



## Section 1 - Identification of The Material and Supplier

Adama Australia Pty Ltd, Suite 1, Level 4,  
Building B  
207 Pacific Highway St Leonards, NSW 2065  
ACN 050 328 973

Telephone (02)9431 7800 (office hours)  
Emergency 1800 024 973 (24 hours)  
Fax (02)9431 7700

**Chemical nature:** Azinphos-methyl is an organophosphorus derivative.  
**Trade Name:** Farmoz Gusathion<sup>®</sup> 200 SC Insecticide  
**Product Use:** Agricultural insecticide for use as described on the product label.  
**Creation Date:** May, 2007  
**This version issued:** August, 2012 and is valid for 5 years from this date.

## Section 2 - Hazards Identification

### Statement of Hazardous Nature

This product is classified as: Xi, Irritating. T, Toxic. N, Dangerous to the environment. Hazardous according to the criteria of SWA.

Dangerous according to the Australian Dangerous Goods (ADG) Code.

**Risk Phrases:** R21, R43, R26/28, R50/53. Harmful in contact with skin. May cause sensitisation by skin contact. Very toxic by inhalation and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects to the aquatic environment.

**Safety Phrases:** S20, S28, S38, S45, S60, S61, S1/2, S24/25, S36/37. When using, do not eat or drink. After contact with skin, wash immediately with plenty of soap and water. In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, contact a doctor or Poisons Information Centre immediately (show this MSDS where possible). This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/Safety Data Sheets. Keep locked up and out of reach of children. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves.

**SUSMP Classification:** S7

**ADG Classification:** Class 6.1: Toxic substances.

**UN Number:** 3018, ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC

## Emergency Overview

**Physical Description & colour:** Yellow to brown suspension.

**Odour:** Sulfur/mercaptan/rotten egg odour.

**Major Health Hazards:** very toxic by inhalation and if swallowed, harmful in contact with skin, possible skin sensitiser. Signs and symptoms associated with mild exposures to organophosphate and carbamate pesticides include: headache, fatigue, dizziness, loss of appetite with nausea, stomach cramps and diarrhoea; blurred vision associated with excessive tearing; contracted pupils of the eye; excessive sweating and salivation; slowed heartbeat, often fewer than 50 per minute; rippling of surface muscles just under the skin. These symptoms may be mistaken for those of flu, heat stroke or heat exhaustion, or upset stomach. Moderately severe organophosphate and carbamate insecticide poisoning cases exhibit all the signs and symptoms found in mild poisonings, but in addition, the victim: is unable to walk; often complains of chest discomfort and tightness; exhibits marked constriction of the pupils (pinpoint pupils); exhibits muscle twitching; has involuntary urination and bowel movement. Severe poisonings are indicated by incontinence, unconsciousness and seizures.

## Potential Health Effects

Acute toxicity: Azinphos-methyl is one of the most toxic of the organophosphate insecticides. It is highly toxic by inhalation, dermal absorption, ingestion, and eye contact. Like all organophosphate chemicals, azinphos-methyl is a cholinesterase inhibitor. It damages normal functioning of cholinesterase, an enzyme which is essential to proper nervous system function. Individuals with a history of reduced lung function, convulsive disorders, or recent exposure to other cholinesterase inhibitors are at increased risk from exposure to azinphos-methyl. See section 11 for Chronic exposure studies.

### Inhalation

**Short term exposure:** Symptoms are described fully above.

## SAFETY DATA SHEET

**Skin Contact:**

**Short term exposure:** Symptoms are described fully above.

**Eye Contact:**

**Short term exposure:** This product may be irritating to eyes, and is likely to be harmful in contact with eyes.

**Ingestion:**

**Short term exposure:** Symptoms are described fully above.

**Carcinogen Status:**

**SWA:** No significant ingredient is classified as carcinogenic by SWA.

**NTP:** No significant ingredient is classified as carcinogenic by NTP.

**IARC:** No significant ingredient is classified as carcinogenic by IARC.

### Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc,%	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )
Azinphos-methyl	86-50-0	20	0.2	not set
Other non hazardous ingredients	secret	to 100	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

### Section 4 - First Aid Measures

**General Information:**

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this MSDS with you when you call.

