# TITAN AMINE 475 HERBICIDE

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

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| **Product Name** | Titan Amine 475 Herbicide |
| **Product Code** | - |
| **Other Names** | - |
| **Product Use** | Agricultural Herbicide |
| **Company Name** | Titan Ag Pty Ltd |
| **Address** | 3/14 Narabang Way<br>Belrose NSW 2085 |
| **Telephone Number** | 02 9986 2943 |
| **Emergency Telephone** | 02 9986 2943 |

## 2. HAZARDS IDENTIFICATION

**HAZARDOUS SUBSTANCE. NON DANGEROUS GOODS.**
Classified as hazardous according to the criteria of Safe Work Australia.

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| **Hazards** | Xn - Harmful<br>N - Dangerous for the Environment |
| **Risk Phrases** | R22 - Harmful if swallowed.<br>R37 - Irritating to respiratory system.<br>R41 - Risk of serious eye damage.<br>R43 - May cause sensitisation by skin contact.<br>R52/53 - Harmful to aquatic organisms. / May cause long-term adverse effects in the aquatic environment |
| **Safety Phrases** | S2 - Keep out of reach of children.<br>S24/25 - Avoid contact with skin and eyes.<br>S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.<br>S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.<br>S46 - If swallowed, seek medical advice immediately and show this container or label.<br>S61 - Avoid release to the environment. Refer to special instructions/Material Safety Data Sheets. |

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

| Ingredient (common name) | CAS Number | Proportion |
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| 2,4-D present as dimethylamine and diethanolamine salts | 94-75-7 | 475g/L |
| Other ingredients deemed not to be hazardous | Proprietary | to 100% |

## 4. FIRST AID MEASURES

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| **Inhalation** | If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention if symptoms persist. |
| **Ingestion** | If swallowed, do NOT induce vomiting. Never give anything by mouth to an unconscious person.<br>Seek medical advice immediately and show this container or label.<br>Prevent vomit from entering the lungs by careful placement of the patient. |
| **Skin** | If skin contact occurs, remove contaminated clothing and wash affected area thoroughly with soap and water. Seek medical attention if symptoms persist.<br>Launder protective clothing before re-use. |
| **Eyes** | In case of eye contact, check for and remove any contact lenses. Immediately irrigate eyes with plenty of running water for at least 15 minutes, keeping eyelids open.<br>Seek medical attention if symptoms persist. |

## 5. FIRE FIGHTING MEASURES

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| | For major fires call the Fire Brigade. Ensure that an escape path is available from any fire. |
| **Suitable Extinguishing Media** | Choose extinguishing media suitable to the burning material.<br>Prevent water used for extinguishing fire entering drains or water courses. |
| **Hazardous Combustion Products** | Toxic fumes of hydrogen chloride or phosgene. |
| **Firefighting Equipment** | Recommended use of self contained breathing apparatus and full protective equipment. |
| **Unusual Fire or Explosion Hazards** | If involved in a fire, the product will not burn. Non-combustible.<br>Use water spray to cool containers involved in fire. |
| ***Hazchem Code*** | Not allocated. |

## 6. ACCIDENTAL RELEASE MEASURES

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| **Spills** | Wear full protective clothing including eye/face protection.<br>Stop leak if safe to do so, and contain spill. 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.<br>Absorb onto sand, vermiculite or other suitable absorbent material.<br>Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly.<br>Recycle containers wherever possible after careful cleaning.<br>Launder protective clothing before storage or re-use.<br>Prevent spillage from entering drains or water courses. |

## 7. HANDLING AND STORAGE

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| **Handling** | Use of safe work practices are recommended to avoid eye or skin |

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| | contact, inhalation or ingestion. Observe good personal hygiene. |
| **Storage** | Store in the closed, original container in a dry, well ventilated area, as cool as possible. Do not store for prolonged periods in direct sunlight. Keep container tightly sealed and do not store with seed, fertilisers or foodstuffs.<br>Make sure that the product does not come into contact with acids, bases and strong oxidising agents. |

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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| **Exposure Standards (Safe Work Australia)** | **2,4-Dichlorophenoxyacetic acid:**<br>TWA: - ppm / 10 mg/m$^3$<br>STEL: - ppm / - mg/m$^3$ |
| **Engineering Controls** | No special ventilation requirements are normally necessary for this product. However make sure that the work environment remains clean and that vapours and mists are minimised. |
| **Respiratory Protection** | If there is a significant chance that vapours or mists are likely to build up in the area where this product is being used, a respirator fitted with a type G cartridge, suitable for agricultural chemicals, should be used. |
| **Eye Protection** | Protective glasses or goggles and face shield. |
| **Skin Protection** | Impervious elbow-length gloves and protective suit. |
| **Hygienic Practices** | Food, beverages and tobacco products should not be stored or consumed where this material is in use. Provide eyewash fountains and safety showers in close proximity to points of potential exposure. |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

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| **Appearance** | Clear brown liquid |
| **Odour** | Fish-like odour |
| **Solubility in water** | Completely soluble |
| **Boiling Point** | No information available |
| **Freezing Point** | No information available |
| **Vapour Pressure** | 2,4-D salts are non-volatile |
| **Vapour Density (Air = 1)** | No information available |
| **Specific Gravity** | 1.207 |
| **Volatile Component** | ~37% (water) |
| **Flash Point** | Does not burn |
| **Flammable Limit – Lower** | Does not burn |
| **Flammable Limit – Upper** | Does not burn |

## 10. STABILITY AND REACTIVITY

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| **Chemical Stability** | Stable under normal conditions of storage and handling. |
| **Incompatible Materials** | Acids, bases, strong oxidising agents |
| **Hazardous Decomposition Products** | Toxic fumes of hydrogen chloride or phosgene. |

**Hazardous Polymerization** Will not occur.
**Conditions to Avo** Protect this product from light.

## 11. TOXICOLOGICAL INFORMATION

**Toxicity**

**Acute toxicity:**
The acid form of 2,4-D is classified as harmful. 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. On rare occasions following high levels of exposure, there can be inflammation of the nerve endings with muscular effects.

