MATERIAL SAFETY DATA SHEET

Date of Issue: January 2013
MSDS No. FMC/T&OMULTI/1

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: BRIGADE T&O MULTI-INSECTICIDE

Other Names: Bifenthrin.
Use: Insecticide for turf, ornamentals and interior/exterior urban pests.
Company: FMC Australasia Pty Ltd.
Address: 5 Palmer Place, Murarrie, Qld 4172
Telephone Number: 07 3908 9222 **Fax Number:** 07 3908 9221
Emergency Telephone Number: 1800 033 111 (All hours - Australia wide).

SECTION 2 HAZARDS IDENTIFICATION

Classified as hazardous according to criteria of Safe Work Australia.
Not classified as a Dangerous Good according to the ADG Code.

Risk phrases:	R20/22	Harmful by inhalation and if swallowed.
Safety Phrases:	S2	Keep out of reach of children.
	S13	Keep away from food, drink and animal feeding stuffs.
	S23	Do not breathe vapour or spray.
	S24/25	Avoid contact with skin and eyes.
	S36/37	Wear suitable protective clothing and gloves.
	S39	Wear eye/face protection.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

CHEMICAL	*CAS NUMBER*	*PROPORTION*
Bifenthrin	82657-04-3	100 g/L
Propane-1,2-diol	57-55-6	< 5%
Other ingredients determined not to be hazardous	mixture	Balance

SECTION 4 FIRST AID MEASURES

FIRST AID

Swallowed: If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia (13 11 26). If any discomfort persists seek medical advice.

Eye: If in eyes, hold eyes open and flush with water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Skin: If on skin wash with plenty of soap and water. Remove contaminated clothing. If irritation occurs and persists see a doctor.

Inhaled: Remove patient to fresh air. If breathing discomfort occurs, obtain medical attention.

Advice to Doctors: Bifenthrin the active ingredient in this product is a pyrethroid insecticide. It has been reported that a topical application of Vitamin E cream has therapeutic value in reducing skin irritation, associated with skin contact with pyrethroid insecticides. Treatment is otherwise symptomatic and supportive.

SECTION 5 FIRE FIGHTING MEASURES

Specific Hazard: Product is a not flammable.

Extinguishing media: Extinguish fire using media suited to burning material. If containers are ruptured contain all runoff.

Hazards from combustion products: There is no risk of an explosion from this product under normal circumstances if involved in a fire. Product is unlikely to decompose until heated to dryness. On further heating will emit toxic fumes of carbon monoxide, carbon dioxide, hydrogen chloride, chlorine, fluorine and hydrogen fluoride etc.

Precautions for fire-fighters and special protective equipment: Isolate fire area. Evacuate downwind. Wear full protective clothing and self-contained breathing apparatus. Do not breathe or contact smoke, gases or vapours generated.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Emergency procedures: Isolate and post spill area. Keep out unprotected persons and animals. Wear wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow length PVC or nitrile gloves and a half facepiece respirator.

Spills: In the case of spillage, contain and absorb spilled material with absorbent material such as sand, clay or cat litter and dispose of waste according to the Australian Standard 2507 - Storage and Handling of Pesticides. Keep material out of streams and sewers. Vacuum, shovel or pump waste into an approved drum. Label for contents. Dispose of drummed wastes, including decontamination solution, in accordance with the requirements of Local or State Waste Management Authorities.

Material and methods for containment and cleanup procedures: To clean spill area, tools and equipment, wash with a solution of soap, water and acetic acid/vinegar. Follow this with a neutralisation step of washing the area with a bleach or caustic soda ash solution. Finally, wash with a strong soap and water solution. Absorb, as above, any excess liquid and add both solutions to the drums of waste already collected.
Do NOT allow spilled product or wash solution to enter sewers, drains, dams, creeks or any other waterways.

SECTION 7 HANDLING AND STORAGE

Precautions for Safe Handling: Ensure containers are kept closed until using product. Poisonous if swallowed. Will irritate the eyes. Avoid contact with eyes and skin. When opening the container and preparing spray, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow length PVC or nitrile gloves and a half facepiece respirator. When using the prepared spray wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow length PVC or nitrile gloves. Wash hands after use. After each day's use, wash gloves, contaminated clothing and respirator, and if rubber wash with detergent and warm water..