If swallowed, splashed on skin or inhaled, contact a Poisons Information Centre or a doctor at once. Remove any contaminated clothing and wash skin thoroughly. If swallowed, use of activated charcoal may be advised.

**Inhalation:** If inhalation occurs, contact a Poisons Information Centre. Urgent hospital treatment is likely to be needed. Remove source of contamination or move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary oedema can be delayed up to 48 hours after exposure.

**Skin Contact:** Wash gently and thoroughly with warm water (use non-abrasive soap if necessary) for 10-20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts) and completely decontaminate them before reuse or discard.

**Eye Contact:** No effects expected. If irritation does occur, flush contaminated eye(s) with lukewarm, gently flowing water for 5 minutes or until the product is removed. Obtain medical advice if irritation becomes painful or lasts more than a few minutes. Take special care if exposed person is wearing contact lenses.

**Ingestion:** If swallowed, do NOT induce vomiting; rinse mouth thoroughly with water and contact a Poisons Information Centre, or call a doctor at once. Give activated charcoal if instructed.

### Section 5 - Fire Fighting Measures

**Fire and Explosion Hazards:** There is no risk of an explosion from this product under normal circumstances if it is involved in a fire.

Fire decomposition products from this product are likely to be toxic if inhaled. Take appropriate protective measures.

**Extinguishing Media:** Water fog or fine spray is the preferred medium for large fires. Try to contain spills, minimise spillage entering drains or water courses.

**Fire Fighting:** If a significant quantity of this product is involved in a fire, call the fire brigade. There is little danger of a violent reaction or explosion if significant quantities of this product are involved in a fire. Recommended personal protective equipment is liquid-tight chemical protective clothing and breathing apparatus.

**Flash point:** Not flammable.

**Upper Flammability Limit:** No data.

### SAFETY DATA SHEET



**Lower Flammability Limit:** No data.

**Autoignition temperature:** No data.

**Flammability Class:** No data.

## Section 6 - Accidental Release Measures

**Accidental release:** In the event of a major spill, prevent spillage from entering drains or water courses. Evacuate the spill area and deny entry to unnecessary and unprotected personnel. Wear full protective chemically resistant clothing including eye/face protection, gauntlets and self contained breathing apparatus. See below under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include rubber, PVC. Eye/face protective equipment should comprise as a minimum, protective goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator. It should be fitted with a type G cartridge, suitable for agricultural chemicals. Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Because of the toxicity of this product, special personal care should be taken in any cleanup operation. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this MSDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

## Section 7 - Handling and Storage

**Handling:** Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this MSDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

**Storage:** This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Store in a cool, well ventilated area. Check containers periodically for leaks. Containers should be kept closed in order to minimise contamination. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. If you keep more than 2500kg or L of Dangerous Goods of Packaging Group II, you may be required to license the premises or notify your Dangerous Goods authority. If you have any doubts, we suggest you contact your Dangerous Goods authority in order to clarify your obligations. Check packaging - there may be further storage instructions on the label.

## Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

<b>SWA Exposure Limits</b>	<b>TWA (mg/m<sup>3</sup>)</b>	<b>STEL (mg/m<sup>3</sup>)</b>
Azinphos-methyl	0.2	not set

The ADI for Azinphos-methyl is set at 0.025mg/kg/day. The corresponding NOEL is set at 0.25 (H)mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, Sept 2011.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

**Ventilation:** This product should only be used where there is ventilation that is adequate to keep exposure below the TWA levels. If necessary, use a fan.

**Eye Protection:** Eye protection such as protective glasses or goggles is recommended when this product is being used.

**Skin Protection:** Whenever you use this product, you should prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.

**Protective Material Types:** We suggest that protective clothing be made from the following: rubber, PVC.

## SAFETY DATA SHEET



**Respirator:** Where there is a risk of exposure to this product, we recommend that you use a respirator. It should be fitted with a type G cartridge, suitable for agricultural chemicals.