**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 poor coordination, weak reflexes, and loss of bladder control.
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. 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.

**Carcinogenic effects:**
2,4-D fed to rats for 2 years caused an increase in malignant tumours. 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 tumours 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 farm population associated with the spraying of 2,4-D. 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.

**Fate in humans and animals:**

The absorption of 2,4-D is almost complete in mammals after ingestion and nearly all of the dose is excreted in the urine. The compound is readily absorbed through the skin and lungs. Men given 5 mg/kg excreted about 82% of the dose as unchanged 2,4-D. The half-life is between 10 and 20 hours in living organisms. There is no evidence that 2,4-D accumulates to significant level in mammals or in other organisms. Between 6 and 8 hours after doses of 1 mg/kg, peak concentrations of 2,4-D were found in the blood, liver, kidney, lungs, and spleen of rats. There were lower levels in muscle and brain.

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| **Routes of Exposure** | Inhalation, ingestion, eye and skin |
| **Health effects from likely routes of exposure** | Inhalation: The components of the product are of low volatility and no adverse effects are expected from handling concentrate. A moderate hazard exists from inhalation of spray and care should be taken to avoid inhalation of spray mist. Can cause irritation.<br>Ingestion: Not a likely route of exposure. Swallowing large amounts may cause injury and results in headache, nausea, motor weakness and incoordination.<br>Eye: Will cause severe irritation.<br>Skin: Will cause irritation. May be absorbed through skin. |
| **Effects of Overexposure** | Prolonged eye contact may cause damage to the eyes.<br>Product is a skin sensitizer. |
| **Existing Conditions Aggravated by Exposure** | No information available |
| **Carcinogenicity** | No (ASCC, NTP, IARC) |

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity and Mobility**

This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.

**Effects on birds:** 2,4-D is harmful to wildfowl and slightly to moderately toxic to birds. The $LD_{50}$ is 1000 mg/kg in mallards, 272 mg/kg in pheasants, and 668 mg/kg in quail and pigeons.

**Effects on aquatic organisms:** Some formulations of 2,4-D are highly toxic to fish while others are less so. Limited studies indicate a half-life of less than 2 days in fish and oysters. Concentrations of 10 mg/L for 85 days did not adversely affect the survival of adult dungeness crabs. For immature crabs, the 96-hour $LC_{50}$ is greater than 10 mg/L, indicating that 2,4-D is only slightly toxic. Brown shrimp showed a small increase in mortality at exposures of 2 mg/L for 48 hours.

**Effects on other organisms:** Moderate doses of 2,4-D severely impaired honeybees brood production. At lower levels of exposure, exposed bees lived significantly longer than the controls. The honeybee $LD_{50}$ is 0.0115 mg/bee.

**Environmental Fate:**
**Breakdown in soil and groundwater:** 2,4-D has low soil persistence. The half-life in soil is less than 7 days. Soil microbes are primarily responsible for its disappearance.
**Breakdown in water:** In aquatic environments, micro-organisms readily degrade 2,4-D. Rates of breakdown increase with increased nutrients, sediment load, and dissolved organic carbon. Under oxygenated conditions the half-life is 1 week to several weeks.
**Breakdown in vegetation:** 2,4-D interferes with normal plant growth processes. Uptake of the compound is through leaves, stems, and roots. Breakdown in plants is by a variety of biological and chemical pathways. 2,4-D is toxic to most broad leaf crops, especially cotton, tomatoes, beets, and fruit trees.

## 13. DISPOSAL CONSIDERATIONS

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| **Disposal methods and containers** | Instructions concerning the disposal of this product and its containers are given on the product label.<br>Dispose according to applicable local and state government regulations. |
| **Special precautions for landfill or incineration** | Please consult your state Land Waste Management Authority for more information |

## 14. TRANSPORT INFORMATION

Not classified as a dangerous good according to the Australian Code for the Transport of Dangerous goods by road or rail.

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| **UN Number** | Not applicable |
| **Proper Shipping Name** | Not applicable |
| **Dangerous Goods Class** | Not applicable |
| **Hazchem Code** | Not applicable |
| **Packing Group** | Not applicable |
| **Special Precautions** | Not applicable |

## 15. REGULATORY INFORMATION

2,4-D, dimethylamine salt and 2,4-D diethanolamine salt (2,4-Dichlorophenoxyacetic acid )are listed in the Australian Inventory of Chemical Substances (AICS).

**SUSDP Classification: S5**

## 16. OTHER INFORMATION

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| **Last Revision of MSDS** | Rev 1.0 (08/11/2010) |
| **Prepared by** | MSDS.COM.AU Pty Ltd www.msds.com.au |
| **Abbreviations Used** | IARC: International Agency for Research on Cancer<br>ASCC: Australian Safety and Compensation Council<br>NTP: National Toxicology Program (U.S.)<br>OSHA: Occupational Safety and Health Administration (U.S.)<br>STEL: Short term exposure limit<br>TWA: Time weighted average |

**Emergency Contacts**

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| **Titan Ag Pty Ltd** | **02 9986 2943** |
| **Titan Ag Pty Ltd – Emergency Number** | **02 9986 2943** |
| **Police and Fire Brigade** | **000** |
| **Poisons Information Centre** | **13 11 26** |

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Please read instructions / label before using product.