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MATERIAL SAFETY DATA SHEET

MSDS No: MSDS/ACE/FG-026

Section 1: Product Identification & Company

Common Name : Tebuconazole Technical
Manufacturer / Supplier : Bharat Rasayan Limited
1501, Vikram Tower, 'Rajendra Place,
New Delhi – 110008, INDIA
Emergency Phones : +91-11-43661120, 1104 Fax 43661100
CAS No. : 107534-96-3

Section 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4), H302

Reproductive toxicity (Category 2), H361d

Chronic aquatic toxicity (Category 2), H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Hazard statement(s)

- H302 : Harmful if swallowed.
- H361d : Suspected of damaging the unborn child.
- H411 : Toxic to aquatic life with long lasting effects.

Precautionary statement(s)

- P273 : Avoid release to the environment
- P281 : Use personal protective equipment as required.

Supplemental Hazard Statements : None

Other hazards: This substance/mixture contains no components considered to be persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Section 3: Composition/information on ingredients**3.1 Substances**

- Synonyms** : 1-(4-Chlorophenyl)-4,4-dimethyl-3-(1H-1,2,4-triazol-1-ylmethyl)-3-pentanol
- Formula** : C₁₆H₂₂ClN₃O
- Molecular weight** : 307.82 g/mol
- CAS-No.** : 107534-96-3
- EC-No.** : 403-640-2
- Index-No.** : 603-197-00-7

Hazardous ingredients according to Regulation (EC) No 1272/2008

Component	Classification	Concentration
1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol		
CAS-No. : 107534-96-3 EC-No. : 403-640-2 Index-No.: 603-197-00-7	Acute Tox. 4; Repr. 2; Aquatic Chronic 2; H302, H361d, H411	<= 100 %

Section 4: First Aid Measures

4.1 Description of first aid measures

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a Physician.

In case of skin contact: Wash off with soap and plenty of water. Consult a physician.

In case of eye contact: Flush eyes with water as a precaution.

If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed: The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed: No data available

Section 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture: Carbon oxides, Nitrogen oxides (NO_x), Hydrogen chloride gas

5.3 Advice for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information: No data available

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections: For disposal see section 13.

Section 7: Handling and storage

7.1 Precautions for safe handling: Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities: Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Storage class (TRGS 510): Non Combustible Solids

7.3 Specific end use(s): Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

Section 8: Exposure controls/personal protection

8.1 Control parameters

8.2 Exposure controls

appropriate engineering controls: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection: Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Body Protection: Complete suit protecting against chemicals, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use (EN 143) respirator cartridges as a backup to engineering controls. If the full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- a) Appearance : Form: solid
- b) Odour : No data available
- c) Odour Threshold : No data available
- d) pH : 6 at 20 °C
- e) Melting /freezing point : 102 °C
- f) Initial boiling point and boiling range : No data available
- g) Flash point : > 100.00 °C
- h) Evaporation rate : No data available
- i) Flammability (solid, gas): No data available
- j) Upper/lower flammability or explosive limits : No data available
- k) Vapour pressure : No data available
- l) Vapour density : No data available
- m) Relative density : 1.250 g/cm³ at 20 °C
- n) Water solubility : No data available
- o) Partition coefficient-octanol/water: No data available
- p) Auto-ignition temperature : No data available
- q) Decomposition temperature : No data available
- r) Viscosity : No data available
- s) Explosive properties : No data available
- t) Oxidizing properties : No data available

9.2 Other safety information

- Bulk density : 400 g/l

Section 10: Stability and reactivity

- 10.1 Reactivity** : No data available
- 10.2 Chemical stability** : Stable under recommended storage conditions.
- 10.3 Possibility of hazardous reactions:** No data available
- 10.4 Conditions to avoid** : No data available
- 10.5 Incompatible materials** : Strong oxidizing agents
- 10.6 Hazardous decomposition products:** Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NO_x), Hydrogen chloride gas

other decomposition products: No data available

In the event of fire: see section 5

Section 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - 1,700 mg/kg(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

LD50 Oral - Chicken - 4,488 mg/kg(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

LC50 Inhalation - Rat - 4 h - > 800 mg/m³(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

LD50 Dermal - Rat - > 5,000 mg/kg(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

Skin corrosion/irritation

Skin - Rabbit(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

Result: No skin irritation

Serious eye damage/eye irritation

Eyes - Rabbit(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

Result: No eye irritation

Respiratory or skin sensitisation

No data available(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

Germ cell mutagenicity

No data available(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as

probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

Suspected human reproductive toxicant(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

Specific target organ toxicity - single exposure

No data available(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

Specific target organ toxicity - repeated exposure

No data available

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Aspiration hazard

No data available(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

Additional Information RTECS: Not available

Section 12: Ecological information

12.1 Toxicity:

Toxicity to fish	:	LC50 - Carassius auratus (goldfish) - 8.7 mg/l - 96.0 h(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)
Toxicity to daphnia and	:	EC50 - Daphnia magna (Water flea) - 11.8 mg/l - 48 h (1-(4-Chlorophenyl)-
Other aquatic invertebrates	:	4, 4 dimethyl-3-(1, 2, 4-triazol-1-ylmethyl) pentan-3-ol)
Toxicity to algae	:	EC50 - Desmodesmus subspicatus (green algae) - 5.3 mg/l - 72 h(1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

12.2 Persistence and degradability : Biodegradability

12.3 Bioaccumulative potential : No data available

12.4 Mobility in soil : No data available (1-(4-Chlorophenyl)-4, 4-dimethyl-3-(1, 2, 4-triazol-1-ylmethyl) pentan-3-ol)

12.5 Results of PBT and vPvB : This substance/mixture contains no components considered to be

Assessment either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher

12.6 Other adverse effects : Toxic to aquatic life with long lasting effects. Avoid release to the environment.

Section 13: Disposal considerations

13.1 Waste treatment methods

Product: Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chem. scrubber.

Contaminated packaging: Dispose of as unused product.

Section 14: Transport information

14.1 UN number

ADR/RID: 3077

IMDG: 3077

IATA: 3077

14.2 UN proper shipping name

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol)

IATA: Environmentally hazardous substance, solid, n.o.s. (1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol).

14.3 Transport hazard class(es)

ADR/RID: 9

IMDG: 9

IATA: 9

14.4 Packaging group

ADR/RID: III

IMDG: III

IATA: III

14.5 Environmental hazards

ADR/RID: yes

IMDG Marine pollutant: no

IATA: yes

14.6 Special precautions for user

Further information: EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packaging's and combination packaging's containing inner packaging's with Dangerous Goods > 5L for liquids or > 5kg for solids.

Section 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical safety assessment: For this product a chemical safety assessment was not carried out

Section 16 Other information: The information provided in this MSDS is of general nature not specific for a particular purpose or situation, and believed to be correct and faithful. Bharat Rasayan Limited does not make any warranty or guarantee of any kind regarding fitness or completeness of information. Bharat Rasayan Limited disclaims any liability to the result(s) obtained or arising out of any use of the product or reliance on data/information contained in this MSDS.