

MATERIAL SAFETY DATA SHEET



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

Treflan™ Herbicide

Effective Date: 13 January 2011
Product Code: 132542

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Treflan™ Herbicide

PURPOSE: Pre-mergent herbicide for weed control in crops.

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

Classified as Dangerous Goods for Land Transport, see Section 14 for land transport exemption.

RISK PHRASES:

R36: Irritating to eyes.
R43: May cause sensitization by skin contact.
R65: Harmful: may cause lung damage if swallowed.
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

SAFETY PHRASES:

S2: Keep out of the reach of children.
S23: Do not breathe fumes or spray.
S24: Avoid contact with skin.
S37: Wear suitable gloves.
S61: Avoid release to the environment. Refer to special instructions below in sections 6,7 and 13.

S62: If swallowed, do not induce vomiting: seek medical advice immediately and show the container or label.

3. COMPOSITION/INFORMATION ON INGREDIENTS:

Ingredient	CAS #	Content
Trifluralin	1582-09-8	44.9%
Aromatic hydrocarbon solvent (may contain naphthalene)	64742-94-5 (91-20-3)	43% (<7%)
Balance not contributing to hazard		5 - 10%

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 doctor, preferably an ophthalmologist.

SKIN: Wash skin thoroughly with soap and water. Remove contaminated clothing. Wash contaminated clothing before reuse.

INGESTION: Do not induce vomiting. Call a doctor. The decision of whether to induce vomiting or not should be made by a doctor.

INHALATION: Remove to fresh air. Consult a doctor.

NOTE TO DOCTOR: No specific antidote. Supportive care. Treatment based on judgement of the doctor in response to symptoms of patient. If lavage is performed, suggest endotracheal and/or oesophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach.

5. FIRE FIGHTING MEASURES:

FLASH POINT: >70 °C(as for solvent)

METHOD USED: PMCC

FLAMMABILITY LIMITS

UFL: Not applicable

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LFL: Not applicable
COMBUSTIBILITY: C1

EXTINGUISHING MEDIA: Water fog or fine spray. Carbon dioxide. Dry chemical powder. Foam.

FIRE & EXPLOSION HAZARDS: During a fire, smoke may contain the original material in addition to combustion products of varying composition (including nitrogen oxides, carbon monoxide, carbon dioxide flourinated hydrocarbons) which may be toxic and/or irritating. Violent eruption of containers may occur under fire conditions. Keep containers cool by spraying with water. Contain runoff to prevent entry into water or drainage systems.

FIRE-FIGHTING EQUIPMENT:
Wear full body protective clothing and use self-contained breathing apparatus.

HAZCHEM: 2X

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Small spills/leaks: Contain and absorb small spills with suitable proprietary absorbents suitable for chemical spills or inert materials such as sand or earth. Transfer liquids and solid material to separate suitable containers for recovery or disposal. Avoid breathing vapor. Keep spills and cleaning run-off out of municipal sewers and open bodies of water. Dam the area of **large spills/leaks** and report them to Dow AgroSciences Emergency Services at 1800-033-882. If exposed to material during clean-up operations, remove all contaminated clothing promptly. Wash all exposed skin areas with soap and water immediately after exposure. Thoroughly launder clothing before reuse. Do not take clothing home to be laundered.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

HANDLING: Do not handle material near food, feed or drinking water.

STORAGE: Store in well-ventilated area. Store in a dry area. Store out of direct sunlight in a cool place. Do not store this material near food, feed or drinking water. Keep container tightly closed when not in use.

OTHER: Triple rinse (or equivalent) and puncture empty container. Dispose empty container via drumMUSTER or in a sanitary landfill as allowed by state and local authorities.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

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

EXPOSURE GUIDELINES:

Exposure guidelines have not been established for the product. Manufacturers recommendation for solvent: Vapour; TWA 100 mg/m³ (15 ppm) total hydrocarbons. Naptahlene: NOHSC: TWA 52 mg/m³ (10 ppm) ; STEL 79 mg/m³ (15 ppm). ACGIH STEL 15 ppm skin; TWA 10 ppm (skin).

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.

