



MATERIAL SAFETY DATA SHEET

Manufacturer/information service:

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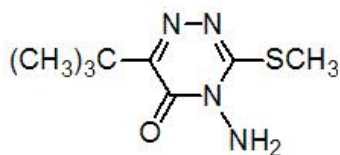
1. Chemical Product Identification

Common Name: Metribuzin 95% TC

Molecular Formula: C₈H₁₄N₄OS

Molecular Weight: 214.29

Structural Formula:



Chemical Name: 4-amino-6-tert-butyl-4,5-dihydro-3-methylthio-1,2,4-triazin-5-one

Form: Powder

Color: Pale yellow or white

Odor: Mild, sulfurous odor

CAS No.: 21087-64-9

2. Composition / Information On Ingredients

Composition	CAS No.	Content %
Metribuzin	21087-64-9	95
Other ingredients	---	5

3. Hazards Identification

Likely routes of exposure: Skin contact, ingestion and inhalation.

Skin: May cause mild irritation. May cause mild sensitization to some individuals.



Eye contact: Mild to moderate eye irritant.

Ingestion: Minimally toxic. Harmful if swallowed.

Inhalation: Minimally toxic. Harmful if inhaled.

4. First Aid Measures

Inhalation: Remove source of contamination, or move victim to fresh air. Keep affected person warm and at rest. Treat symptomatically and supportively. If breathing is difficult, a qualified person should administer oxygen. Get medical attention immediately if effects persist.

Skin contact: Move the victim to fresh air and remove all contaminated clothing, shoes and leather goods. Gently wipe off excess chemical. Wash affected skin areas gently and thoroughly with cold water and non-abrasive soap. Do not rub the skin. If irritation persists, obtain medical attention.

Eye contact: Immediately flush the eyes with clean, gently flowing cold water for 20 minutes, holding the eyelid(s) open. If irritation persists, obtain medical attention.

Ingestion: Have victim rinse mouth thoroughly with water. Do not induce vomiting. Seek medical advice immediately, showing container and label.

Advice to physician: There is no specific antidote. Treat symptomatically and supportively as and when required. Gastric lavage could be considered . Give oxygen if respiration is depressed.

5. Fire-Fighting Measures

Extinguishing agents: Extinguish fires with carbon dioxide, dry powder, or alcohol-resistant foam. Water spray can be used for cooling of unaffected stock, but avoid water coming in contact with the product. Use as little water as possible. Use spray or fog. Solid stream may cause spreading. Contain water used for fire fighting for later disposal.

Hazardous products of combustion: In a fire, carbon oxides (CO, CO₂), nitrogen oxides (NO_x) and sulfur oxides (SO_x) may be formed.

Fire fighting: Remove spectators from surrounding area. Remove container from fire area if possible. Contain fire control agents for later disposal. Use a recommended extinguishing agent for the type of surrounding fire. Avoid inhaling hazardous vapours and fumes from burning materials. Keep upwind.

Personal protective equipment: Fire may produce irritating or poisonous vapours (toxic



fumes of carbon oxides, nitrogen oxides and sulfur oxides), mists or other products of combustion. Fire fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

6. Accidental Release Measures

Personal precautions: Avoid contact with skin and eyes. Do not breathe in spray or fumes. For personal protection see Section 8.

Environmental precautions: Do not allow entering drains or watercourses. Spillage or uncontrolled discharges into water courses (or public waters) to be reported immediately to the Police and to the Department of Water/Environmental Affairs.

Occupational spill: Do not touch spilled material; stop leak if you can do it without risk. Keep out unprotected persons and animals. For small liquid spills, soak up with damp earth or sand, or other non-combustible absorbent material. Place the material into a clean, dry container and cover for subsequent disposal. For large liquid spills, contain the liquid by damming in with absorptive material and pump into containers. Soak up remainder with absorbent material. Label containers with its content and dispose it in accordance with local regulations. Open burning or dumping of this material is prohibited. Do not flush spilled material into drains. Keep spectators away. In situations where product comes in contact with water, contain contaminated water for disposal.

7. Handling And Storage

Handling: Avoid contact with eyes, prolonged contact with skin, and inhalation of spray and fumes. Handle product with caution. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking or using the toilet. Remove clothing immediately if the herbicide gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Operators should change and wash clothing after use. Do not apply directly to areas where surface water is present, or to intertidal areas below the mean high water mark. Water used to clean equipment must be disposed of correctly to avoid contamination.

