the characterization of the accumulation of a chemical in an organism. It is defined as the concentration of a chemical in an organism (plants, microorganisms, animals) divided by the concentration in a reference compartment (e.g. food, surrounding water).

BOD: Biochemical oxygen demand. The amount of oxygen required by aerobic microorganisms to decompose the organic matter in a sample of water, such as that polluted by sewage. It is used as a measure of the degree of water pollution. Also called biological oxygen demand.

Dow AgroSciences Industrial Hygiene Guideline: An internal company standard based on an 8 hour TWA.

EC₅₀: median effective concentration. Statistically derived concentration of a substance in an environmental medium expected to produce a certain effect in 50% of test organisms in a given population under a defined set of conditions.

Explosive Limits: The range of concentrations (% by volume in air) of a flammable gas or vapour that can result in an explosion for ignition in a confined space.

K_{oc}: the organic carbon partition coefficient (mL soil water /g organic carbon).

K_{ow}: See P_{ow}

LC₅₀: Lethal Concentration 50%. A concentration of chemical in air or water that will kill 50% of the test organisms.

LD₅₀: Lethal Dose-50%. The doses of a chemical that will kill 50% of the test animals receiving it.

NIOSH: American national Institute of Occupational Safety and Health, a federal agency which conducts research on occupational safety and health questions and recommends new standards.

NOHSC: National Occupational Health and Safety Commission of Australia now the Office of the Australian Safety and Compensation Council.

OASCC: Office of the Australian Safety & Compensation Commission.

OSHA: American Occupational Safety and Health Administration.

PEL: Permissible Exposure Level, a maximum allowable exposure level by law.

pH: Measure of how acidic or alkaline a material is using a 1 - 14 scale. pH 1 is strongly acidic and pH 14 strongly alkaline.

Polymerisation: a chemical reaction in which small molecules (monomers) combine to form much larger molecules (polymers). A hazardous polymerisation reaction is one that occurs at a fast rate and releases large amounts of energy.

P_{ow}: The octanol-water partition coefficient is the ratio of the concentration of a chemical in octanol and in water at equilibrium and at a specified temperature. Octanol is an organic solvent that is used as a surrogate for natural organic matter. This parameter is used in many environmental studies to help determine the fate of chemicals in the environment.

STEL: Short-Term Exposure Limit. A term used to indicate the maximum average concentration allowed for a continuous 15 minute exposure period.

TLV: Threshold Limit Value, an exposure limit set by a competent authority

TWA: Time Weighted Average. The average concentration of a chemical in air over the total exposure time - usually an 8-hour workday.

References

AS/NZS 1715-1994 Selection Use and Maintenance of Respiratory Protective Devices.

ASNZS 1716 - 1994 Respiratory protective devices. Australian Dangerous Goods Code

International Maritime Dangerous Goods Code.

International Air Transport Association (IATA) Dangerous Goods Regulation

NOHSC Hazardous Substances Information System.

VERSION TRACKING

Replaces version dated: 4 July 2007

Sections amended: 1, 14

Product code: GF-1544

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**FOR FURTHER PRODUCT INFORMATION CALL DOW
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REPRESENTATIVES TOLL FREE 1800 700 096 DURING
BUSINESS HOURS.**

This MSDS has been compiled using publicly available information, information provided by suppliers of ingredients used in the product and internal studies on the product and/or its ingredients.

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 BASED ON PUBLICLY AVAILABLE AND INTERNALLY AVAILABLE INFORMATION. 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 FUTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY. THE 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.

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