江苏省农用激素工程技术研究中心有限公司
JIANGSU AGROCHEM LABORATORY CO., LTD

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MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT IDENTIFICATION:

PRODUCT NAME: TEBUCONAZOLE120g/l FS

CHEMICAL NAME: alpha-(2-(4-Chlorophenyl)ethyl)-alpha-(1-1-dimethylethyl) -1H-1,2,4-triazole-1-ethanol

FORMULA: C16 H22 Cl N3 0

2. COMPOSITION/INFORMATION ON INGREDIENTS:

INGREDIENT NAME	CAS NUMBER	CONCENTRATION
Tebuconazole	107534-96-3	120g/l
Others		up to 1000g/l

3.HAZARDS IDENTIFICATION:

Color: red **Form:** liquid **Odor:** Faint vanilla;

Harmful if inhaled; Harmful if absorbed through skin; Causes eye irritation; Harmful if swallowed.

POTENTIAL HEALTH EFFECTS:

ROUTE(S) OF ENTRY: Inhalation; Skin Contact; Skin Absorption; Eye Contact

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE EFFECTS OF EXPOSURE: Based on EPA Toxicity Category criteria of a similar formulation, this material is mildly toxic by the oral and dermal routes of exposure. In addition, animal studies from a similar formulation indicate that this material may be mildly irritating to the eyes, slightly irritating to the skin, and a positive dermal sensitizer.

CHRONIC EFFECTS OF EXPOSURE: Based on animal toxicity studies with the active ingredient, tebuconazole, (see Section 11), there may be toxic effects on the following organs: spleen, liver, adrenals, and lens of the eye. This product may contain up to approximately 2% total crystalline silica (quartz). However, the amount of respirable crystalline silica is expected to be significantly lower based on data provided by the raw material manufacturer. Excessive long-term exposure to respirable crystalline silica may cause silicosis, a form of progressive pulmonary fibrosis. Severe and permanent lung damage may result.

CARCINOGENICITY: ELITE 45 WP is not listed as a carcinogen by NTP, IARC, or regulated as a carcinogen by OSHA. However, it may contain crystalline silica (quartz), a substance which is classified by NTP as a Group 2 carcinogen and by IARC as a Group 1 carcinogen. Crystalline silica is a naturally-occuring mineral component of many sands and clays. Although controversial, the carcinogenic potential of crystalline silica must be considered if it is inhaled under excessive

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exposure conditions. However, the respirable portion of the silica which may be contained in this product is small, such that excessive inhalation exposure during normal conditions of use is unlikely.

NTP: Crystalline silica is classified as an NTP anticipated human carcinogen - "substances or groups of substances that may reasonably be anticipated to be carcinogens

IARC: IARC has classified crystalline silica as a Group 1 carcinogen. There is sufficient evidence in humans for the carcinogenicity of inhaled

crystalline silica (quartz) from occupational sources.

OSHA: Not regulated

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: No specific medical conditions are known which may be aggravated by exposure to the active ingredient in this product; however, pulmonary and respiratory diseases may be aggravated by exposure to respirable crystalline silica

4. FIRST AID MEASURES:

FIRST AID FOR EYES: Hold eyelids open and flush with copious amounts of water for 15 minutes. Call a physician if irritation develops or persists after flushing.

FIRST AID FOR SKIN: Remove contaminated clothing. Wash skin immediately with soap and water. Get medical attention if irritation develops or persists. If signs of intoxication(poisoning) occur, get medical attention immediately.

FIRST AID FOR INHALATION: If a person is overcome by excessive exposures to dusts or aerosols of this material, remove to fresh air or uncontaminated area. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention as soon as possible.

FIRST AID FOR INGESTION: If ingestion is suspected, call a physician or poison control center. If medical assistance cannot be given immediately, induce vomiting and get to a hospital. Drink one or two glasses of water and induce vomiting by touching back of throat with finger or, if available, by administering syrup of ipecac. If syrup of ipecac is available, administer 1 tablespoonful (15 mL) of syrup of ipecac followed by 1 to 2 glasses of water. If vomiting does not occur within 20 minutes, repeat the dose once. Do not induce vomiting or give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN: No specific antidote is available. Treat poisoning victims symptomatically.