Safety deluge showers should, if practical, be provided near to where this product is being used.

## Section 9 - Physical and Chemical Properties:

<b>Physical Description &amp; colour:</b>	Yellow to brown suspension.
<b>Odour:</b>	Sulfur/mercaptan/rotten egg odour.
<b>Boiling Point:</b>	Not available.
<b>Freezing/Melting Point:</b>	No specific data. Liquid at normal temperatures.
<b>Volatiles:</b>	Water component.
<b>Vapour Pressure:</b>	2.37 kPa at 20°C (water vapour pressure), 0.18x10 <sup>-6</sup> kPa at 20°C (Azinphos-methyl)
<b>Vapour Density:</b>	No data.
<b>Specific Gravity:</b>	1.14 approx at 20°C
<b>Water Solubility:</b>	Completely soluble in water.
<b>pH:</b>	6.5-7.5
<b>Volatility:</b>	No data.
<b>Odour Threshold:</b>	No data.
<b>Evaporation Rate:</b>	No data.
<b>Coeff Oil/water distribution:</b>	2.96 at 20°C (Azinphos-methyl) (log P octanol/water)
<b>Autoignition temp:</b>	Not applicable - does not burn.

## Section 10 - Stability and Reactivity

**Reactivity:** This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

**Conditions to Avoid:** This product should be kept in a cool place, preferably below 30°C. Containers should be kept dry. Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

**Incompatibilities:** acids, bases, oxidising agents.

**Fire Decomposition:** Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas. Oxides of phosphorus and other phosphorus compounds. Water. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death. Hydrogen cyanide poisoning signs and symptoms are weakness, dizziness, headache, nausea, vomiting, coma, convulsions, and death. Death results from respiratory arrest. Hydrogen cyanide gas acts very rapidly; symptoms and death can both occur quickly.

**Polymerisation:** This product will not undergo polymerisation reactions.

## Section 11 - Toxicological Information

There is wide variation in the recorded LD<sub>50</sub> values for azinphos-methyl depending on the route of exposure and the test animal. The oral LD<sub>50</sub> for azinphos-methyl is 4.4 to 16 mg/kg in rats, 80 mg/kg in guinea pigs, and 8 to 20 mg/kg in mice. The dermal LD<sub>50</sub> is 88 to 220 mg/kg in rats, and 65 mg/kg in mice. The 1-hour inhalation LC<sub>50</sub> for azinphos-methyl in rats is 0.4 mg/L. For humans, ingestion of azinphos-methyl in amounts above 1.5 mg/day can cause severe poisoning with symptoms such as dimness of vision, salivation, excessive sweating, stomach pain, vomiting, diarrhoea, unconsciousness, and death. Inhalation of the dust or aerosol preparation of azinphos-methyl may cause wheezing, tightness in the chest, blurred vision, and tearing of the eyes.

**Chronic toxicity:** Long term exposure to azinphos-methyl, above the average 8-hour standard set by the Occupational Safety and Health Administration (OSHA), can impair concentration and memory, and cause headache, irritability, nausea, vomiting, muscle cramps, and dizziness. Cholinesterase inhibition from exposure to azinphos-methyl may persist for 2 to 6 weeks. Repeated exposure to small amounts may result in an unexpected inhibition of cholinesterase, causing symptoms that resemble other flu-like illnesses, including general discomfort, weakness, and lack of appetite. The effects of azinphos-methyl exposure may be greater in a previously exposed person than in an individual with no previously exposure.

**Reproductive effects:** In a two generation reproduction study, there were no observed reproductive and maternal effects in rats at 0.25 mg/kg/day. However, at oral doses of 20 mg/kg to 8 day pregnant mice, Gusathion was toxic to the foetus. These data indicate that reproductive effects in humans are unlikely at expected exposure levels.

## SAFETY DATA SHEET





**Teratogenic effects:** In a teratology study, no maternal or developmental effects were observed in rats at doses of 2 mg/kg/day. A 16 mg/kg oral dose to 8-day pregnant rats caused specific development abnormalities in the muscles and bones. It appears the teratogenic effects are not likely in humans under expected exposure conditions.

