MILES

MATERIAL SAFETY DATA SHEET

MOBAY CORPORATION
AGRICULTURAL CHEMICALS DIVISION
P.O. BOX 4913 HAWTHORN ROAD
KANSAS CITY, MO 64120-0013

NON-TRANSPORTATION
MOBAY EMERGENCY PHONE.....: (816) 242-2582
MOBAY INFORMATION PHONE.....: (816) 242-2000

TRANSPORATION EMERGENCY
CALL CHEMI\TREC: 800-424-9300
DISTRICT OF COLUMBIA 202-483-7616

I. PRODUCT IDENTIFICATION:

PRODUCT NAME.....: Shaw's Fungicide 100 contains BAYLETON
PRODUCT CODE.....: 22956
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 CL N3 O2
EPA # 8378-55

II. HAZARDOUS INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS	CONCENTRATION (%)
BAYLETON (TRIADIMEFON)		
43121-43-3	OSHA : NOT ESTABLISHED	1 %
	ACGIH : NOT ESTABLISHED	

INGREDIENT 1497
SPECIFIC CHEMICAL IDENTITY IS WITHHELE AS A TRADE SECRET.
OSHA : NOT ESTABLISHED 1-5 %
ACGIH : NOT ESTABLISHED

INGREDIENT 1422
SPECIFIC CHEMICAL IDENTITY IS WITHHELD AS A TRADE SECRET.
OSHA : NOT ESTABLISHED 1-5%
ACGIH : NOT ESTABLISHED

MAY BE CONTAMED IN THIS PRODUCT AS AN ALTERNATE TO INGREDIENT 1497.

III. PHYSICAL PROPERTIES:

PHYSICAL FORM .....: SOLID
APPEARANCE.....: FREE FLOWING GRANULES
COLOR.....: BEIGE
ODOR.....: MILD KETONE
ODOR THRESHOLD .....: NOT ESTABLISHED
MOLECULAR WEIGHT.....: 293.8 (FOR BAYLETON/TRIADIMEFON)
PH.....: NOT APPLICABLE
BOILING POINT.....: NOT APPLICABLE
MELTING/FREEZING POINT.....: NOT APPLICABLE
SOLUBILITY IN WATER.....: 64 PPL @ 20 C (FOR BAYLETON/ TRIADIMEFON)
SPECIFIC GRAVITY .....: NOT APPLICABLE
BULK DENSITY.....: CA 28 LBS/CU FT (FLUFFED)
% VOLATILE BY VOLUME .....: NOT ESTABLISHED
VAPOR PRESSURE .....: 1.5 X 10-7 MM HG @ 20 C (FOR BAYLETON/TRIADIMEFON)
VAPOR DENSITY .....: NOT ESTABLISHED (AIR = 1)

IV. FIRE AND EXPLOSION DATA:

FLASH POINT.....: NOT APPLICABLE
FLAMMABLE LIMITS:
UPPER EXPLOSIVE LIMIT (UEL)(%) .....: NOT APPLICABLE
LOWER EXPLOSIVE LIMIT (LEL)(%) .....: NOT APPLICABLE
EXTINGUISHING MEDIA .....: WATER
SPECIAL FIRE FIGHTING PROCEDURES .....: IF INVOLVED IN A FIRE, WEAR SELF-CONTAINED BREATHING EQUIPMENT.

V. HUMAN HEALTH DATA:

ROUTE(S) OF ENTRY .....: INHALATION OF DUST AND DERMAL CONTACT WITH THIS PRODUCT ARE THE PRIMARY ROUTES OF ENTRY. THE ACTIVE INGREDIENT IN THIS PRODUCT CAN BE ABSORBED THROUGH THE SKIN.

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE EFFECTS OF EXPOSURE .....: EYE IRRITATION MAY OCCUR PRIMARILY DUE TO MECHANICAL ABRASION BY THE GRANULAR MATERIAL RESULTING IN TEAR AND/OR REDDENING OF THE EYES. ANIMAL STUDIES HAVE SHOWN THAT THIS PRODUCT IS MILDLY TOXIC ORALLY AND DERMALLY, AND IS A MILD EYE IRRITANT. SENSITIZATION STUDIES HAVE NOT BEEN CONDUCTED ON THIS FORMULATION; HOWEVER, ANOTHER FORMULATION CONTAINING APPROXIMATELY DOUBLE THE CONCENTRATION OF ACTIVE INGREDIENT AND THE ACTIVE INGREDIENT ARE POSITIVE DERMAL SENSITIZERS.

