

MATERIAL SAFETY DATA SHEET

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MSDS No. FMC/BRIG/2

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **BRIGADE[®] GRANULAR INSECTICIDE**

Other Names: Bifenthrin.
Use: A granular Insecticide for control of certain pests in turf; ants, fleas and ticks in external surrounds of buildings and structures.
Company: FMC Australasia Pty Ltd.
Address: Unit 6, 9 Archimedes 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 NOHSC Australia.
Not classified as a Dangerous Good according to the ADG Code.**

Risk phrases: No Risk phrases have been established.
(See section 11 on Crystalline silica).

Safety Phrases: S2 Keep out of reach of children.
S22 Do not breathe dust.
S24/25 Avoid contact with skin and eyes.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

<i>CHEMICAL</i>	<i>CAS NUMBER</i>	<i>PROPORTION</i>
Bifenthrin	82657-04-3	0.2% w/w
Quartz [Silica crystalline]	14808-60-7	> 90% w/w
Other ingredient determined to be non hazardous		< 5% w/w

SECTION 4 FIRST AID MEASURES

FIRST AID

Swallowed: If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia (13 11 26).

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 or clothing, shake off and then wash skin with soap and water.

Inhaled: Remove patient to fresh air.

Advice to Doctors: Bifenthrin, the active ingredient in this product is a pyrethroid insecticide. Bifenthrin is toxic by ingestion and highly toxic by inhalation. Gastric lavage with an endotracheal tube may be preferred to vomiting. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive. However, due to the very low concentration of bifenthrin in this product, symptoms are unlikely to be caused by this product.

SECTION 5 FIRE FIGHTING MEASURES

Specific Hazard: Product is slightly combustible. May support combustion at elevated temperatures.

Extinguishing media: Foam, CO₂ or dry chemical. Soft stream water fog if no alternatives. Contain all runoff.

Hazards from combustion products: On burning will emit toxic fumes of carbon monoxide, carbon dioxide, hydrogen chloride 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 ACCIDENTIAL RELEASE MEASURES

Emergency procedures: Isolate and post spill area. Keep out unprotected persons and animals. Wear prescribed protective clothing and equipment. Large spills should be dyked and covered to prevent dispersal. Keep material out of streams and sewers. Vacuum, shovel or pump spilled material into an approved container and if unable to use as directed on the label, dispose of as listed in section 13.

Material and methods for containment and cleanup procedures: To clean spill area, tools and equipment, wash with a solution of caustic or soda ash and an appropriate alcohol (methanol, ethanol or isopropanol). Follow this by washing with a strong soap and water solution. Absorb any excess liquid and add to drums of waste that cannot be re-used.

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. Avoid skin and eye contact. Do not breathe dust. When opening the container and using granules, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing).

Conditions for Safe Storage: Store in the closed original container, in a cool well ventilated area, out of direct sunlight. Keep away from domestic pets, especially dogs. If dogs eat the granules, contact your veterinary surgeon immediately.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION**National Exposure Standards:**

No NOHSC Australia exposure standard has been established for bifenthrin. The following standard may apply to the product:

Atmospheric Contaminant	Exposure Standard (TWA) ^a	STEL
Silica Crystalline (quartz)	0.1 mg/m ³	-
a = TWA - Time-weight Average		b = STEL - Short Term Exposure Standard

Biological Limit Values:

No biological limit allocated.

Engineering controls:

Use in a ventilated area only. Ventilate all transport vehicles prior to unloading. Keep containers close when not in use.

Personal Protective equipment (PPE):

Work Clothing: Depending on circumstances encountered, wear long sleeve uniform or overalls. Launder all clothes before reuse.

Eye Protection: Where potential for dust exists, wear chemical protective goggles or a face shield.

Respiratory Protection: For dust exposure wear a properly fitted half face or full face air purifying respirator. Respirator selection is based on airborne concentrations.

Gloves: Wear chemical protective gloves made of materials such as PVC, rubber or neoprene. Wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

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:	Tan, solid granules.
Odour:	Slightly musty odour.
Boiling point:	Not available.
Freezing point:	Not available.
Bilk Density:	1.39 g/mL.
Solubility in Water:	Not soluble.
Flammability:	May support combustion at elevated temperatures.
Corrosive hazard:	Non corrosive; compatible with stainless steel, glass & aluminium.
Flashpoint (°C) :	Not applicable - granule.
Flammability Limits (%):	Not established.
Poisons Schedule:	Product is a not a scheduled poison.

SECTION 10 STABILITY AND REACTIVITY

Product is considered stable in ambient conditions for a period of at least 2 years after manufacture.