**Mutagenic effects:** No mutagenic effects were observed in the Ames test on bacteria and a test on human cell cultures. These data suggest that azinphos-methyl is not mutagenic.

**Carcinogenic effects:** Although one carcinogenicity study on rats suggested that tumours of the pancreas and selected thyroid cells may have been associated with azinphos-methyl, two other studies at doses up to 10 mg/kg/day did not show an increase in the incidence of tumours in mice from azinphos-methyl. The carcinogenicity of azinphos-methyl is not clear from current evidence.

**Organ toxicity:** Toxicity from azinphos-methyl is primarily manifested in cholinesterase inhibition which affects the nervous system. Dogs fed 9 mg/kg/day showed tremors, weakness, abnormal quietness, and some weight loss.

**Fate in humans and animals:** One study suggests that Gusathion is rapidly broken down into non-poisonous forms in the body. Azinphos-methyl is eliminated in faeces and urine of mammals within 2 days of administration.

### Classification of Hazardous Ingredients

Ingredient	Risk Phrases
Azinphos-methyl	>=7%Conc<25%: T+: R26/28; R21; R43

### Section 12 - Ecological Information

**Effects on birds:** Azinphos-methyl is slightly to moderately toxic to birds..

**Effects on aquatic organisms:** Azinphos-methyl is moderately to very highly toxic to freshwater fish.

Azinphos-methyl is highly toxic to aquatic invertebrates, shellfish, frogs, and toads. The LC<sub>50</sub> values are below 1µg/L for many of the species.

**Effects on other organisms:** Several studies have indicated that azinphos-methyl causes adverse effects in wildlife. Wild mammals and aquatic organisms appear to be more vulnerable than birds to hazards created by this material. A 90% mortality rate is seen in pollinating leaf cutting bees after a 9-day exposure to greenhouse alfalfa treated with azinphos-methyl.

#### Environmental Fate:

**Breakdown in soil and groundwater:** Persistence of azinphos-methyl in soil is quite variable but is generally low under field conditions. The half-life in sandy loam soil is 5 days. Its half-life in nonsterile soil is 21 days when oxygen is present or 68 days under oxygen-free conditions. In sterile soil, the half-life is reported to be 355 days. Azinphos-methyl is fairly immobile in soil because it adsorbs strongly to soil particles and has low water solubility. It has low leaching potential and is unlikely to contaminate groundwater. Biodegradation and evaporation are the primary routes of disappearance for azinphos-methyl. Azinphos-methyl is also subject to degradation by ultraviolet (UV) light from the sun and hydrolytic decomposition. Photodecomposition is particularly rapid at high levels of soil moisture and in the presence of UV light.

**Breakdown in water:** In general, organophosphates, such as azinphos-methyl, are dissipated rapidly in water. In pond water, it is subject to degradation by sunlight and microorganisms, with a half-life of up to 2 days. Volatilization from water is unlikely.

**Breakdown in vegetation:** Residue levels of azinphos-methyl in crops are dependent on the rate and frequency of application, nature of the plant surface, and weather conditions such as rainfall, temperature, sunlight, humidity, and wind. The half-life on vegetable and forage crops is 3 to 5 days under field conditions. It gives effective protection for 2 or more weeks.

### Section 13 - Disposal Considerations

**Disposal:** Instructions concerning the disposal of this product and its containers are given on the registered label. These should be carefully followed. Special help is available for the disposal of Agricultural Chemicals. The product label will give general advice regarding disposal of small quantities, and how to cleanse containers. However, for help with the collection of unwanted rural chemicals, contact ChemClear 1800 008 182 <http://www.chemclear.com.au/> and for help with the disposal of empty drums, contact DrumMuster <http://www.drummuster.com.au/> where you will find contact details for your area.