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 safety glasses. Where contact with the liquid is likely, chemical goggles are recommended

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing and chemical resistant gloves should be needed. Avoid gloves made of natural rubber ("latex").

RESPIRATORY: For most conditions, no respiratory protection should be needed. However, when airborne exposure guidelines and/or comfort levels may be exceeded use an approved air-purifying respirator. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

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

temperatures or mechanical action may form vapors, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs. Excessive exposure should be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Orange liquid
ODOR: Aromatic
WATER SOLUBILITY: product is emulsifiable as trifluralin is nearly insoluble.
SPECIFIC GRAVITY (WATER = 1): 1.070
VAPOUR PRESSURE: 1.99×10^{-4} mm Hg @ 29.5°C or 13.7mPa @ 25 °C (trifluralin). <13Pa @ 20 °C (solvent)

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:

Effects have been observed in blood, kidney and liver from chronic exposure of laboratory animals to trifluralin. No information found for the solvent. Exposure to high concentrations of naphthalene may cause destruction of red blood cells, anemia, and cataracts.

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Stable under normal storage conditions.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID). Strong bases, acids or oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Nitrogen oxides, carbon dioxide, carbon monoxide and fluorinated hydrocarbons.

HAZARDOUS POLYMERIZATION: Not known to occur.

CANCER INFORMATION:

Data for the potential for trifluralin to induce cancers has been inconclusive. Therefore, it is prudent to consider the active ingredient a possible human carcinogen. No information found for the solvent. Naphthalene caused cancer in laboratory animal studies, but the relevance of these findings to humans is uncertain.

TERATOLOGY (BIRTH DEFECTS): Developmental toxicity has only been observed for trifluralin at maternally toxic doses. No information found for the solvent.

REPRODUCTIVE EFFECTS:

Trifluralin did not cause birth defects in laboratory animal studies. Other effects were observed only at maternally toxic doses. No information found for the solvent.

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.

Based largely or completely on the product components.

EYE: It may cause eye irritation.

SKIN: The trifluralin dermal LD₅₀ for rats is >4000 mg/kg. solvent dermal LD₅₀ > 3160 mg/kg. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Prolonged or repeated exposure may cause allergic skin reaction.

INGESTION: Very low toxicity if swallowed. The trifluralin oral LD₅₀ for rats is >5000 mg/kg. Solvent LD₅₀ > 7000 mg/kg. Small amounts of the solvent aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema

INHALATION: No adverse effects anticipated by this route of exposure for trifluralin. The solvent at elevated

MUTAGENICITY: Trifluralin was not mutagenic in relevant studies. No information found for the solvent.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

Based largely or completely on information for trifluralin.

MOVEMENT & PARTITIONING:

Bioconcentration potential is moderate (BCF between 100 and 3000 and Log P_{ow} between 3 and 5).

Potential for mobility in soil is slight (K_{oc} between 2000 and 5000).

The solvent has high potential for bioaccumulation.

DEGRADATION & PERSISTENCE:

Tightly bound to soil and is extremely resistant to leaching and elution. Degradation occurs by volatilisation, photodegradation, aerobic and anaerobic mechanisms, as the more usual routes. Half-life in soils is dependent on soil type and conditions and is approximately 25-289 days (typically 60 days).

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ECOTOXICOLOGY:

Material is very toxic to fish on an acute basis ($LC_{50} < 1$ mg/L). Material is very toxic to aquatic invertebrates on an acute basis ($EC_{50} < 1$ mg/L).

Material is practically non-toxic to birds on an acute basis ($LD_{50} > 2000$ mg/kg).

Earthworms. Permitted application rates result in soil residues of approximately 1 ppm trifluralin, a level that had no adverse effects on earthworms.

Bees. Non-toxic

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:

DANGEROUS GOODS CLASSIFICATION

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).

For **MARINE and AIR** transport the following classification applies:

UN No: UN3082

Class: 9

Packing group: III

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

15. REGULATORY INFORMATION:

APVMA APPROVAL NUMBER: 58759
POISON SCHEDULE: S5

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.

NZS: New Zealand Standard

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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: New

Sections amended: New

Product code: Third party

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

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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 FURTHER 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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