MATERIAL SAFETY DATA SHEET

OLYMPIC HORTICULTURAL PRODUCTS™

OLYMPIC HORTICULTURAL PRODUCTS, CO.
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TRANSPORTATION EMERGENCY
CALL CHEMTREC 800-424-9300
DISTRICT OF COLUMBIA 202-483-7616

NON-TRANSPORTATION
OLYMPIC/BAYER EMERGENCY PHONE . . 800-414-0244
OLYMPIC INFORMATION PHONE 800-659-6745

STRIKE® 25 WDG Water Dispersible Granule
GREENHOUSE & NURSERY SYSTEMIC FUNGICIDE

EPA Registration Number: 3125-436-598 7

I. PRODUCT IDENTIFICATION:

PRODUCT NAME . . . . . .: STRIKE 25 WDG Greenhouse & Nursery Systemic Fungicide
CHEMICAL FAMILY . . . . . .: Triazole Fungicide
CHEMICAL NAME . . . . . .: 1-(4-Chlorophenoxy) -3, 3-dimethyl-1-(1H-1,2,4-triazol -1-yl)-2-butanone
SYNONYMS . . . . . .: Triadimefon
FORMULA . . . . . .: C14 H16 C1 N3 O2

II. HAZARDOUS INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS	CONCENTRATION (%)
STRIKE (triadimefon)		
43121-43-3	OSHA : Not Established ACGIH : Not Established	25 %
Ingredient 1968		
Specific chemical identity is withheld as a trade secret.	OSHA : Not Established ACGIH : Not Established	1 - 3 %
Ingredient 1878		
Specific chemical identity is withheld as a trade secret.	OSHA : Not Established ACGIH : Not Established	3 - 5 %
Ingredient 1611		
Specific chemical identity is withheld as a trade secret.	OSHA : Not Established ACGIH : Not Established	1 - 3 %
Total Silica (quartz)		
14808-60-7	OSHA : .100 mg/m3 TWA (respirable) ACGIH : .100 mg/m3 TWA (respirable)	< 3 %
Ingredient 1606		
	OSHA : 5.000 mg/m3 TWA (respirable) ACGIH : 2.000 mg/m3 TWA (respirable)	60 - 70 %

III. PHYSICAL PROPERTIES:

PHYSICAL FORM . . . . . .: Solid
APPEARANCE . . . . . .: Granular
COLOR . . . . . .: Tan
ODOR . . . . . .: Sharp, musty
MOLECULAR WEIGHT . . . . . .: 293.8 (for STRIKE/triadimefon)
BOILING POINT . . . . . .: Not applicable
MELTING/FREEZING POINT . .: 82 C (for STRIKE/triadimefon)
SOLUBILITY IN WATER . . . . . .: 64 ppm @ 20 C (for STRIKE/triadimefon)
SPECIFIC GRAVITY . . . . . .: Not applicalble
BULK DENSITY . . . . . .: 37-42 lb/cu ft
VAPOR PRESSURE . . . . . .: 1.5 x 10 -7 mm Hg @ 20 C (for STRIKE/triadimefon)

IV. FIRE AND EXPLOSION DATA:

FLASH POINT . . . . . .: Not Applicable
FLAMMABLE LIMITS:
UPPER EXPLOSIVE LIMIT (UEL) (%) . . . .: Not Established
LOWER EXPLOSIVE LIMIT (LEL) (%) . . .: Not Established
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 runoff by diking to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.
UNUSUAL FIRE / EXPLOSION HAZARDS . .: During the routine handling of this material there should be little risk of a dust explosion. However, tests on similar organic materials indicate that an explosive mixture can develop. Therefore, appropriate preventive measures should be taken. If a large dust cloud develops, turn off any devices that may cause a spark and leave the area until the cloud dissipates. Additional information on this subject is available upon request.