CHRONIC EFFECTS OF EXPOSURE .....: BASED ON THE RESULTS OF ANIMAL STUDIES, NO DELETERIOUS EFFECTS OR SYMPTONS SHOULD BE EXPECTED FROM CHRONIC EXPOSURE TO THE ACTIVE INGREDIENT IN THIS PRODUCT DURING NORMAL USE.

CARCINOGENICITY

NTP.....: NOT LISTED

IARC .....: NOT LISTED

OSHA.....: NOT LISTED

MEDCIAL CONDITIONS

AGGRAVATED BY EXPOSURE.....: NO SPECIFIC MEDICAL CONDITIONS ARE KNOWN WHICH MAY BE AGGRAVATED BY EXPOSURE TO THE ACTIVE INGREDIENT IN THIS PRODUCT.

EXPOSURE LIMITS.....: 1.0 MG/M3 MOBAY EXPOSURE LIMIT (MEL) FOR BAYLETON TECHNICAL. THE MEL IS AN INTERNAL GUIDELINE ESTABLISHED BY A SCIENTIFIC COMMITTEE WITHIN MOBAY. IT IS BASED ON AVAILABLE LITERATURE AND MOBAY EXPERIENCE WITH THE PRODUCT. THE MEL IS USED AS A GUIDELINE FOR MOBAY OPERATIONS ONLY AND IS NOT A RECOMMENDATION FOR ANY OTHER PURPOSE.

VI. EMERGENCY AND FIRST AID PROCEDURES:

FIRST AID FOR EYES .....: HOLD EYELIDS OPEN AND FLUSH WITH COPIOUS AMOUNTS OF WATER FOR 15 MINUTES. CALL A PHYSICAN IF IRRITATION PERSISTS OR DEVELOPS AFTER FLUSHING.

FIRST AID FOR SKIN.....: REMOVE CONTAMINATED CLOTHING. WASH SKIN WITH SOAP AND WATER. GET MEDICAL ATTENTION IF IRRITATION PERSISTS. IF SIGNS OF INTOXICATION (POISONING) OCCUR, GET MEDICAL ATTENTION IMMEDIATELY.

FIRST AID FOR INHALATION.....: REMOVE VICTIM TO GRESH AIR OR UNCONTAMINATED AREA. IF NOT BRATHING, GIVE ARTIFICIAL RESPIRATION, PREFERABLEY MOUTH-TO-MOUTH. GET MEDICAL ATTENTION AS SOON AS POSSIBLE.

FIRST AID FOR INGESTION .....: CONTACT A PHYSICIAN OR POISON CONTROL CENTER.

NOTE TO PHYSICIAN.....: EYES – GRANULES MAY IRRITATE EYES THROUGH MECHANICAL INJURY. INGESTION – THIS FORMULATION IS EXPECTED TO BE LOW TOXICITY. TRAT SYMPTOMATICALLY. IN CASE OF POISONING, IT IS ALSO REQUESTED THAT MOBAY CORPORATION, AGRICULTURAL CHEMICALS DIVISION, KANSAS CITY, MISSOURI, BE NOTIFIED. TELEPHONE: 816/242-2000 OR 816/242-2882 (WEEK-ENDS).

VII. EMPLOYEE PROTECTION RECOMMENDATIONS:

EYE PROTECTION REQUIREMENTS.....: GOGGLES SHOULD BE USED WHEN NEEDED TO PREVENT GRANULAR MATERIAL OR DUST FROM GETTING INTO THE EYES.

SKIN PROTECTION REQUIREMENTS .....: THE USE OF CHEMICAL RESISTANT GLOVES, LONG SLEEVES AND LONG TROUSERS TO PREVENT SKIN CONTACT IS RECOMMENDED AS GOOD PRACTICE.

RESPIRATOR REQUIREMENTS.....: WHEN POTENTIAL EXPOSURE TO PRODUCT DUST IS EXCESSIVE, WEAR A RESPIRATOR APPROVED FOR DUSTS AND MISTS, OR ONE APPROVED FOR PESTICIDES, BY NIOSH.

VENTILATION REQUIREMENTS .....: MAINTAIN EXPOSURE LEVELS BELOW THE APPLICABLE EXPOSURE LIMITS THROUGH THE USE OF GENERAL AND LOCAL EXHAUST VENTILATION WHERE NEEDED.

