



Product Name: GARLON™ 600 HERBICIDE

Issue Date: 16.08.2013

Dow AgroSciences (Australia) Ltd. encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

## 1. Product and Company Identification

### Product Name

GARLON™ 600 HERBICIDE

### COMPANY IDENTIFICATION

Dow AgroSciences (Australia) Ltd.  
A Subsidiary of The Dow Chemical Company  
ABN 24 003 771 659  
Level 5  
20 Rodborough Rd  
Frenchs Forest, NSW 2086  
Australia

Customer Information Number:

1800-700-096

[auscustomerservice@dow.com](mailto:auscustomerservice@dow.com)

### EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:**

61 3 9663 2130

**Local Emergency Contact:**

1800 033 882

For advice, contact a doctor (at once) or the Australian Poisons Information Centre: 131 126

Transport Emergency Only Dial 000

## 2. Hazards Identification

HAZARDOUS SUBSTANCES CLASSIFICATION: Not classified as hazardous to health according to the criteria of the National Occupational Health and Safety Commission, Australia

## 3. Composition Information

Component	Amount	Classification:	CAS #
Triclopyr-2-butoxyethyl ester	71.1 %	Xn: R22; R43; N: R50/53	64700-56-7
Diethylene glycol monoethyl ether	18.7 %	Not classified.	111-90-0
Balance	10.2 %		Not available Not available

See Section 16 for full text of R-phrases.

## 4. First Aid Procedures

**Consult the Poisons Information Centre (Ph 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.**

### Description of first aid measures

**Inhalation:** Move person to fresh air; if effects occur, consult a physician.

**Skin Contact:** 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.

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

**Ingestion:** If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

### Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

### Indication of immediate medical attention and special treatment needed

No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

## 5. Fire Fighting Measures

### Suitable extinguishing media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

**Extinguishing Media to Avoid:** Do not use direct water stream. May spread fire.

### Special hazards arising from the substance or mixture

**Hazardous Combustion Products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Sulfur oxides. Nitrogen oxides. Hydrogen fluoride. Carbon monoxide. Carbon dioxide.

**Unusual Fire and Explosion Hazards:** Container may vent and/or rupture due to fire. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

### Advice for firefighters

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

**Special Protective Equipment for Firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

See Section 9 for related Physical Properties

**HAZCHEM:** 2X•

## 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**Methods and materials for containment and cleaning up:** Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

## 7. Handling and Storage

### Handling

**General Handling:** Keep out of reach of children. Do not swallow. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

### Storage

Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

## 8. Exposure Controls / Personal Protection

### Exposure Limits

Component	List	Type	Value
Diethylene glycol monoethyl ether	AIHA WEEL	TWA	140 mg/m <sup>3</sup> 25 ppm
Triclopyr-2-butoxyethyl ester	Dow IHG	TWA	2 mg/m <sup>3</sup> D-SEN

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.

A "skin" notation following the inhalation 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.

### Personal Protection

**Eye/Face Protection:** Use safety glasses (with side shields).

**Skin Protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. 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.

**Hand protection:** Use chemical resistant gloves classified under standard AS/NZS 2161.10: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene

rubber (“nitrile” or “NBR”). Polyvinyl chloride (“PVC” or “vinyl”). Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 or higher (breakthrough time greater than 480 minutes according to AS/NZS 2161.10) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to AS/NZS 2161.10) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Respiratory Protection:** Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

**Ingestion:** Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

### Engineering Controls

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

### Other Information

Selection and use of personal protective equipment should be in accordance with the recommendations in one or more of the relevant Australian/New Zealand Standards, including:

AS/NZS 1336: Recommended practices for eye protection in the industrial environment.

AS/NZS 1337: Eye protectors for industrial applications.

AS/NZS 1715: Selection, use and maintenance of respiratory protective devices.

AS/NZS 2161: Occupational protective gloves.

AS/NZS 2210: Occupational protective footwear.

AS 2919: Industrial clothing.