Conditions for Safe Storage: DO NOT store near (or allow to contact) fertilizers, fungicides or pesticides. Store in the closed original container, in a cool well ventilated area, out of direct sunlight. Store in a room or place away from children, animals, food, feed stuffs and seed.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

National Exposure Standards:
No exposure standard for bifenthrin has been established by Safe Work Australia. However, the following exposure standard has been established:

Atmospheric Contaminant	*Exposure Standard (TWA)*	*Proportion in Brigade*
Propane-1,2-diol total: (vapour & particulates)	150 ppm (474 mg/m^3)	< 5%
TWA = Time-weight Average		

It is highly unlikely that atmospheric concentrations of Propane-1,2-diol will reach the above concentration when used as directed.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION (Continued)

Biological Limit Values:
No biological limit allocated.

Engineering controls:
Use in well ventilated area only. Use local exhaust at all process locations where spray may be emitted. Ventilate all transport vehicles prior to unloading. Keep containers closed when not in use.

Personal Protective equipment (PPE):
Work Clothing: Wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow length PVC or nitrile gloves and a half facepiece respirator. When using the prepared spray wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow length PVC or nitrile gloves. Wash hands after use. After each day's use, wash gloves, contaminated clothing and respirator, and if rubber wash with detergent and warm water.

Personal Hygiene: Clean water should be available for washing in case of eye or skin contamination. Wash skin before eating, drinking or smoking. Shower at the end of the workday.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White, opaque liquid.
Odour:	Very mild, soap like odour.
Boiling point:	Not available.
Freezing point:	Not available.
Specific Gravity:	1.0 g/mL.
pH:	Not available.
Solubility in Water:	Product suspends in water.
Flammability:	Not flammable.
Corrosive hazard:	Non corrosive; compatible with stainless steel containers & polyethylene used in spray tanks and parts.
Flashpoint (°C) :	Not applicable, not flammable..
Flammability Limits (%):	Not flammable.
Poisons Schedule:	Product is a schedule 6 (S6) poison.
Formulation type:	Suspension Concentrate.

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: Product is considered stable in ambient conditions for a period of at least 2 years after manufacture.
Conditions to avoid: No particular conditions to avoid.
Incompatible materials: No particular materials to avoid.
Hazardous decomposition products: When the product is heated to high temperatures, the active constituent will decompose and emit toxic fumes.
Hazardous reactions: No particular reactions to avoid.

SECTION 11 TOXICOLOGICAL INFORMATION

Potential Health Effects:
Studies with laboratory animals have shown this product to be harmful if swallowed. Ingestion of large doses of bifenthrin by laboratory animals produced signs of toxicity which included clonic convulsions, tremors and bloody nasal discharge. Irritating to eyes and respiratory system.

Acute

Swallowed:	This product is poisonous if swallowed; the acute oral LD_{50} (rat) = 505 mg/kg (calculated).
Eye:	Irritating to the eyes.
Skin:	This product has a low dermal toxicity. The dermal LD_{50} (rabbit) > 2000 mg/kg. May cause skin irritation. Skin sensitising may occur in sensitive individuals.
Inhaled:	This product is harmful if inhaled. Acute inhalation LC_{50} = 8.7 mg/L/4 hour (calculated).

SECTION 11 TOXICOLOGICAL INFORMATION(Continued)

Chronic: No data available on this formulation. In studies with laboratory animals, Bifenthrin Technical did not cause teratogenicity or reproductive toxicity. Tremors were associated with repeated exposure of dogs, rats, rabbits and mice to Bifenthrin. The overall results from a battery of genotoxicity studies indicate that Bifenthrin is not considered to be genotoxic. Ames test results were negative.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Toxicology: The active ingredient, Bifenthrin, is highly toxic to fish and aquatic arthropods with LC_{50} values ranging from 0.0038 µg/L to 17.8 µg/L. In general, the aquatic arthropods are the most sensitive species. Care should be taken to avoid contamination of the aquatic environment. Bifenthrin had no effect on molluscs at its limit of water solubility. Bifenthrin is only slightly toxic to both waterfowl and upland game birds with LC_{50} values range from 1800 mg/kg to > 2,150 mg/kg. Do not contaminate sewers, drains, dams, creeks or any other waterways with product or the used container.