5. FIRE FIGHTING MEASURES:

FLASH POINT: Not applicable

EXTINGUISHING MEDIA: Water; Carbon Dioxide; Dry Chemical; Foam **SPECIAL FIRE FIGHTING PROCEDURES:** Keep out of smoke; cool exposed containers with water spray.

Fight fire from upwind position. Use self-contained breathing equipment. Contain run-off by diking to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.

UNUSUAL FIRE / EXPLOSION HAZARDS: Dust Explosion Hazard: Specific testing with tebuconazole is not complete. Tests indicate low ignition energy for dust cloud meaning that explosive mixture can develop. Measures should be taken to eliminate buildup of static charge during routine material handling. All equipment should be grounded and material stored in containers lined with conductive plastic bags. If large dust cloud develops, turn off all devices that may cause spark and leave area until cloud dissipates.

6. ACCIDENTAL RELEASE MEASURES:

SPILL OR LEAK PROCEDURES: Isolate area and keep unauthorized people away. Do not walk through spilled material. Avoid breathing dusts and skin contact. Avoid generating dust (a fine water spray mist, plastic film cover, or floor sweeping compound may be used if necessary). Use recommended protective equipment while carefully sweeping up spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with soap and water. Rinse with water. Use dry absorbent material such as clay granules to absorb and collect wash solution for proper disposal. Contaminated soil may have to be removed and disposed. Do not allow material to enter streams, sewers, or other waterways.

7. HANDLING AND STORAGE:

STORAGE TEMPERATURE(MIN/MAX): None/60 day average not to exceed 120 ^{o}F

SHELF LIFE: Time/temperature-dependent. Contact Bayer for specific information.

SPECIAL SENSITIVITY: Extreme heat / moisture

HANDLING/STORAGE PRECAUTIONS: Store in a cool, dry area designated specifically for pesticides. Do not store near any material intended for use or consumption by humans or animals.

8. PERSONAL PROTECTION:

EYE PROTECTION REQUIREMENTS: Use goggles if needed to prevent dust from getting into the eyes.

SKIN PROTECTION REQUIREMENTS: Avoid skin contact. Wear long sleeves and trousers. Use chemical-resistant gloves such as nitrile, and additional protective clothing when needed to prevent dermal exposure.

VENTILATION REQUIREMENTS: Maintain exposure levels below exposure limits through the use of general and local exhaust ventilation.

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RESPIRATOR REQUIREMENTS: If necessary under the conditions of use, wear a NIOSH-approved particulate respirator.

ADDITIONAL PROTECTIVE MEASURES: Clean water should be available for washing in case of eye or skin contamination. Educate and train employees in safe use of the product. Follow all label instructions. Launder clothing after use. Wash thoroughly after handling.

9.PHYSICAL AND CHEMICAL PROPERTIES:

PHYSICAL FORM:

COLOR:

ODOR: Faint vanilla

ODOR THRESHOLD: Not established

MOLECULAR WEIGHT: 307.8 (for tebuconazole)

pH: 8-10 **BOILING POINT:** Not applicable

MELTING/FREEZING POINT: 102-105 °C (for tebuconazole)

SOLUBILITY IN WATER: Disperses (32 ppm @ 20 °C for tebuconazole)

SPECIFIC GRAVITY: Not applicable

BULK DENSITY: 15-22 lb/cu-ft

VAPOR PRESSURE: 9.8 x 10 -9 mm Hg @ 20 °C (for tebuconazole)

10. STABILITY AND REACTIVITY:

STABILITY: This is a stable material.

HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBILITIES: None known

INSTABILITY CONDITIONS: None known

DECOMPOSITION PRODUCTS: Proposed due to fire or other extreme conditions: CO, CO_2, oxides of nitrogen

11. TOXICOLOGICAL INFORMATION:

Acute toxicity studies have not been conducted on this product as formulated. The acute toxicity data provided is from a very similar formulation, Elite 45 DF. The non-acute information pertains to the technical grade active ingredient, tebuconazole.

ACUTE TOXICITY:

ORAL LD50: Male Rat: 4865 mg/kg - Female Rat: 2593 mg/kg

DERMAL LD50: Male and Female Rabbit: >2000 mg/kg

INHALATION LC50: 4 hr exposure to liquid aerosol: Male and Female Rat: >0.970 mg/l (analytical); 1 hr exposure to liquid aerosol (extrapolated from 4 hr LC50): Male and Female Rat: >3.880 mg/l (analytical)

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EYE EFFECTS: Rabbit: Mild irritation to the cornea and conjunctiva with all remarkable irritation resolving within 7 days.

SKIN EFFECTS: Rabbit: Slight dermal irritant

SENSITIZATION: Guinea Pig: Positive dermal sensitizer.

SUBCHRONIC TOXICITY:

In dermal toxicity studies using rabbits, tebuconazole was administered at doses up to and including 1000 mg/kg for 6 hours/day, 5 days/week for a period of 3 weeks. There were no local or systemic effects observed at any of the levels tested. The no-observed-effect-level (NOEL) was 1000 mg/kg. In a 3 week inhalation study, rats were exposed to tebuconazole for 6 hours/day, 5 days/week at aerosol concentrations of 1.2, 10.6 or 155.8 mg/cubic meter. Liver enzyme effects were observed at the high concentration. The NOEL was 10.6 mg/cubic meter.

CHRONIC TOXICITY:

In chronic dog studies, tebuconazole was administered for 52 weeks at dietary concentrations of 40, 100, 150, 200 or 1000 ppm. Due to a lack of significant effects, the high dose was increased to 2000 ppm at 40 weeks for the remainder of the study. At the high dose, effects relating to liver, spleen, ocular and adrenal were observed. The overall NOEL from these studies was 100 ppm based on adrenal effects. In a 2 year study, tebuconazole was administered to rats at dietary concentrations of 100, 300 or 1000 ppm. There was a reduction in body weight gains and an increased incidence of liver and spleen effects at the high dose. The NOEL was 300 ppm.

CARCINOGENICITY:

Tebuconazole was investigated for carcinogenicity in feeding studies using rats and mice. There was no indication of a carcinogenic effect in rats or mice when tested at dose levels up to and including the maximum tolerated dose (MTD) for each species. An increased incidence of hepatocellular neoplasms occurred in mice at a dose level approximately three fold greater than the MTD.

MUTAGENICITY:

Numerous in vitro and in vivo mutagenicity studies have been conducted on tebuconazole, all of which are negative.

DEVELOPMENTAL TOXICITY:

Tebuconazole has been evaluated for developmental toxicity in oral studies using mice, rats and rabbits. In mice treated at dose levels ranging from 1100 mg/kg, the NOELs for maternal and developmental toxicity were 3 and 10 mg/kg, respectively. When rats were treated at dose levels of 30, 60 or 120 mg/kg, the NOELs for maternal and developmental toxicity were 30 and 60 mg/kg, respectively. For rabbits treated at dose levels of 10, 30 or 100 mg/kg, the NOELs for maternal and developmental toxicity were less than 10 and 30 mg/kg, respectively. In dermal teratology studies on rats and mice, tebuconazole was administered during gestation at dose levels of 100, 300 or 1000 mg/kg. In rats, there was no indication of maternal or developmental toxicity;

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therefore, the maternal and developmental NOEL was 1000 mg/kg. In mice, the NOELs for maternal and developmental toxicity were 100 and 300 mg/kg, respectively.

TOXICOLOGICAL INFORMATION continued:

REPRODUCTION:

In a reproduction study, tebuconazole was administered to rats at dietary concentrations of 100, 300 or 1000 ppm for 2 generations. Smaller litter sizes and decreased pup weight gain was observed in conjunction with maternal toxicity at the high concentration. The maternal and reproductive NOEL was 300 ppm.

