MATERIAL SAFETY DATA SHEET

Date of Issue: March 25, 2003

1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND SUPPLIER

Product name	**Gusathion® 200 SC Insecticide**
Other names	None
Product code and pack sizes	260855 (10 L)
Chemical group	Organophosphorus
Recommended use	Agricultural insecticide
Formulation	Suspension concentrate
Supplier	Bayer CropScience Pty Ltd ABN 87 000 226 022
Address	391 - 393 Tooronga Road, East Hawthorn Victoria 3123, Australia
Telephone	(03) 9248 6888
Facsimile	(03) 9248 6800
Website	www.bayercropscience.com.au
Contact	Development Manager (03) 9248 6888
Emergency Telephone Number	1800 033 111 – Orica SH&E Shared Services

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HAZARDOUS SUBSTANCE (see Risk phrases below) - DANGEROUS GOOD

Very poisonous. Cholinesterase inhibitor. Dangerous to the aquatic environment.

Hazard designation Hazardous (National Occupational Health and Safety Commission - NOHSC)

Risk phrases
R26/28 – Very toxic by inhalation and if swallowed.
R21 – Harmful in contact with skin.
R43 – May cause sensitisation by skin contact.

Safety phrases See Sections 4, 5, 6, 7, 8, 9, 13

ADG classification "Dangerous good" for transport by road or rail according to the Australian Code for the Transport of Dangerous Goods by Road and Rail – ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (contains azinphos-methyl), Class 6.1, Packing Group II, UN 3018.

SUSDP classification Schedule 7 (Standard for the Uniform Scheduling of Drugs and Poisons)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/L)
Azinphos-methyl	[86-50-0]	200
Other ingredients, non hazardous, including water	----	940

4. FIRST AID MEASURES

If poisoning occurs, immediately contact a doctor or Poisons Information Centre (telephone 13 11 26), and follow the advice given. Show this Material Safety Data Sheet to the doctor.

Inhalation

If inhaled, remove to fresh air and keep at rest. Obtain **urgent** medical advice. If breathing stops or shows signs of failing, start artificial respiration. If advised by doctor or Poisons Information Centre, atropine tablets may be administered.

Skin contact

Immediately remove contaminated clothing. Wash affected areas with soap and water. Seek **urgent** medical aid. Persons assisting the patient should protect themselves from contamination. If advised by doctor or Poisons Information Centre, atropine tablets may be administered.

Eye contact

Rinse eyes immediately with clean water for at least 15 minutes and obtain **urgent** medical aid.

Ingestion

Wash out mouth with water. Keep patient at rest and seek **urgent** medical advice as above. **Transport patient to doctor or hospital quickly.** If advised by doctor or Poisons Information Centre, atropine tablets may be administered.
DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.

First Aid Facilities

Provide eyewash and safety shower facilities in the workplace.
Obtain an emergency supply of atropine tablets 0.6 mg.

Medical attention

Gusathion 200 SC contains azinphos-methyl which is an organophosphorus compound, and as such it is a cholinesterase inhibitor.

Symptoms of poisoning

Mild intoxication causes headache, blurred vision, weakness, sweating, mild chest pain, nausea and vomiting. Severe intoxication causes cyanosis (blueness of the skin, as from lack of oxygen), muscular twitching, spasms, miosis (pinpoint pupils) and respiratory paralysis. Onset of symptoms may be delayed. Cholinesterase inhibition sometimes persists for several weeks.

Treatment

Basic aid, decontamination, symptomatic treatment and if necessary administration of antidote. Antidote: Atropine sulphate. In severe cases pralidoxime may be administered as well, if given within 24 hours after exposure. Atropine should not be given to a cyanosed patient. Monitor respiratory, cardiac and central nervous system function. Monitor red blood cell and plasma cholinesterase levels. Administer oxygen if necessary. Watch for pulmonary oedema and delayed neurological symptoms.

Contraindications

Adrenergic derivatives. Never give patient morphine, theophylline or theophylline-ethylenediamine. Large amounts of intravenous fluids are generally contraindicated because of the threat of pulmonary oedema.

Production workers and agricultural workers handling this product should be monitored for cholinesterase levels. A baseline level should be established prior to any potential exposure.

