

MATERIAL SAFETY DATA SHEET

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Date of Issue: April 2013
MSDS No. FMC/APT/1

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: APTITUDE HERBICIDE

Other Names: Metribuzin + Carfentrazone-ethyl.
Use: Agricultural Herbicide for winter cereals.
Company: FMC Crop Protection Pty Ltd.
Address: 5 Palmer 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 Safe Work Australia.
Not classified as a Dangerous Good according to the ADG Code.**

Risk Phrases: R20 Harmful by inhalation.
Safety Phrases: S2 Keep out of reach of children.
S22 Do not breathe dust.
S24/25 Avoid contact with skin and eyes.
S37/39 Wear Suitable gloves and eye/face protection.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

CHEMICAL	CAS NUMBER	PROPORTION (% w/w)
Carfentrazone-ethyl	128639-02-1	9%
Metribuzin	21087-64-9	37.5%
Hydrated amorphous silica	112926-00-8	5-10%
Other ingredients determined to be non-hazardous		Balance

SECTION 4 FIRST AID MEASURES

FIRST AID

Swallowed: If poisoning occurs, contact a Doctor or Poisons Information Centre. Phone 13 11 26. Wash mouth out with water and give water to drink.

Eye: Gently brush granules away. Hold eyes open and flood with clean water until product is washed out of eyes. Ensure irrigation under eyelids by occasionally lifting them. Do not try to remove contact lenses unless trained. If irritation persists, seek medical advice.

Skin: Brush granules gently off clothing and skin. Remove contaminated clothing. Wash skin thoroughly with soap and water. If skin is irritated, seek medical advice.

Inhaled: Remove to fresh air and observe until recovered. If irritation or symptoms persists more than about 30 minutes, seek medical advice.

Advice to Doctors: Metribuzin and Carfentrazone-ethyl have generally low acute toxicity. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care.

SECTION 5 FIRE FIGHTING MEASURES

Specific Hazard: Generally considered a low risk. Not flammable.

Extinguishing media: Extinguish fire using media suited to burning material. If containers are ruptured contain all runoff.

Hazards from combustion products: On burning will emit toxic fumes of carbon monoxide, carbon dioxide, oxides of nitrogen, 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. Wear prescribed protective clothing and equipment. Do not breathe dust. Large spills should be dyked or covered to prevent dispersal. Vacuum or shovel spilled material into an approved container and dispose of as listed in Section 8.

Material and methods for containment and cleanup procedures: To clean spill area, tools and equipment, wash with a solution of soap, water and acetic acid/vinegar. Follow this with a neutralisation step of washing the area with a bleach or caustic soda ash solution. Finally, wash with a strong soap and water solution. Absorb, as above, any excess liquid and add both solutions to the drums of waste already collected.

Dispose of waste as indicated in Section 8 or according to Australian Standard 2507 - Storage & Handling of Pesticides. Keep out unprotected persons and animals. 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 preparing spray wear cotton overalls buttoned to the neck and wrist. Wash hands after use.

Conditions for Safe Storage: DO NOT store near (or allow to contact) fertilizers, fungicides or pesticides. Store in the closed original container, in a cool well ventilated area, out of direct sunlight. Store in room or place away from children, animals, food, feed stuffs, seed and fertilizers.

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

No exposure standard has been established by Safe Work Australia for this product.

Biological Limit Values:

No biological limit allocated.

Engineering controls:

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

Personal Protective equipment (PPE):

General: Wear cotton overalls buttoned to the neck and wrist (or equivalent clothing). If inhalation risk exists, wear a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides (Australian Standards).

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: Light brown solid granules.
Odour: Sweet musty like odour
Boiling point: No data.

SECTION 9 | PHYSICAL AND CHEMICAL PROPERTIES (Continued)

Freezing point:	No applicable – solid at ambient temperature.
Bulk density:	No data.
pH:	5 - 7.
Solubility in Water:	Product disperses in water.
Flammability:	Not flammable.
Corrosive hazard:	Non corrosive; compatible with stainless steel containers & polyethylene used in spray tanks and parts.
Flashpoint (°C):	Not applicable, not flammable.
Flammability Limits (%):	Not established.
Poisons Schedule:	This product is a schedule 6 (S6) poison.
Formulation type:	Water dispersible granule

SECTION 10 | STABILITY AND REACTIVITY

Chemical Stability: Product is considered stable for at least 2 years when stored at ambient temperatures out of direct sunlight, in the original container.

Conditions to avoid: Avoid exposure to heat.

Incompatible materials: Can react with oxidising agents and strong acids and bases.

Hazardous Decomposition Products: If involved in a fire, it may emit fumes containing toxic compounds.

Hazardous Reactions: No special considerations.

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

Studies with laboratory animals have shown this product to have low oral, dermal and inhalation toxicity. Symptoms of overexposure to carfentrazone-ethyl shown by laboratory animals include decreased activity, tearing eyes, bleeding from the nose and incoordination.

Acute

Swallowed: The product has low toxicity; the oral LD₅₀ in the rat is > 2000 mg/kg.

Eye: Slightly irritating to the eyes.

Skin: Slightly irritating to the skin. This product has a low dermal toxicity. The dermal LD₅₀ in the rabbit is > 2000 mg/kg. It is non-sensitising to the skin.

Inhaled: Harmful by inhalation. The Acute Inhalation toxicity LC₅₀ > 2.08 mg/L/4 hour with no deaths recorded.

Chronic: In studies with laboratory animals, carfentrazone-ethyl did not cause reproductive toxicity, teratogenicity or carcinogenicity. An overall absence of genotoxicity has been demonstrated in tests of mutagenicity, DNA damage and chromosomal aberrations.