### Section 14 - Transport Information

**ADG Code:** 3018, ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC

**Hazchem Code:** 2X

**Special Provisions:** 61, 274

### SAFETY DATA SHEET

Issued by: Adama Australia Pty Ltd

Phone: (02)9431 7800 (office hours)

Poisons Information Centre: 13 1126 from anywhere in Australia, (0800 764 766 in New Zealand)



**Limited quantities:** ADG 7 specifies a Limited Quantity value of 100 ml for this class of product.

**Dangerous Goods Class:** Class 6.1, Toxic Substances.

**Packaging Group:** II

**Packaging Method:** P001, IBC02

Class 6 Toxic Substances shall not be loaded in the same vehicle or packed in the same freight container with Classes 1 (Explosives), 3 (Flammable Liquids where the Flammable Liquid is nitromethane), 5.1 (Oxidising Agents where the Toxic Substances are Fire Risk Substances), 5.2 (Organic Peroxides where the Toxic Substances are Fire Risk Substances), 8 (Corrosive Substances where the Toxic Substances are cyanides and the Corrosives are acids), Foodstuffs and foodstuff empties. They may however be loaded in the same vehicle or packed in the same freight container with Classes, 2.1 (Flammable Gases), 2.2 (Non-Flammable, Non-Toxic Gases), 2.3 (Toxic Gases), 3 (Flammable liquids, except where the flammable liquid is nitromethane), 4.1 (Flammable Solids), 4.2 (Spontaneously Combustible Substances), 4.3 (Dangerous When Wet Substances), 5.1 (Oxidising Agents except where the Toxic Substances are Fire Risk Substances), 5.2 (Organic Peroxides except where the Toxic Substances are Fire Risk Substances), 7 (Radioactive Substances), 8 (Corrosive Substances except where the Toxic Substances are cyanides and the Corrosives are acids), 9 (Miscellaneous Dangerous Goods)

## Section 15 - Regulatory Information

**AICS:** All of the significant ingredients in this formulation are compliant with NICNAS regulations.

The following ingredient: Azinphos-methyl, is mentioned in the SUSMP.

## Section 16 - Other Information

**This MSDS contains only safety-related information. For other data see product literature.**

### Acronyms:

<b>ADG Code</b>	Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th Edition
<b>AICS</b>	Australian Inventory of Chemical Substances
<b>SWA</b>	Safe Work Australia, formerly ASCC and NOHSC
<b>CAS number</b>	Chemical Abstracts Service Registry Number
<b>Hazchem Code</b>	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
<b>IARC</b>	International Agency for Research on Cancer
<b>NOS</b>	Not otherwise specified
<b>NTP</b>	National Toxicology Program (USA)
<b>R-Phrase</b>	Risk Phrase
<b>SUSMP</b>	Standard for the Uniform Scheduling of Medicines & Poisons
<b>UN Number</b>	United Nations Number

### Contact Points:

Call Adama on (02)9431 7800 and ask for the technical manager.

Fax: (02)9431 7700

<b>Police and Fire Brigade:</b>	<b>Dial 000</b>
<b>Emergency contact:</b>	<b>1800 024 973 (24 hours)</b>

**If ineffective: Dial Poisons Information Centre  
(13 1126 from anywhere in Australia)**

The information contained in this Material Safety Data Sheet is provided in good faith and is believed to be correct at the date hereof. However, it is expected that individuals receiving the information will exercise their independent judgement in determining its appropriateness for a particular purpose. Adama Australia Pty Ltd makes no representation as to the accuracy or comprehensiveness of the information and to the full extent allowed by law excludes all liability whatsoever, whether with respect to negligence or otherwise, for any loss or damage arising from or connection with the supply or use of the information in this Material Safety Data Sheet.

Please read all labels carefully before using product.

This MSDS is prepared in accord with the SWA document "National Code of Practice for the Preparation of Material Safety Data Sheets" 2nd Edition [NOHSC:2011(2003)]

Copyright © Kilford & Kilford Pty Ltd, August, 2012.

<http://www.kilford.com.au/> Phone (02)9251 4532

## SAFETY DATA SHEET

Issued by: Adama Australia Pty Ltd

Phone: (02)9431 7800 (office hours)

Poisons Information Centre: 13 1126 from anywhere in Australia, (0800 764 766 in New Zealand)