ADDITIONAL PROTECTIVE REQUIREMENTS.....: 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 NOT A STABLE MATERIAL.

HAZARDOUS POLYMERIZATION .....: WILL NOT OCCUR.

INCOMPATIBILITIES.....: STRONG OXIDING AGENTS, ACIDS

INSTABILITILY CONDITIONS.....: NOT NOTED

DECOMPOSITION PRODUCTS : HCL, HYDRANZINES, AMINES, NITROGEN OXIDES, CO

IX. SPILL AND LEAK PROCEDURES:

SPILL OR LEAK PROCEDURES.....: CAREFULLY SWEEP UP SPILLED GRANULES AND PLACE IN COVERED CONTAINER. SCRUB CONTAMINATED AREA WITH SOAP AND WATER.

WASTE DISPOSAL .....: BURY MATERIAL IN EPA-APPROVED LANDFILL. EMPTY CONTAINERS MUST BE HANDLED WITH CARE DUE TO PRODUCT RESIDUE.

X. SPECIAL PRECAUTIONS & STORAGE DATA:

STORAGE TEMPERATURE(MIN/MAX) .....: NONE/30 DAY AVERAGE NOT TO EXCEED 100 F

SHELF LIFE.....: NOT NOTED
SPECIAL SENSITIVITY.....: 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.

XI. SHIPPING INFORMATION:

D.O.T. SHIPPING NAME .....: NOT REGULATED
TECHNICAL SHIPPING NAME.....: TRIADIMEFON
D.O.T. HAZARD CLASS.....: NON-REGULATED
U.N./N.A. NUMBER.....: NONE
PRODUCT RQ (LBS.).....: NONE
D.O.T. LABEL .....: NONE
D.O.T. PLACARD .....: NON-REGULATED
FREIGHT CLASS BULK .....: DO NOT SHIP IN BULK
FREIGHT CLASS PACKAGE.....: FUNGICIDES, NOI (NMFC 102120)
PRODUCT LABEL .....: NOT APPLICABLE

XII. ANIMAL TOXICITY DATA:

THE ACUTE TOXICITY INFORMATION IS BASED ON ACUTE TOXICITY DATA FROM ANOTHER FORMULATION OF SIMILAR COMPOSITION EXCEPT THAT IS HAS APPROXIMATELY DOUBLE THE CONCENTRATION OF ACTIVE INGREDIENT. THE NON-ACUTE INFORMATION PERTAINS TO THE ACTIVE INGREDIENT, TRIADIMEFON.

ACUTE TOXICITY

ORAL LD50 .....: MALE AND FEMALE RAT: >2500 MG/KG
DERMAL LD50.....: MALE AND FEMALE RABBIT: >2000 MG/KG
INHALATION LC50 .....: 4 HR. (DUST) MALE RAT: >3.2 MG/L (NOMINAL) – 4 HR. (DUST) FEMALE RAT: >3.2 MG/L (NOMINAL) – 1 HR. (DUST) RAT: >6.4 MG/L (NOMINAL) (EXTRAPLIATED FROM 4-HR. NOMINAL)
EYE EFFECTS.....: RABBIT: MILD EYE IRRITANT.
SKIN EFFECTS .....: RABBIT: NOT A DERMAL IRRITANT.
SENSITIZATION .....: GUINEA PIG: DERMAL SENSITIZATION STUDIES HAVE NOT BEEN CONDUCTED ON THIS FORMULATION, HOWEVER, ANOTHER FORMULATION CONTAINING APPROXIMATELY DOUBLE THE CONCENTRATION OF ACTIVE INGREDIENT AND THE ACTIVE INGREDIENT ARE POSITIVE DERMAL SENSITIZERS.