## 9. Physical and Chemical Properties

### Appearance

<b>Physical State</b>	Liquid.
<b>Color</b>	Brown
<b>Odor</b>	Odorless
<b>Odor Threshold</b>	Odorless
<b>pH</b>	6.7 <i>pH Electrode</i>
<b>Melting Point</b>	Not applicable
<b>Freezing Point</b>	No test data available
<b>Boiling Point (760 mmHg)</b>	No test data available.
<b>Flash Point - Closed Cup</b>	95 °C <i>Closed Cup</i>
<b>Evaporation Rate (Butyl Acetate = 1)</b>	No test data available
<b>Flammability (solid, gas)</b>	No data available
<b>Flammable Limits In Air</b>	<b>Lower:</b> No test data available <b>Upper:</b> No test data available
<b>Vapor Pressure</b>	No test data available
<b>Vapor Density (air = 1)</b>	1.2
<b>Specific Gravity (H<sub>2</sub>O = 1)</b>	No test data available
<b>Solubility in water (by weight)</b>	emulsifiable
<b>Autoignition Temperature</b>	No test data available
<b>Decomposition Temperature</b>	No test data available
<b>Kinematic Viscosity</b>	No test data available
<b>Explosive properties</b>	no data available
<b>Oxidizing properties</b>	no data available
<b>Liquid Density</b>	1.2 g/ml @ 20 °C ANZ-01

## 10. Stability and Reactivity

### Reactivity

No dangerous reaction known under conditions of normal use.

### Chemical stability

Unstable at elevated temperatures.

### Possibility of hazardous reactions

Polymerization will not occur.

**Conditions to Avoid:** Exposure to elevated temperatures can cause product to decompose.

**Incompatible Materials:** Avoid contact with: Strong oxidizers.

### Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials.

Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide.

Hydrogen fluoride. Nitrogen oxides. Sulfur oxides.

## 11. Toxicological Information

### Acute Toxicity

#### 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.

LD50, rat, male > 2,000 mg/kg

#### Dermal

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50, rabbit > 2,000 mg/kg

#### Inhalation

No adverse effects are anticipated from single exposure to vapor.

### Eye damage/eye irritation

May cause slight eye irritation. Corneal injury is unlikely. Vapor or mist may cause eye irritation.

### Skin corrosion/irritation

Prolonged contact may cause slight skin irritation with local redness.

### Sensitization

#### Skin

Has caused allergic skin reactions when tested in guinea pigs.

### Repeated Dose Toxicity

In animals, effects have been reported on the following organs: For the active ingredient(s): Kidney. Liver. For the solvent(s): Blood. Kidney. Liver. Testes.

### Chronic Toxicity and Carcinogenicity

For similar active ingredient(s). Did not cause cancer in laboratory animals. For the solvent(s): Did not cause cancer in laboratory animals.

### Developmental Toxicity

For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals. For the solvent(s): Did not cause birth defects or any other fetal effects in laboratory animals.

### Reproductive Toxicity

For similar active ingredient(s). In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. For the solvent(s): Studies in laboratory animals indicate that diethylene glycol monoethyl ether (DEGEE) is not a reproductive toxicant even when given in large amounts (a few percent in the drinking water). However, at the highest doses, it caused some toxic effects in offspring of treated animals: increased liver weight, decreased brain weight, reduced sperm motility.

**Genetic Toxicology**

For the active ingredient(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative. For the solvent(s): In vitro genetic toxicity studies were predominantly negative. Animal genetic toxicity studies were negative.

**12. Ecological Information****Toxicity**Data for Component: **Triclopyr-2-butoxyethyl ester**

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species). Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg). Material is slightly toxic to birds on a dietary basis (LC50 between 1001 and 5000 ppm).

**Fish Acute & Prolonged Toxicity**

LC50, Lepomis macrochirus (Bluegill sunfish), flow-through test, 96 h: 0.36 mg/l

LC50, fish, 96 h: 0.310 mg/l

**Aquatic Invertebrate Acute Toxicity**

EC50, Daphnia magna (Water flea), 48 h, immobilization: 2.9 mg/l

**Aquatic Plant Toxicity**

ErC50, Pseudokirchneriella subcapitata (green algae), Growth rate inhibition, 96 h: > 3.00 mg/l

EbC50, diatom Navicula sp., biomass growth inhibition, 120 h: 0.193 mg/l

EbC50, Lemna gibba, biomass growth inhibition: 2.2 mg/l

**Fish Chronic Toxicity Value (ChV)**

rainbow trout (Oncorhynchus mykiss), NOEC: 0.0263 mg/l

**Aquatic Invertebrates Chronic Toxicity Value**

Daphnia magna (Water flea), 21 d, number of offspring, NOEC: 1.6 mg/l

**Toxicity to Above Ground Organisms**

oral LD50, Colinus virginianus (Bobwhite quail): 735 mg/kg bodyweight.