Storage: Store in its original, labelled and closed container in dry, cool, shaded, well-ventilated area, away from heat, sparks and other sources of ignition. Do not store with other pesticides, fertilizer, seeds, foodstuffs and water supplies. Store away from incompatible substances. Product is incompatible with galvanized steel or unlined mild steel. Keep out of reach of unauthorized persons, children and animals. Local regulations should be



complied with.

8. Exposure Controls/Personal Protection

It is essential to provide adequate ventilation. The measures appropriate for a particular work site depend on how this material is used and on the extent of exposure. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire and other applicable regulations.

PERSONAL PROTECTIVE EQUIPMENT: If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection.

Respirator: It is usually safe to use the product without a mask or respirator. If the product is used in dusty or confined conditions, a mask or respirator suitable for protection from dusts and mists of pesticides is adequate. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

Clothing: Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

Gloves: Employee must wear appropriate synthetic protective gloves to prevent contact with this substance.

Eye protection: Wear safety goggles or face shield.

Emergency eye wash: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

9. Physical and Chemical Properties

Appearance: Pale yellow or white powder

Water content: $\leq 1.0\%$

Acidity (as H₂SO₄): $\leq 0.5\%$

Insoluble in acetone: $\leq 0.5\%$

Melting point: 125°C

Boiling point: Decomposes before boiling

Bulk density: 1.26 g/ml

Partition Coefficient: log P = 1.65 (at pH 7, 20°C)

Vapour pressure: 0.121 mPa (25°C)



Solubility: 1165 mg/l in water (20°C); In organic solvents: 449.4 g/l in acetone, 0.82 g/l in n-heptane, 250 g/l in ethyl acetate, 60 g/l in xylene (all at 20°C).

10. Stability and Reactivity

Stability: Stable under normal temperatures and storage conditions.

Storage stability: Stable for 2 years under normal warehouse conditions. Store at temperatures below 50°C and above 0°C.

Incompatibility: Product is normally compatible with diuron, ametryn and paraquat provided the mixing instructions are strictly adhered to. The quality of the water however, can affect the compatibility. Therefore, a compatibility test should be carried out with the water and the products to be used prior to mixing. Do not physically mix concentrate directly with other herbicides or pesticide concentrates; always dilute first. Avoid strong alkalis.

Thermal decomposition: Toxic oxides of carbon, nitrogen and sulfur are released when the product decomposes on heating.

11. Toxicological Information

Acute oral LD50 for rat: 322 a.i.mg/kg

Acute dermal LD50 for rat: >5000 a.i.mg/kg

Inhalation LC50 (4 h) for rat: 2.05 a.i.mg/L.

Skin irritation: Non-irritating to skin (rabbits)

Eye irritation: Non-irritating to eyes (rabbits)

Skin sensitization: Not a skin sensitiser (guinea pigs).

12. Ecological And Ecotoxicological Information

Effect on birds: moderate toxicity to birds, acute oral LD50 for Bobwhite quail is 164 a.i.mg/kg.

Effect on fish: moderate toxicity to fish, acute 96 hour LC50 for Rainbow trout is 74.6 a.i.mg/L.

Effect on aquatic invertebrates: moderate toxicity to aquatic invertebrates, acute 48 hour EC50 for Daphnia magna is 49 a.i.mg/L.

Effect on algae: moderate toxicity to algae, acute 72 hour EC50 for Scenedemus subspicatus is 0.02 mg/L.

Effect on honeybees: low toxicity to honeybees, contact acute 48 hour LD50 is >200



a.i.µg/bee, oral acute 48 hour LD50 is 166 a.i.µg/bee.

Effect on earthworms: moderate toxicity to earthworms, acute 14 day LC50 for Eisenia foetida is 427 a.i.mg/kg.

13. Disposal Considerations

Pesticide disposal: Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product that cannot be reused or reprocessed. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Do not contaminate rivers, dams or any other water sources with the product or used containers. Comply with local legislation applying to waste disposal.

Container disposal: Emptied containers retain vapour and product residues. Observe all labelled safeguards until container is destroyed. TRIPLE RINSE empty containers in the following manner: Invert the empty container over the spray or mixing tank and allow to drain for at least 30 seconds after the flow has slowed down to a drip. Thereafter rinse the container three times with a volume of water equal to a minimum of 10 % of that of the container. Add the rinsings to the contents of the spray tank before destroying the container in the prescribed manner. Do not re-use the empty container for any other purpose but destroy it by perforation and flattening and bury in an approved dump site. Prevent contamination of food, feedstuffs, drinking water and eating utensils. Comply with local legislation applying to waste disposal.

14. Transport Information

Not applicable.

15. Regulatory Information

Not applicable.

16. Other Information

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the product as such. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear. It is the responsibility of persons on receipt of



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this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produce formulations containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.