SECTION 11 TOXICOLOGICAL INFORMATION***Potential Health Effects:***

Studies with laboratory animals have shown this product to have low acute toxicity. Ingestion of large doses of bifenthrin (the active ingredient in this product) by laboratory animals produced signs of toxicity which included clonic convulsions, tremors and bloody nasal discharge. This product has only a very low proportion of bifenthrin (0.2%), and these symptoms are unlikely to be caused by this product.

Acute

Swallowed: This product has low oral toxicity. Acute Oral LD₅₀ (rat) > 5000 mg/kg.

Eye: Non-irritating to the eye. Excessive exposure to granules may cause irritation to the eyes. This product contains a granular material (sand) that may cause mechanical irritation to the eyes.

Skin: Non-irritating to the skin. Acute Dermal LD₅₀ (rabbit) > 2000 mg/kg.

Inhaled: As this product is a granule it is unlikely to be an inhalation hazard.

Chronic: No data available on this formulation. In studies with laboratory animals, Bifenthrin Technical (the active ingredient in this product) 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 11 TOXICOLOGICAL INFORMATION (Continued)

Crystalline silica - also known as silicon dioxide (SiO_2) - is the basic component of sand, quartz and granite rock and is found in varying proportions in aggregates, sand, mortar, concrete and stone, and is also in the air and the soil. Processes which may give rise to airborne concentrations of crystalline silica dust include hard rock mining, excavation, tunnelling and earthworks, construction, foundry operations, ceramics production, stone works, refractory brick production, abrasive blasting, agricultural ploughing and harvesting, and the production of asphalt, agricultural chemicals, abrasives, glass and paint. If the dust given off from working with these materials is fine enough to be breathed into the lungs, it is termed "respirable". Certain exposures to crystalline silica can cause serious harm to human health. Prolonged exposure to respirable crystalline silica can cause silicosis.

NOHSC have classified crystalline silica as a hazardous substance, but have not given a classification and have not allocated Risk phrases for this substance.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Toxicology: Bifenthrin is highly toxic to fish and aquatic arthropods with LC_{50} values ranging from 0.0038 $\mu\text{g/L}$ to 17.8 $\mu\text{g/L}$. 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 (LC_{50} values range from 1800 mg/kg to > 2,150 mg/kg).

Physical/Environmental Properties: No data is available on Brigade Granular Insecticide. The active ingredient, bifenthrin (0.2%), degrades at a moderate rate in soils ($t_{1/2}$ = 50 to 205 days), and more rapidly on the surface of bare soils ($t_{1/2}$ = 7 to 62 days). Bifenthrin is tightly bound in most soils and an extremely low water solubility. Bifenthrin is highly toxic to aquatic organisms.

SECTION 13 DISPOSAL CONSIDERATIONS

Spills & Disposal: In the case of spillage contain spilled material by dyking. Dispose of waste as indicated below or according to the Australian Standard 2507 - Storage and Handling of Pesticides. Wear prescribed protective clothing and equipment. Keep material out of streams and sewers. Vacuum, shovel or pump waste into an approved drum. To decontaminate spill area, tools and equipment, wash with a suitable solution (ie organic solvent, detergent, bleach or caustic) and add the solution to the drums of wastes already collected. Label 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.

Puncture, shred or 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. Empty containers and product should not be burnt.

SECTION 14 TRANSPORT INFORMATION

Road & Rail Transport: Brigade Granular Insecticide is not classified as Dangerous Goods under the Australian Code for the Transport of Dangerous Goods by Road and Rail.

SECTION 14 | TRANSPORT INFORMATION (Continued)

Marine and Air Transport: Brigade Granular Insecticide is a Marine Pollutant according to 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 3077, Class 9 (Miscellaneous Dangerous Goods), Packing Group III, Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Contains 0.2% bifenthrin).

SECTION 15 | REGULATORY INFORMATION

Classified as a hazardous substance according to criteria of NOHSC Australia, but no classification or risk phrases have been established.

Under the Standard for Uniform Scheduling of Drugs and Poisons (SUSDP No. 20), this product is not a scheduled poison.

This product is registered under the Agricultural and Veterinary Chemicals Code Act 1994. Product Registration No. 52791.

Product is not classified as a Dangerous Good according to the ADG Code (6th Ed).

Product is classified as a Dangerous Good according to International Maritime Dangerous Goods (IMDG) Code and the International Air Transport Association (IATA).

SECTION 16 | OTHER INFORMATION

Issue Date: 13 March 2006 (revised to 16 section format, updated exposure standard, new company name and corrected minor typographical errors).

Key to abbreviations and acronyms used in this MSDS:

Genotoxic Capable of causing damage to genetic material, such as DNA.

Oedema Accumulation of fluid in tissues.

ADG Code Australian Dangerous Goods Code (for the transport of dangerous goods by Road and Rail).

NOHSC National Occupational Health and Safety Commission.

PPE Personal protective equipment.

References

1. "Search Hazardous Substances". HSIS NOHSC Australia website. (2006).
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 MSDS