No evidence of carcinogenic potential was observed in chronic feeding studies with metribuzin in rats and mice. Target organs are the thyroid and the liver and it also appears to depress the central nervous system. Metribuzin is not genotoxic, teratogenic, carcinogenic or a reproductive toxin.

SECTION 12 | ECOLOGICAL INFORMATION

Environmental Toxicology: Carfentrazone-ethyl is toxic to algae (EC₅₀ = 15 ppb), moderately toxic to fish (LC₅₀ 1.6 to 2 mg/L) and slightly toxic to aquatic crustacean (LC₅₀ = > 9.8 mg/L). Carfentrazone-ethyl was shown to cause no effects to earthworms at concentrations up to 820 mg/kg in soil. Carfentrazone-ethyl is slightly toxic to birds (LD₅₀ > 2,250 mg/kg) and low toxicity to bees (no deaths at 200 µg/bee). Do not contaminate sewers, drains, dams, creeks or any other waterways with product or the used container.

SECTION 12 ECOLOGICAL INFORMATION (Continued)

Metribuzin has moderate toxicity to birds. The LD₅₀ in bobwhite quail = 164 mg/kg and mallard duck = 460-680 mg/kg. Metribuzin is very toxic to fish and other aquatic organisms. The 96-hour LC₅₀ in rainbow trout = 74.6 mg/L and golden orfe = 141.6 mg/L, Daphnia 48-hour LC₅₀ = 49.6 mg/L. Metribuzin is highly toxic to algae EC₅₀ green algae = 0.021 mg/L.

Environmental Properties: Carfentrazone-ethyl is rapidly degraded in soils under aerobic and anaerobic conditions (half life = 1 to 2 days). Carfentrazone-ethyl rapidly hydrolyses at pH 9 but stable at pH 5. Field studies show that Carfentrazone-ethyl has a low potential for movement in the soil. The Log P of 3.36 and a measured bioconcentration factor of 206 in fish, indicate a low potential for accumulation. The low vapour pressure (1.19×10^{-7} Torr) indicates that volatility is not a concern.

Metribuzin is of moderate persistence in the soil environment. The half-life of Metribuzin varies according to soil type and climatic conditions. Soil half-lives of 30 to 120 days have been reported; a representative value may be approximately 60 days. Metribuzin is poorly bound to most soils and soluble in water, giving it a potential for leaching in many soil types. Soil mobility is affected by many site-specific variables, including the amount of soil organic matter, particle size distribution, porosity, rainfall, and application rates. Metribuzin has been detected in some rivers, wells and groundwater in the USA. The major mechanism by which Metribuzin is lost from soil is microbial degradation. Losses due to volatilization or photodegradation are not significant under field conditions. *Breakdown in water:* The half-life of Metribuzin in pond water is approximately 7 days. If present, Metribuzin would most likely be found in the water column rather than the sediment, due to its low binding affinity and high water solubility. *Breakdown in vegetation:* Metribuzin is absorbed through the leaves when plants are given surface treatment, but the primary route for uptake is through the root system. From the roots, it is translocated upward, becoming concentrated in the roots, stems, and leaves of treated plants. In non-susceptible plants it is de-aminised to more water-soluble conjugates; in susceptible plants it is not metabolized and disrupts photosynthesis in the chloroplast.

SECTION 13 DISPOSAL CONSIDERATIONS

Spills & Disposal: Isolate and post spill area. Wear prescribed protective clothing and equipment. Large spills should be dyked or covered to prevent dispersal. Keep out animals and unprotected persons. 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.

Disposal of empty containers: Break, crush, puncture and 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: This product is exempt from classification as a Dangerous Good in packs less than 3,000 kg under the Australian Code for the Transport of Dangerous Goods by Road and Rail. For bulk shipments this product is a class 9, UN 3077. (See special provision AU01).

It is good practice not to transport agricultural chemical products with food, food related materials and animal feedstuffs.

Marine and Air Transport: This product is classified as 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 Carfentrazone). Hazchem code 2Z. Hazard Identification Number (HIN) 90.

SECTION 15 REGULATORY INFORMATION

Classified as a hazardous substance according to criteria of Safe Work Australia. (Xn -Harmful).
Under the Standard for Uniform Scheduling of Medicines and Poisons (SUSMP), this product is a schedule 6 poison.

This product is undergoing registration under the Agricultural and Veterinary Chemicals Code Act 1994.
Product is not classified as a Dangerous Good according to the ADG Code (7th Ed).

Requirements concerning special training:

Check State or Territory regulations that require people who use pesticides in their job or business to have training in the application of the materials.

SECTION 16 OTHER INFORMATION

CONTACT POINT: The Manager, FMC Crop Protection Pty Ltd., Murarrie, Brisbane Qld. 4172.
Telephone: 07 - 3908 9222 Facsimile: 07 - 3908 9221

Issue Date: 15 April 2013 (Initial MSDS).

Key to abbreviations and acronyms used in this MSDS:

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

Ataxia: Inability to control the coordinate movements of the muscles.

Bradycardia: Is a resting heart rate of under 60 beats per minute (adults).

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

Mutagenic: Capable of inducing a genetic mutation in an organism.

Oedema: Accumulation of fluid in tissues.

PPE: Personal protective equipment.

SUSDP: Standard for the Uniform Scheduling of Drugs and Poisons.

Teratogen: An agent capable of causing abnormalities in a developing foetus.

Safe Work Australia: Formally known as Australian Safety & Compensation Council (ASCC) which was formally known as the National Occupational Health & Safety Commission (NOHSC).

References

1. "Search Hazardous Substances". Safe Work Australia HSIS website. (2013).
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.