



Material Safety Data Sheet

2,4-D amine 625

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product trade name: 4Farmers 2,4-D Amine 625 Herbicide
Other names: Amine 625
Recommended use: Agricultural herbicide to control broadleaf weeds, especially in cereal crops.
Company name & address: 4Farmers Pty. Ltd.
A.C.N 067 443 485
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2. HAZARDS IDENTIFICATION

Hazard classification: Hazardous according to the criteria of NOHSC. Non-dangerous goods.
Risk phrases: R22 Harmful if swallowed.
R25 Toxic if swallowed.
R36 Irritating to eyes.
R38 Irritating to skin.
Safety phrases: S1/2 Keep locked up and out of the reach of children.
S3/9/49 Keep only in the original container in a cool, well-ventilated place.
S13 Keep away from food, drink and animal feeding stuffs.
S20/21 When using do not eat or drink/smoke
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S23 Do not breathe spray.
S24/25 Avoid contact with skin/eyes
S29/35 Do not empty into drains/Dispose of material and container in a safe way
SUSDP Classification: S5.
ADG Classification: Not a dangerous good
UN Number: None allocated

3. COMPOSITION

Substance	CAS Number	% content
2,4-D dimethylamine	2008-39-1	Ratio may vary, amounts to give total of 62.5% 2,4-D acid equivalent.
2,4-D diethanolamine	5742-19-8	
Water	7732-18-5	To 100

4. FIRST AID MEASURES

Skin contact: Remove contaminated clothing. Wash contaminated skin with soapy water. If skin irritation develops, get medical attention. Wash clothing thoroughly before re-use.
Eye contact: Rinse eye(s) with clean running water for 15 mins. Get medical attention.
Ingestion: Rinse mouth. Give water to drink if patient is conscious. DO NOT induce vomiting. If vomiting occurs ensure patient can breathe, then give water to drink. Get medical attention.
Advice to doctor: No specific antidote is known. Treat symptomatically.

5. FIRE FIGHTING MEASURES

Product is not flammable. Some components will burn after heating to dryness. Treat fire as appropriate to other flammables present.
Suitable extinguishing media: Carbon dioxide, dry chemical, foam, water fog.
Unsuitable extinguishing media: Water stream.
Special hazards in fire: Combustion may release carbon dioxide, and/or chlorine compounds.
Required special protective equipment for fire-fighters: Wear self contained breathing apparatus if in enclosed space.
Hazchem code: Not applicable.



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6. ACCIDENTAL RELEASE MEASURES

Emergency procedures: Wear protective equipment to prevent skin and eyes being affected.
Evacuate unprotected and unnecessary personnel from area of spill.
If material is leaking from a container, stop the leak only if this can be done safely.
Prevent spillage entering drains or watercourse.

Methods for containment & cleanup: Vermiculite, Sand, Soil is a suitable absorbent, especially soils high in clay.
Soil can be used to form bunds to contain spillage.
Contaminated soil should be collected for disposal at a suitable landfill.
Contaminated area and tools should be washed down with hypochlorite bleach.
Personal protective equipment and clothing should be washed with soapy water.

7. HANDLING AND STORAGE

Handling: Keep away from food, drink, and animal feedstuff.
KEEP OUT OF REACH OF CHILDREN.
Wear suitable Personal protective equipment when handling and spraying.

Storage: Store in the original container in a dry, cool, ventilated, LOCKED area.
DO NOT store in prolonged sunlight.
DO NOT store with food, seed, or animal feedstuff.

8. EXPOSURE CONTROLS

National exposure standards: None set for 2,4-D. The time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life is set at 10 mg/m³.

Biological limit values: None set for 2,4-D.

Engineering measures: Use assisted ventilation in enclosed spaces if needed, especially storage areas.

Personal protection equipment:

- Eye/face protection: Goggles or glasses to AS 1366, AS/NZS1337
- Hand/skin protection: Overalls, PVC gloves and apron, face shield
- Respiratory protection: Should not be necessary under normal conditions. If spray mist may be encountered, a particulate filter to AS/NZS 1715 should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Brown mobile liquid.

Odour: Ammoniacal.

pH: Slightly acidic.

Vapour pressure: Will be that of water solvent

Vapour density: Will be that of water solvent

Boiling point/range: >> 100 °C.

Melting/freezing point: < 0 °C.

Solubility: Fully miscible.

Specific gravity - density: ≈ 1.25

Flashpoint: N/A

Explosive limits (air): N/A

Ignition temperature: N/A

10. STABILITY AND REACTIVITY

Chemical stability: Normally stable. Active may degrade in strong UV light.

Conditions to avoid: Very high or low temperatures.

Materials to avoid: Strong oxidising agents.

Hazardous decomposition products: Oxides of nitrogen and chlorine. Burning with limited oxygen may produce carbon monoxide.

Hazardous reactions: Not known. Does not polymerise.



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11. TOXICOLOGICAL INFORMATION

Acute toxicity: 2,4-D acid is of slight to moderate toxicity. The oral LD50 of 2,4-D ranges from 375 to 666 mg/kg in the rat, 370 mg/kg in mice, and from less than 320 to 1000 mg/kg in guinea pigs. The dermal LD50 values are 1500 mg/kg in rats and 1400 mg/kg in rabbits, respectively. In humans, prolonged breathing of 2,4-D causes coughing, burning, dizziness, and temporary loss of muscle coordination. Other symptoms of poisoning can be fatigue and weakness with possible nausea. The dimethyl ammonium salt is slightly less toxic.

Chronic toxicity: Rats given high amounts, 50 mg/kg/day, of 2,4-D in the diet for 2 years showed no adverse effects. Dogs fed lower amounts in their food for 2 years died, probably because dogs do not excrete organic acids efficiently. A human given a total of 16.3 g in 32 days therapeutically, lapsed into a stupor and showed signs of incoordination, weak reflexes, and loss of bladder control.