V. HUMAN HEALTH DATA:

ROUTE(S) OF ENTRY . . . . . .: Inhalation; Skin Contact; Skin Absorption
HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:
ACUTE EFFECTS
OF EXPOSURE . . . . . .: Based on animal toxicity testing (see Section XII), this material may be mildly irritating to the eyes, and may cause dermal sensitization. Based on EPA Toxicity Category criteria, this material is mildly toxic orally and essentially non-toxic dermally.
CHRONIC EFFECTS
OF EXPOSURE . . . . . .: Based on the results of animal studies, no deleterious effects or symptoms would be expected from chronic exposure to the active ingredient in this product during normal use. However, this product may contain up to approximately 3% total crystalline silica. Excessive, long-term exposure to respirable crystalline silica may cause silicosis, a form of disabling progressive and sometimes fatal pulmonary fibrosis. Severe and permanent lung damage may result.
CARCINOGENICITY
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 Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans" Vol. 42 - for Crystalline Silica (Quartz) - determined that "There is sufficient evidence for the carcinogenicity of crystalline silica to experimental animals. There is limited evidence for the carcinogenicity of crystalline silica to humans."
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, a component of this formulation.
EXPOSURE LIMITS . . . . . .: 1.0 mg/m3 BAYER EXPOSURE LIMIT (BEL) for TRIADIMEFON Technical. The BEL is an internal guideline established by a scientific committee within Bayer. It is based on available literature and Bayer experience with the product. The BEL is used as a guideline for Bayer operations only, and is not a recommendation for any other purpose.

VI. EMERGENCY AND FIRST AID PROCEDURES:

FIRST AID FOR EYES . . . . . .: Hold eyes 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 . . . . . .: In case of contact, remove contaminated clothing and wash skin with soap and water. Get medical attention if irritation develops and persits. 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. 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. In case of poisoning, it is also requested that Bayer Corp., Agriculture Division, Kansas City, Missouri be notified. Telephone: 800-414-0244

VII. EMPLOYEE PROTECTION RECOMMENDATIONS:

EYE PROTECTION
REQUIREMENTS . . . . . .: Goggles shoud be used when needed to prevent dust or spray mixture from getting into the eyes.
SKIN PROTECTION
REQUIREMENTS . . . . . .: Avoid skin contact. Wear long sleeves and trousers, chemical-resistant gloves and additional protective clothing when needed to prevent dermal exposure.
RESPIRATOR
REQUIREMENTS . . . . . .: Under normal handling conditions no respiratory protection is needed. However, if needed to prevent respiratory irritation, wear a NIOSH-approved respirator for dusts and

mists or a NIOSH-approved respirator for pesticides.

VENTILATION

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

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.

VIII. REACTIVITY DATA:

STABILITY . . . . . .: This is a stable material.

HAZARDOUS

POLYMERIZATION . . . . . .: Will not occur.

INCOMPATIBILITIES . . . . . .: Strong oxidizing agents, acids.

INSTABILITY CONDITIONS . . .: Not Noted.

DECOMPOSITION

PRODUCTS . . . . . .: Proposed under fire or extreme conditions: hydrazines, amines, nitrogen oxides, CO.

IX. SPILL AND LEAK PROCEDURES:

SPILL OR LEAK

PROCEDURES . . . . . .: Isolate area and keep unauthrized 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, or contact vegetation.

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

X. SPECIAL PRECAUTIONS & STORAGE DATA:

STORAGE TEMPERATURE

(MIN/MAX) . . . . . .: None/30 day average not to exceed 100 F

SHELF LIFE . . . . . .: Not Noted

SPECIAL SENSITIVITY . . . . . .: Extreme heat, moisture

HANDLING/STORAGE

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

XI. SHIPPING INFORMATION:

TECHNICAL

SHIPPING NAME . . . . . .: Triadimefon

FREIGHT CLASS BULK . . . . . .: Do not ship in bulk

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)

PROPER SHIPPING NAME . . . . . .: None

HAZARD CLASS DIVISION NUMBER . . .: Not Determined

UN NUMBER . . . . . .: None

SUBSIDIARY RISK . . . . . .: None

PACKING GROUP . . . . . .: None

HAZARD LABEL(s) . . . . . .: None

RADIOACTIVE? . . . . . .: Non-Radioactive

XII. ANIMAL TOXICITY DATA:

Only a dermal sensitization study has been performed on this product as formulated. Other acute toxicological information has been extrapolated from a similar formulation, TRIADIMEFON 25% WP. The non-acute information pertains to the active ingredient, triadimefon.

ACUTE TOXICITY

ORAL LD50 . . . . . .: Male Rat: 2828 mg/kg; Female Rat: 3668 mg/kg

DERMAL LD50 . . . . . .: Male and Female Rabbit: >5000 mg/kg

INHALATION LC50 . . . . . .: 4 Hr. Exposure to Liquid Aerosol: Male and Female Rat: >0.334 mg/l (analytical); 1 Hr. Exposure to Liquid Aerosol (extrapolated from 4 Hr. LC50): Male and Female Rat: >1.336 mg/l (analytical)

EYE EFFECTS . . . . . .: Rabbit: mild irritation to the cornea, iris and conjunctiva was observed with all remarkable irritation resolving by 3 days.