dietary LC50, Colinus virginianus (Bobwhite quail): 1890 mg/kg diet.

oral LD50, Apis mellifera (bees): > 110 ug/bee

contact LD50, Apis mellifera (bees): > 100 ug/bee

**Toxicity to Soil Dwelling Organisms**

LC50, Eisenia fetida (earthworms), 14 d: > 521 mg/kg

Data for Component: **Diethylene glycol monoethyl ether**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

**Fish Acute & Prolonged Toxicity**

LC50, Ictalurus catus (catfish), flow-through test, 96 h: 6,010 mg/l

**Aquatic Invertebrate Acute Toxicity**

LC50, Daphnia magna (Water flea), static test, 48 h, mortality: 1,982 mg/l

**Aquatic Plant Toxicity**

Based on information for a similar material: ErC50, Desmodium subspicatus (green algae), static test, Growth rate inhibition, 96 h: > 100 mg/l

**Toxicity to Micro-organisms**

EC10; Bacteria, 16 h: 4,000 mg/l

**Persistence and Degradability**Data for Component: **Triclopyr-2-butoxyethyl ester**

Chemical degradation (hydrolysis) is expected in the environment. Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

**Stability in Water (1/2-life):**

8.7 d; 25 °C; pH 7

**OECD Biodegradation Tests:**

Biodegradation	Exposure Time	Method	10 Day Window
18 %	28 d	OECD 301B Test	fail

**Indirect Photodegradation with OH Radicals**

Rate Constant	Atmospheric Half-life	Method
2.3E-11 cm <sup>3</sup> /s	5.6 h	Estimated.

**Theoretical Oxygen Demand:** 1.21 mg/mg

**Data for Component: Diethylene glycol monoethyl ether**

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% biodegradation in OECD test(s) for inherent biodegradability).

**OECD Biodegradation Tests:**

Biodegradation	Exposure Time	Method	10 Day Window
90 %	28 d	OECD 301E Test	pass
> 90 %	5.5 d	OECD 302B Test	Not applicable

**Bioaccumulative potential****Data for Component: Triclopyr-2-butoxyethyl ester**

**Bioaccumulation:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

**Partition coefficient, n-octanol/water (log Pow):** 4.62

**Bioconcentration Factor (BCF):** 110; fish

**Data for Component: Diethylene glycol monoethyl ether**

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

**Partition coefficient, n-octanol/water (log Pow):** -0.54 Measured

**Mobility in soil****Data for Component: Triclopyr-2-butoxyethyl ester**

**Mobility in soil:** Calculation of meaningful sorption data was not possible due to very rapid degradation in the soil., For the degradation product:, Triclopyr., Potential for mobility in soil is very high (Koc between 0 and 50).

**Henry's Law Constant (H):** 2.9E-03 Pa\*m<sup>3</sup>/mole.

**Data for Component: Diethylene glycol monoethyl ether**

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

**Partition coefficient, soil organic carbon/water (Koc):** 20 Estimated.

**Henry's Law Constant (H):** 2.22E-08 atm\*m<sup>3</sup>/mole; 25 °C Estimated.

## 13. Disposal Considerations

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.

## 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).

**IMDG**

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

**Technical Name:** Triclopyr 2-Butoxyethyl Ester

**Hazard Class:** 9 **ID Number:** UN3082 **Packing Group:** PG III

**EMS Number:** F-A,S-F

Marine pollutant.: Yes

### ICAO/IATA

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

**Technical Name:** Triclopyr 2-Butoxyethyl Ester

**Hazard Class:** 9 **ID Number:** UN3082 **Packing Group:** PG III

**Cargo Packing Instruction:** 964

**Passenger Packing Instruction:** 964

**Environmental Hazard:** Yes

*This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.*

## 15. Regulatory Information

**Poison Schedule:** 6

**APVMA Approval Number:** 31898

## 16. Other Information

### Risk-phrases in the Composition section

R22 Harmful if swallowed.  
 R43 May cause sensitization by skin contact.  
 R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

### Revision

Identification Number: 52481 / 4069 / Issue Date 16.08.2013 / Version: Replaces May 2009

DAS Code: IWD-3483

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

### Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation

*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*



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