NEUROTOXICITY:

In an acute neurotoxicity screening study, tebuconazole was administered to rats as a single oral dose at doses of 100, 500, or 1000 mg/kg for males and 100, 250, or 500 mg/kg for females. Treatment-related clinical signs of toxicity and transient neurobehavioral effects were evident in both sexes. There were no treatment-related microscopic lesions within the skeletal muscle or neural tissues. Based on these results the NOEL for neuropathology was 1000 mg/kg for males and 500 mg/kg for females, the highest dose tested. The overall NOEL was less than 100 mg/kg for both sexes. In a subsequent study, an overall NOEL of 50 mg/kg was established for both sexes. In a 13 week neurotoxicity screening study, tebuconazole was administered to rats at dietary concentrations of 100, 400 or 1600 ppm. Body weight and food consumption was reduced at the high-dose. Functional observational battery (FOB) and automated measures of motor and locomotor activity were not affected by treatment. There were no treatment-related microscopic lesions in neural tissues or skeletal muscle in any of the treated animals. There was no evidence of neurotoxicity at any dietary concentration. The NOEL for microscopic lesions was 1600 ppm, the highest concentration tested. The NOEL for overall toxicity was 400 ppm. In a one generation developmental neurotoxicity study, tebuconazole was administered to rats at dietary concentrations of 100, 300 or 1000 ppm during gestation and postnatal development. Preliminary data indicated a decrease in pup body weights and absolute brain weights for surviving 12day pups at 1000 ppm. The significance of the decreased absolute brain weights with respect to developmental neurotoxicity is not clear, given the overt maternal and neonatal toxicity that were evident at this dose level. Further understanding of this finding will be available when brain tissue measurements and histopathology are completed.

12. ECOLOGICAL INFORMATION:

This product is toxic to estuarine and marine invertebrates. Bayer will provide a summary of specific data upon written request. As with any pesticide, this product should be kept out of streams, lakes and other aquatic habitats of concern.

13. DISPOSAL CONSIDERATIONS WASTE DISPOSAL METHOD:

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Follow container label instructions for disposal of wastes generated during use in compliance with the product label. In other situations, bury in an approved EPA landfill or burn in an incinerator approved for pesticide destruction. Do not reuse container

14. TRANSPORTATION INFORMATION:

TECHNICAL SHIPPING NAME: Tebuconazole

FREIGHT CLASS PACKAGE: Fungicides, NOI (NMFC 102120)

PRODUCT LABEL: Not Noted

DOT (DOMESTIC SURFACE):

HAZARD CLASS OR DIVISION: Non-Regulated

IMO / IMDG CODE (OCEAN):

HAZARD CLASS DIVISION NUMBER: Non-Regulated

ICAO / IATA (AIR):

HAZARD CLASS DIVISION NUMBER: Non-Regulated

15. REGULATORY INFORMATION:

OSHA STATUS: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA STATUS: This product is exempt from TSCA Regulation under FIFRA Section 3 (2)(B)(ii) when used as a pesticide.

CERCLA REPORTABLE QUANTITY: No components listed

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: None

SECTION 311/312 HAZARD CATEGORIES: Immediate Health Hazard; Delayed Health Hazard

SECTION 313 TOXIC CHEMICALS: None

RCRA STATUS: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

16. OTHER INFORMATION:

NFPA 704M RATINGS:

Health: 1 Flammability:1 Reactivity: 1

Other:

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0=Insignificant 1=Slight 2=Moderate

3=High 4=Extreme

Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. NFPA ratings are provided by Bayer as a customer service.

REASON FOR ISSUE: Create New MSDS

PREPARED BY: V. C. Standart

APPROVED BY: D. C. Eberhart

TITLE: Product Safety Manager

APPROVAL DATE: 06/02/1999

SUPERSEDES DATE: None

MSDS NUMBER: 36346

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