SKIN EFFECTS . . . . . .: Rabbit: Not a dermal irritant.

SENSITIZATION . . . . . .: Guinea Pig: Positive dermal sensitizer.

SUBCHRONIC TOXICITY . . . . .: In a 4 week dermal toxicity study, rabbits were exposed to the active ingredient for 7 hours/day, 5 days/week, at levels of 50 and 250 mg/kg. Slight dermal irritation was exhibited by rabbits of both dose groups. In a 3 week dermal toxicity study, rats were treated with triadimefon at levels of 100, 300 or 1000 mg/kg for 6 hours/day, 5 days/week. At 1000 mg/kg, behavioral changes observed included increased reactivity and increased activity. Based on clinical signs, the no-observed-effect-level (NOEL) was 300 mg/kg. In a subchronic inhalation study, rats were exposed to triadimefon for 6 hours/day, for 15 days to liquid aerosol concentrations of 78.7 and 307 mg/cubic meter. The no-effect concentration was 78.7 mg/cubic meter. Liver weights were increased at 307 mg/cubic meter.

CHRONIC TOXICITY . . . . . .: In a 2 year study, dogs were administered triadimefon at dietary concentrations of 100, 330,1000 ppm. The high dose was administered at 1000 ppm for 54 weeks, and then increased to 2000 ppm for the remainder of the study. Liver weights and liver enzyme levels were increased at the high dose, however, histopathological examinations did not reveal any damage to the liver. The NOEL was 330 ppm. When rats were administered triadimefon for 2 years at dietary concentrations ranging from 50 to 1800 ppm, the NOEL was 300 ppm. Effects observed at the high dose included reduced body weights, increased feed consumption, changes in serum chemistries, increased liver weights and thyroid effects.

CARCINOGENICITY . . . . . .: Triadimefon was tested for carcinogenicity in 2 feeding studies using rats. In the first study, rats were administered dietary concentrations of 50 or 500 ppm for 2 years. No evidence of a carcinogenic effect was found. In the second study, triadimefon was administered for 2 years at dietary concentrations of 50, 300 or 1800 ppm. At the high dose only, there was a slight increase in the incidence of benign follicular adenomas of the thyroid. In oncogenicity studies using mice, triadimefon was administered at dietary concentrations of 50, 300 or 1800 ppm. At the high dose only, there was an increase in the incidence of benign liver tumors. No increase in malignant tumors occurred.

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

DEVELOPMENTAL TOXICITY .: In teratology studies using rats, triadimefon was administered during gestation at oral doses ranging from 10 to 100 mg/kg. Teratogenic effects were observed, but only at maternally toxic dose levels. The overall NOELs derived from these studies for maternal and developmental toxicity were 10 and 30 mg/kg, respectively. In an inhalation teratology study, rats were exposed to triadimefon during gestation at liquid aerosol concentrations of 14.0, 33.2 or 113.7 mg/cubic meter for 6 hours/day. The NOEL for maternal toxicity was 14.0 mg/cubic meter. No fetotoxic or teratogenic effects were observed. In teratology studies using rabbits, triadimefon was administered during gestation at oral doses ranging from 5 to 120 mg/kg. The overall NOEL derived from these studies for both maternal and developmental toxicity was 20 mg/kg. Starting at the maternally toxic level of 40 mg/kg, there was an increased incidence of fetal skeletal variations.

REPRODUCTION . . . . . .: In reproduction studies, triadimefon was administered to rats at dietary concentrations of 50, 300 or 1800 ppm. At 1800 ppm, reproductive effects including smaller litter sizes, reduced litter weights, and reduced viability and lactation were observed; at this dose, parental body weight gains were depressed, and a reduction in mating occurred. The reproductive NOEL was 300 ppm.

XIII. FEDERAL REGULATORY INFORMATION:

OSHA STATUS . . . . . .: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CF1910.1200.

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 are listed.

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES . . . . . .: No components listed.

SECTION 311/312

HAZARD CATEGORIES . . . . . .: Immediate Health Hazard.

SECTION 313

TOXIC CHEMICALS . . . . . .: No components listed.

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) This product is not a hazardous waste under RCRA.

XIV. OTHER REGULATORY INFORMATION:

NFPA 704M RATINGS: Health 3 Flammability Reactivity Other

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

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

XV. APPROVALS:

REASON FOR ISSUE . . . . . .: Revise Sections II, III, V & XII

APPROVAL DATE . . . . . .: 06/30/94

SUPERSEDES DATE . . . . . .: 06/07/91

MSDS NUMBER . . . . . .: 08713