5. FIRE FIGHTING MEASURES

Extinguishing media Waterspray, foam, dry chemical, carbon dioxide, sand.

Hazards from combustion products In a fire, hydrogen cyanide, carbon monoxide, phosphorus pentoxide, sulphur dioxide and nitrogen oxides may be formed.

Precautions for fire fighters Fire fighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). Keep unnecessary people away and move all other personnel to windward side of fire. Isolate hazard area and deny entry. Consider evacuation, taking all relevant factors into account. In case of doubt, evacuate immediate vicinity and request emergency services assistance. Use water spray to cool fire-exposed containers. Bund area with sand or earth to prevent contamination of drains or waterways. Dispose of fire control water or other extinguishing agent and spillage safely later.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with the spilled material or contaminated surfaces. Do not smoke, eat or drink during the cleanup process. Personnel involved in cleanup should wear full body protective clothing and equipment as described in Section 8 - PERSONAL PROTECTION. Keep people and animals away and upwind. Consider evacuation and obtain assistance from emergency services if needed. Prevent spilled material from entering drains or watercourses. Contain spill and absorb with earth, sand, clay, or other absorbent material. Collect and store in properly labelled drums for safe disposal. Clean floor with a damp cloth and place cloth in drum. Seal and label drums for safe disposal. Thoroughly ventilate the area after cleanup. Deal with all spillages immediately. If contamination of drains, streams, watercourses, etc. is unavoidable, warn the local water authority. Decontaminate tools, equipment and clothing used in the cleanup. Dispose of any heavily soiled clothing, placing it in disposal drum.

7. HANDLING AND STORAGE

Handling Keep out of reach of children. Very dangerous. Poisonous if absorbed by skin contact, inhaled or swallowed. Repeated exposure may cause allergic disorders. Repeated minor exposures may have a cumulative poisoning effect. Will irritate the eyes and skin. Avoid contact with eyes, skin and clothing. Do not inhale vapour or spray mist. If clothing becomes contaminated with product or wet with spray remove it immediately. If product on skin, immediately wash area with soap and water. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, goggles, respirator and contaminated clothing.

Storage Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. Store in a locked room or place away from children, animals, food, feedstuffs, seed and fertilisers.

Flammability Not flammable

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards

NOHSC Exposure standard for azinphos-methyl:
TWA: 0.2 mg/m³. Skin notation.

Definitions:
Exposure standard – Time Weighted Average (TWA) means the average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.
Skin notation – Absorption through the skin may be a significant source of exposure.

Engineering controls

Control process conditions to avoid contact. Use local exhaust ventilation during manufacture. Use this product in a well-ventilated area only.

Personal Protective Equipment

Product is very dangerous – poisonous if absorbed by skin contact, inhaled or swallowed.

- Wear goggles or face shield
- Wear full face piece respirator with combined dust and gas cartridge - AS/NZS 1715/1716 approved. In enclosed spaces a respirator or hood with an independent air supply should be worn.
- Wear cotton overalls buttoned to the neck and wrist, a washable hat and impervious footwear.
- Wear elbow-length PVC gloves.
- Keep working clothes separate. Remove soiled or soaked clothing immediately. Clean them separately, taking suitable precautions, or destroy if necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Yellow to brown liquid suspension
Odour:	Mercaptan-like (rotten eggs)
pH:	6.5 to 7.5
Vapour pressure:	1.8×10^{-6} hPa at 20° C (azinphos-methyl)
Vapour density:	Not available
Boiling point:	Not
Freezing/melting point:	Not available
Solubility:	Miscible with water
Specific Gravity:	Approx. 1.14 at 20° C
Flash Point:	None
Flammability (explosive) limits:	Not available
Auto-ignition temperature:	Not available
Partition coefficient (octanol/water):	Azinphos-methyl: Log P_{ow} = 2.96 at 20° C

10. STABILITY AND REACTIVITY

Chemical stability Stable under normal conditions of use.

Hazardous polymerisation Will not polymerise.

Conditions to avoid Heat

Incompatible materials Oxidising agents, alkaline materials, acids

Hazardous decomposition products In a fire, hydrogen cyanide, carbon monoxide, phosphorus pentoxide, sulphur dioxide and nitrogen oxides may be formed.