Possible routes of exposure: Inhalation of spray mist is the most likely cause of exposure.

Range of effects. Excessive exposure may affect human health as follows:

Skin contact: May cause irritation unless rinsed immediately. There is also potential for absorption of toxic amounts of the chemical. Treat all skin contact as an emergency.

Eye contact: Likely to cause severe irritation unless rinsed immediately.

Inhalation/ingestion: Prolonged breathing of 2,4-D causes coughing, burning, dizziness, and temporary loss of muscle coordination. Other symptoms of poisoning can be fatigue and weakness with possible nausea. On rare occasions following high levels of exposure, there can be inflammation of the nerve endings with muscular effects.

Dose/conc./conditions likely to cause injury:

Delayed effects if any:

Carcinogenic effects: 2,4-D fed to rats for 2 years caused an increase in malignant tumors. Female mice given a single injection of 2,4-D developed cancer (reticulum-cell sarcomas). Another study in rodents shows a low incidence of brain tumors at moderate exposure levels (45 mg/kg/day) over a lifetime. However, a number of questions have been raised about the validity of this evidence and thus about the carcinogenic potential of 2,4-D. In humans, a variety of studies give conflicting results. Several studies suggest an association of 2,4-D exposure with cancer. An increased occurrence of non-Hodgkin's lymphoma was found among a Kansas and Nebraska farm population associated with the spraying of 2,4-D. Other studies done in New Zealand, Washington, New York, Australia, and on Vietnam veterans from the U.S. were all negative. There remains considerable controversy about the methods used in the various studies and their results. Thus, the carcinogenic status of 2,4-D is not clear.

Organ toxicity: Most symptoms of 2,4-D exposure disappear within a few days, but there is a report of liver dysfunction from long-term exposure.

Relevant negative data:

Reproductive effects: High levels of 2,4-D (about 50 mg/kg/day) administered orally to pregnant rats did not cause any adverse effects on birth weights or litter size. Higher doses (188 mg/kg/day) resulted in fetuses with abdominal cavity bleeding and increased mortality. DNA synthesis in the testes was significantly inhibited when mice were fed large amounts (200 mg/kg/day) of 2,4-D. The evidence suggests that if 2,4-D causes reproductive effects in animals, this only occurs at very high doses. Thus reproductive problems associated with 2,4-D are unlikely in humans under normal circumstances.

Teratogenic effects: 2,4-D may cause birth defects at high doses. Rats fed 150 mg/kg/day on days 6 to 15 of pregnancy had offspring with increased skeletal abnormalities, such as delayed bone development and wavy ribs.

This suggests that 2,4-D exposure is unlikely to be teratogenic in humans at expected exposure levels.

Mutagenic effects: 2,4-D has been very extensively tested and was found to be non-mutagenic in most systems. 2,4-D did not damage DNA in human lung cells. However, in one study, significant effects occurred in chromosomes in cultured human cells at low exposure levels. The data suggest that 2,4-D is not mutagenic or has low mutagenic potential.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Aquatic organisms: Fish – Not particularly toxic.
Crustacea – Not particularly toxic
Algae, Plants – Varies with species, from Acute I (EC₅₀ ≤ 1 mg/L) upwards.

Flora: Highly toxic to many dicotyledons. Relatively non-toxic to grasses, but may interfere with seed production.



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Fauna:	Moderately toxic to birds. LD ₅₀ 's range from 500 to 1000+ mg/kg.
Soil organisms:	Not toxic to earthworms.
Bees:	Not toxic.
Long term:	
Ozone effects:	None recorded.
Persistence/degradation:	Degrades in soil with a half life measured in days or weeks rather than months.
Mobility:	Not particularly mobile in soil.
Bioaccumulative potential:	Excretion is very rapid (ca 24 hours) in test animals. Very unlikely to bio-accumulate.

13. DISPOSAL CONSIDERATIONS

Product:	Whenever possible, product should be used for its intended purpose, even if reclaimed from spillage (reclaimed product must be uncontaminated).
Containers:	Whenever possible, follow directions given on container. If not available, triple or pressure rinse plastic or metal containers before disposal. Recycle containers if possible (replace cap and return clean containers to recycler or designated collection point). Treat rinsings as for product above. 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.
Sewage:	Do not dispose of product or rinsings into sewage systems or septic tanks.

14. TRANSPORT INFORMATION

Not a dangerous good, so has no UN Number, UN proper shipping name, ADG Class, or ADG Packing Group.	
Special precautions:	Do not store with foodstuffs.
Hazchem code:	None.
4Farmers does not anticipate that this product will be shipped by air or sea, nor be exported. Extra rules apply if such transport is undertaken.	
MARINE TRANSPORT:	Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG) for transport by sea.
AIR TRANSPORT:	Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulation for transport by air.
UN No:	3082
Class:	9 Miscellaneous Dangerous Goods
Packing group:	3
SHIPPING NAME:	ENVIRONMENTALLY HAZARDOUS LIQUID, N.O.S.(CONTAINS 2,4-D)

15. REGULATORY INFORMATION

AICS: All of the significant ingredients in this formulation are to be found in the public AICS Database. This product is an Agricultural Chemical registered by the Agricultural Pesticides and Veterinary Medicines Authority.

Aquatic Environmental Hazards classification according to UN Chapter 4.1.1 Classification of Environmental Hazards. Hazardous to the Aquatic Environment.

16. OTHER INFORMATION

ADI – Allowable Daily Intake.
NOEL – No Observable Effect Level.
TLV – Threshold limit value.
TWA – Time weighted average.
This MSDS prepared March 2008.