

SAFETY DATA SHEET



Dow AgroSciences

Emergency Phone: 1800-033-882 (24hrs)
+61 3 9663 2130 (24 hrs)
Dow AgroSciences Australia Ltd.
Frenchs Forest NSW 2086

GOAL™ HERBICIDE

Effective Date: 12 March 2012
Product Code: 15124

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Goal™ Herbicide

USES: 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:
Australia: 1800 033 882
Global: +61 3 9663 2130
(24 hours) (EMERGENCIES ONLY)
Transport Emergency Only Dial 000

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Classified as hazardous according to the criteria of
NOHSC

Classified as Dangerous Goods - see Section 14 for
land transport exemption.

Potential Health Effects:

Risk Phrases

R65: Harmful: may cause lung damage if
swallowed.
R36/38: Irritating to eyes and skin.
R50: Very toxic to aquatic organisms.

Safety Phrases

S2: Keep out of the reach of children.
S20/21: When using do not eat, drink or smoke.
S62: If swallowed, do not induce vomiting: seek
medical advice immediately and show this
container or label.
S23: Do not breathe vapour or spray.

S24/25: Avoid contact with skin and eyes.
S36/37/39: Wear suitable protective clothing, gloves and
eye/face protection.
S26: In case of contact with eyes, rinse
immediately with plenty of water and seek
medical advice.
S28: After contact with skin, wash immediately
with plenty of soap and water.
S29: Do not empty into drains.
S37: Keep container tightly closed in a cool place.

3. COMPOSITION/INFORMATION ON INGREDIENTS:

Ingredient	CAS #	Content
Oxyfluorfen	042874-03-3	23%
N-methyl-2-pyrrolidone (NMP)	872-50-4	10–20%
Solvent naptha (petroleum) heavy aromatic.	64742-94-5	40–60%
Other Ingredients		5-25%
Total		100%

4. FIRST AID:

Consult the Poisons Information Centre (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: Flush eyes thoroughly with water for several minutes.
Remove contact lenses after initial 1-2 minutes and
continue flushing for several additional minutes. If effects
occur, consult a physician, preferably an ophthalmologist.

SKIN: Remove material from skin immediately by washing
with soap and plenty of water. Remove contaminated
clothing and shoes while washing. Seek medical attention if
irritation persists. Wash clothing before reuse. Discard
items, which cannot be decontaminated, including leather
articles such as shoes, belts, and watchbands.

INGESTION: For advice, contact a Poisons Information
Centre. Phone 13 11 26. Do not induce vomiting unless
told to do so by a Poisons Information Centre or doctor. Do
not give any liquid to the person. Do not give anything by
mouth to an unconscious person.

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INHALATION: Move person to fresh air. If person is not breathing, call an ambulance (dial 000), then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a Poison Information Centre (dial 13 11 26) or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

NOTE TO PHYSICIAN: If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

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 footwear. Stop leak when safe to do so. Dam the area and prevent entry into waterways, and drains. **Small spills/leaks:** Absorb with material with a proprietary absorbent suitable for chemical spills or inert 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. Dam the area of **large spills/leaks** and report them to Dow AgroSciences Emergency Services at 1800-033-882.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 98°C
METHOD USED: SCC

AUTO-IGNITION TEMPERATURE: 346°C (NMP)

FLAMMABILITY LIMITS

UFL: 11.8% (solvent naphtha)
LFL: 1.3% (NMP)

COMBUSTIBLE LIQUID: C1

EXTINGUISHING MEDIA: When product is involved in a fire use CO₂, dry chemical, water spray or foam.

FIRE & EXPLOSION HAZARDS: Pesticide particulates can become airborne. Combustion generates toxic fumes of the following: hydrogen chloride, hydrogen fluoride, and nitrogen oxides. Dried product can burn.

FIRE-FIGHTING EQUIPMENT: Remain upwind. Avoid breathing smoke. Wear self-contained breathing apparatus that conforms to relevant Australian Standards and full protective gear. Use water spray to cool containers exposed to fire. Contain run-off.

HAZCHEM: 2X

6. ACCIDENTAL RELEASE MEASURES:

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

HANDLING: Keep out of reach of children. Harmful if swallowed or inhaled. 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. Reduce stacking height where local conditions can affect packaging strength.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE STANDARDS: These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

Oxyfluorfen: Dow AgroSciences Industrial Hygiene Guide is 0.2 mg/m³, TWA and 1.6 mg/m³, STEL.

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NMP: TWA 25ppm; 103 mg/m³ (NOHSC). STEL 75ppm; 309 mg/m³ (NOHSC). AIHA WEEL 10 ppm, Skin. Interim Industrial Hygiene Guide is 500 ppm.

A 'skin' notation following the exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact. 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.

'Interim Industrial Hygiene Guides' are occupational exposures limits set by the original owner of this product prior to the merger with Dow AgroSciences. These limits have not been reviewed per the Dow IHG process, but are utilized during this period of merger integration until Dow AgroSciences can formally adopt or modify.

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

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

EYE/FACE PROTECTION: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator that complies with Australian Standards.

SKIN PROTECTION: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, gloves, boots, apron, or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly. Items, which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and disposed of properly.

RESPIRATORY: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an air-purifying respirator that complies with Australian Standards.