Environmental Properties: The active ingredient, Bifenthrin, degrades at a moderate rate in agricultural soils (t½ = 50 to 205 days), and more rapidly on the surface of bare soils (t½ = 7 to 62 days). Bifenthrin is tightly bound in most soils and has extremely low water solubility.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal: Persons involved in cleanup require complete skin protection - see section 8. On site disposal of the concentrated product is not acceptable. Ideally the product should be used for its intended purpose. If there is a need to dispose of the product, approach local authorities who hold periodic collections of unwanted chemicals (ChemClear®). Label all recovered material for contents. Dispose of drummed wastes, including decontamination solution, in accordance with the requirements of Local or State Waste Management Authorities.

Dangerous to Fish: Do NOT allow spilled product or wash solution to enter sewers, drains, dams, creeks or any other waterways.

Disposal of empty, non-returnable containers: Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on-site. If recycling, replace cap and return containers to recycler or designated collection point. If not recycling, break, crush or puncture and bury empty containers in a local authority landfill. If not available bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, vegetation and roots, in compliance with relevant Local, State or Territory government regulations. Empty containers and product should not be burnt.

SECTION 14 TRANSPORT INFORMATION

Road & Rail Transport: Brigade T&O Multi-Insecticide is not classified as a Dangerous Goods under the Australian Code for the Transport of Dangerous Goods by Road and Rail in containers less than 3000 litres. (See special provision AU01). Bulk shipments should use UN 3082, as per below.

Marine and Air Transport: This product is a Marine Pollutant according to the International Maritime Dangerous Goods (IMDG) Code and the International Air Transport Association (IATA). If transporting by sea or air the following Dangerous Goods Classification applies:-
UN 3082, Class 9 (Miscellaneous Dangerous Goods), Packing Group III, Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains 10% Bifenthrin). Hazchem ●3ZE. Hazard Identification Number (HIN) 90.

SECTION 15 REGULATORY INFORMATION

Classified as a hazardous substance according to criteria of Safe Work Australia. (Xn).
Under the Standard for Uniform Scheduling of Medicines and Poisons (SUSMP), this product is a schedule 6 poison.

SECTION 15 REGULATORY INFORMATION (Continued)

Classified as a hazardous substance according to criteria of Safe Work Australia. (Xn) Harmful.
This product is registered under the Agricultural and Veterinary Chemicals Code Act 1994. Product No. 61928.
Product is not classified as a Dangerous Good according to the ADG Code (7th Ed) in containers less than 3000 litres. (Special Provision AU01)
Product is classified as a Dangerous Good according to the International Maritime Dangerous Goods (IMDG) Code and the International Air Transport Association (IATA).

Requirements concerning special training:
Check State or Territory regulations that require people who use pesticides in their job or business to have training in the application of the materials.

SECTION 16 OTHER INFORMATION

Issue Date: 11 January 2013 (2nd issue. 5 year update). Valid for 5 years.

Key to abbreviations and acronyms used in this MSDS:

ADG Code:	Australian Dangerous Goods Code (for the transport of dangerous goods by Road and Rail).
Carcinogen:	An agent which is responsible for the formation of a cancer.
Genotoxic:	Capable of causing damage to genetic material, such as DNA.
NOHSC:	National Occupational Health and Safety Commission.
Lacrimation:	The production, secretion, and shedding of tears.
Lavage:	A general term referring to cleaning or rinsing.
LD_{50}:	Median Lethal Dose. A statistically derived single dose of a substance that can be expected to cause death in 50% of dosed animals.
Mutagen:	An agent capable of producing a mutation.
PPE:	Personal protective equipment.
Teratogen:	An agent capable of causing abnormalities in a developing foetus.
TWA:	The Time Weighted Average airborne concentration over an eight-hour working day, for a five day working week over an entire working life.
Safe Work Australia:	Formally known as Australian Safety & Compensation Council (ASCC) which was formally known as the National Occupational Health & Safety Commission (NOHSC).

References

1. "Search Hazardous Substances". Safe Work Australia website. (2013).
2. "Approved Criteria for Classifying Hazardous Substances" 3rd Ed. NOHSC Australia. [NOHSC:1008 (2004)]. October 2004.

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. 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.

End of MSDS