11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

Azinphos-methyl, the active ingredient in Gusathion 200 SC, is an anticholinesterase compound. Symptoms typical of cholinesterase inhibition (for all routes of entry):
Mild cases
Headache, blurred vision, weakness, sweating, mild chest pain, nausea and vomiting.
Severe cases
Cyanosis (blueness of the skin, as from lack of oxygen), muscular twitching, spasms, miosis (pinpoint pupils) and respiratory paralysis. These symptoms commence from one to three hours after excessive exposure.

Inhalation Very poisonous by inhalation.

Skin contact Poisonous if absorbed by skin contact. Will irritate the skin.

Eye contact Will irritate the eyes.

Ingestion Very poisonous if swallowed.

ANIMAL TOXICITY DATA - Product

Acute:

Oral toxicity LD_{50} rat: approx. 50 mg/kg *(derived from active ingredient data)*

Dermal toxicity LD_{50} rat: approx. 800 mg/kg *(derived from active ingredient data)*

Inhalation toxicity LC_{50} (4 h) rat: approx. 0.15 mg/L aerosol *(active ingredient)*

Skin irritation Non irritant (rabbit)

Irritation to mucous membranes Non irritant (rabbit)

11. TOXICOLOGICAL INFORMATION - continued

Sensitisation Azinphos-methyl is a skin sensitiser.

Chronic:
Repeated exposure may cause allergic disorders. Repeated minor exposure may have a cumulative poisoning effect. The main health effects from repeated exposure would be toxic symptoms of cholinesterase inhibition as described above. Azinphos-methyl is not listed as a carcinogen by NTP or IARC. Several positive *in vitro* mutagenicity studies have been reported on azinphos-methyl. Negative results have been obtained in all *in vivo* studies conducted on azinphos-methyl. Teratogenic effects were not observed in the animal studies with azinphos-methyl. There was no evidence of delayed neurotoxicity from azinphos-methyl.

12. ECOLOGICAL INFORMATION

Very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment. Toxic to bees. DO NOT contaminate streams, rivers or waterways with Gusathion 200 SC or the used containers.

Ecotoxicity

Azinphos-methyl:
Fish toxicity:
LC_{50}: 0.12 mg/L (96 h); golden orfe (*Leuciscus idus*)
LC_{50}: 0.003 to 0.02 mg/L (96 h); trout (*Oncorhynchus mykiss*)
Aquatic invertebrate toxicity:
EC_{50}: 0.0011 mg/L (48 h); *Daphnia magna*
Algae toxicity:
Growth rate:
IC_{50}: 7.15 mg/L (96 h); green algae (*Desmodesmus subspicatus)*
Bacteria toxicity:
EC_{50}: > 10000 mg/L; activated sludge
Bird toxicity:
LD_{50}: 32 mg/kg; bobwhite quail
Gusathion 200 SC:
Fish toxicity:
LC_{50}: 0.0401 mg/L (96 h); trout (*Oncorhynchus mykiss*)
Aquatic invertebrate toxicity:
EC_{50}: 0.0147 mg/L (48 h); *Daphnia magna*

Environmental fate, persistence and degradability Azinphos-methyl has low mobility in soil. Its half-life in soil is several weeks.

13. DISPOSAL CONSIDERATIONS

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 clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.
Dispose of waste product as hazardous waste via a licensed disposal contractor to an approved landfill. Do not discharge into drains or sewers.

14. TRANSPORT INFORMATION

UN number	3018
Proper shipping name	ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (contains azinphos-methyl)
Class and Subsidiary Risk	6.1
Packing Group	II
EPG	Guide 35 – Dangerous Goods - Initial Emergency Response Guide
Hazchem code	2X
Marine Pollutant	Yes (Azinphos-methyl is a Severe Marine Pollutant Class "PP")

15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988
National Registration Authority approval number: 45727

Training in the use of farm chemicals is recommended before handling this product.

See also Section 2.

16. OTHER INFORMATION

Trademark information	Gusathion® is a Registered Trademark of Bayer.
Preparation information	Replaces August 1, 2002 MSDS. Reasons for revision: 16 heading format, R phrases, inhalation toxicity and danger to the environment
Abbreviations	IARC = International Agency for Research on Cancer NTP = National Toxicology Program

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.

Our 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.

END OF MSDS