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

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Amber Liquid
ODOUR: Sweet
pH: 7.2 to 7.5
VAPOUR PRESSURE: 0.29 mm Hg @ 20°C (NMP)
VAPOR DENSITY (AIR = 1): 5.2 (solvent, naphtha)
BOILING POINT: 201.7°C (NMP)
MELTING POINT: -24.4°C (NMP)
FREEZING/MELTING POINT:
SOLUBILITY IN WATER: Emulsifiable
SPECIFIC GRAVITY (WATER = 1): 1.08
PERCENT VOLATILITY: 62 to 64% (estimate)
EVAPORATION RATE (BAc = 1): 0.06 (NMP)
VISCOSITY: 12.8 CPS

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Stable under normal storage conditions. Avoid contact with ignition sources (e.g. sparks, open flame, and heated surfaces).

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Avoid contact with the following: acids, bases, amines, oxidizing agents, halogens, and sodium hypochlorite.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may yield the following: hydrogen chloride, hydrogen fluoride and nitrogen oxides.

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 corneal injury. Vapour may cause eye irritation experienced as mild discomfort and redness.

SKIN: Brief contact may cause severe skin irritation with pain and local redness. Skin contact may cause allergic skin reaction. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD₅₀ for skin absorption in rats is >4000 mg/kg.

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INGESTION: Low toxicity if swallowed. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia. The oral LD₅₀ for rats is 2985 mg/kg (females) and 4594 mg/kg (males).

INHALATION: Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause central nervous system effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. The aerosol LC₅₀ for rats is >4.8 mg/L for 4 hours.

SYSTEMIC (OTHER TARGET ORGAN EFFECTS):

Oxyfluorfen, in animals, effects have been reported on the following organs: blood, kidney, liver, spleen, bone marrow, adrenals, urinary bladder. For the other ingredients, in animals, effects have been reported on the following organs: lungs, stomach, thyroid, urinary tract, blood-forming organs (bone marrow & spleen) and liver.

CANCER INFORMATION: Oxyfluorfen has caused cancer in laboratory animals.

TERATOLOGY (BIRTH DEFECTS): Oxyfluorfen has been toxic to the foetus in laboratory animals only at doses toxic to the mother. NMP has caused toxic effects to the foetus in laboratory animals at high dose levels with either mild or undetectable maternal toxicity.

REPRODUCTIVE EFFECTS: For oxyfluorfen, in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

MUTAGENICITY: For oxyfluorfen and the solvent, in-vitro and animal genetic toxicity studies were negative. For the minor component(s), in-vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING: Based largely or completely on information for oxyfluorfen.

Bioconcentration potential is moderate (BCF is between 100 and 3000 or Log Pow between 3 and 5).
Measured log octanol/water partition coefficient (Log Pow) is 4.7.

DEGRADATION & PERSISTENCE: Based largely or completely on information for oxyfluorfen.

Biodegradation under aerobic laboratory conditions is below detectable limits (BOD₂₀ or BOD₂₈ is <2.5%).
Biodegradation reached in Closed Bottle Test (OECD Test No. 301D) after 28 days is 1.2%.

ECOTOXICOLOGY: Based largely or completely on information for oxyfluorfen.

Material is very **highly toxic to aquatic organisms** on an acute basis (LC₅₀ or EC₅₀ is <0.1 mg/L in the most sensitive species tested).

Growth inhibition EC₅₀ in blue-green alga (*Anabaena flos-aquae*) is >0.1 mg/L.

Growth inhibition EC₅₀ in diatom (*Navicula sp.*) is 0.03 mg/L.

Growth inhibition EC₅₀ in duckweed (*Lemna sp.*) is 0.0003 mg/L.

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 ppm).

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

Growth inhibition EC₅₀ in green alga (*Selenastrum capricornutum*) is >0.0029 mg/L.

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.

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14. TRANSPORT INFORMATION:

ROAD AND RAIL TRANSPORT:

Not dangerous goods under the ADG code when being transported in IBCs or other receptacles < 500 L (kg), (Special Provision AU01).

SEA AND AIR TRANSPORT: Classified as dangerous goods for transport by sea and air in accordance with the International Maritime Dangerous Goods Code (IMDG) and the International Air Transport Association (IATA) Dangerous Goods Regulation.

UN No: 3082

Class: 9

Packing group: III

SHIPPING NAME: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (OXYFLUORFEN).

Marine Pollutant: Yes

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 Safe Work Australia.

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.

Safe Work Australia: independent statutory agency with primary responsibility to improve work health and safety and workers' compensation arrangements across Australia. Previously Australian Safety and Compensation Council.

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.

AS/NZS 2161.10 - 2005 Occupational protective gloves - Part 10.1: Protective gloves against chemicals and micro-organisms. Australian Dangerous Goods Code

15. REGULATORY INFORMATION:

APVMA APPROVAL NUMBER: 54271

POISON SCHEDULE: S5

16. OTHER INFORMATION:

Glossary

ACGIH: American Conference of Governmental Industrial Hygienists.

Advisory Committee on Chemicals scheduling: replaces the National Drugs and Poisons Scheduling Committee. Scheduling is a classification system that controls how medicines and chemicals are accessible to consumers

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.

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International Maritime Dangerous Goods Code.
International Air Transport Association (IATA) Dangerous Goods
Regulation
Safe Work Australia Hazardous Substances Information System.

VERSION TRACKING

Replaces version dated: 13 March 2007

Sections amended: 1, 6, 16

Product code: GF-1190

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

Dow AgroSciences (Australia) Ltd. urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above.

However, no warranty, express or implied, is given.

Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped.

Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

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