SUBCHRONIC TOXICITY.....: SUBCHRONIC STUDIES HAVE BEEN CONDUCTED ON RATS GIVEN THE ACTIVE INGREDIENT VIA DIET OR ORAL GAVAGE. FAT ACCUMULATION IN THE LIVER OCCURRED AT DIETARY CONCENTATIONS GREATER THAN 500 PPM. ORAL GAVAGE DOSES OF 5 MG/KG AND GREATER CAUSED HEPATIC MIRCOSOMAL ENZYME INDUCTION IN RATS. WHEN DOGS WERE FED THE ACTIVE INGREDIENT IN THE DIET, INDUCTION OF HEPATIC MICROSOMAL ENZYMES OCCURRED AT CONCENTRATIONS OF 600 PPM AND GREATER. IN A 4 WEEK DERMAL STUDY, RABBITS WERE EXPOSED TO THE ACTIVE INGREDIENT FOR 7 HOURS PER DAY, 5 DAYS PER WEEK, AT LEVELS OF 50 AND 250 MG/KG. SLIGHT DERMAL IRRITATION WAS EXHIBITED BY RABBITS OF BOTH DOSE GROUPS. IN A SUBCHRONIC INHALATION STUDY USING RATS, THE ACTIVE INGREDIENT WAS ADMINISTERED VIA TWO DIFFERENT REGIMENS. IN ONE, RATS WERE EXPOSED TO AN AEROSOL CONCENTRATION OF 453.6 MG CUBIC METER FOR 4 HOURS PER DAY FOR 5 CONSECUTIVE DAYS. THIS TREATMENT WAS TOLERATED WITHOUT ANY DETRIMENTAL EFFECTS. IN THE SECOND, RATS WERE EXPOSED 6 HOURS PER DAY FOR 15 DAYS TO 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 THE ACTIVE INGREDIENT AT DIETARY CONCENTRATIONS OF 100, 330, OR 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. THE NO-OBSERVED-EFFECT-LEVEL (NOEL) WAS 100 AND 330 PPM FOR MALE AND FEMALE DOGS, RESPECTIVELY. WHEN THE ACTIVE INGREDIENT WAS ADMINISTERED TO MICE FOR 21 MONTHS AT DIETARY CONCENTRATIONS OF 50, 300, OR 1800 PPM, THE NOEL WAS 50 PPM. CLINICAL CHEMISTRY, GROSS PATHOLOGY AND HISTOPATHOLOGICAL EXAMINATION INDICITED LIVER EFFECTS OCCURRED IN MICE OF THE 300 AND 1800 PPM DOSE GROUPS. WHEN RATS WERE ADMINISTERED THE ACTIVE INGREDIENT FOR 2 YEARS AT DIETARY CONCENTRATIONS RANGING FROM 50 TO 1800 PPM, THE NOEL WAS 300 PPM. AT 1800 PPM, AN INCREASE IN LIVER EFFECTS OCCURRED.

CARCINOGENICITY .....: THE ACTIVE INGREDIENT WAS TESTED FOR CARCINOGENICITY IN 2 FEEDING STUDIES USING RATS. IN THE FIRST STUDY, RATS WERE ADMINISTERED THE ACIVE INGREDIENT FOR 2 YEARS AT DIETAY CONCENTRATIONS OF 50 OR 500 PPM. NO EVIDENCE OF A CARCINOGENIC EFFECT WAS FOUND. IN THE SECOND STUDY, RATS WERE FED THE ACTIVE INGREDIENT FOR 2 YEARS AT CONCENTRATIONS OF 50, 300, OR 1800 PPM. AT THE PRINTING OF THIS MSDS, THIS STUDY WAS NOT COMPLETED; PRELIMINARY RESULTS INDICATE THAT THE ACTIVE INGREDIENT IS NOT CARCINOGENIC IN RATS AT DOSE LEVELS UP TO AND INCLUDING 1800 PPM. IN STUDIES USING MICE, ANIMALS WERE FED THE ACTIVE INGREDIENT AT DIETARY CONCENTATIONS OF 50, 300, OR 1800 PPM. AT THE HIGH DOSE ONLY, AN INCREASE IN THE INCIDENCE OF BENIGN LIVER TUMORS WAS NOTED FOR BOTH SEXES. NO INCREASE IN MALIGNANT TUMORS OCCURRED.

MUTAGENICITY.....: NUMEROUS IN VITRO AND IN VIVO MUTAGENICITY STUDIES HAVE BEEN CONDUCTED ON THE ACTIVE INGREDIENT, ALL OF WHICH ARE NEGATIVE.

TERATOGENICITY .....: THE ACTIVE INGREDIENT WAS TESTED FOR TERATOGENIC EFFECTS IN 4 GAVAGE STUDIES USING RATS. IN THESE STUDIES, DAILY ORAL DOSES RANGING FROM 10 TO 100 MG/KG WERE ADMINISTERED DURING GESTATION DAYS 6-15. THE NOEL FROM ALL THESE STUDIES WAS 10 MG/KG FOR MATERNAL TOXICITY AND 30 MG/KG FOR DEVELOPMENTAL TOXICITY. RIB ANOMALIES AND CLEFT PALATES WERE OBSERVED IN RAT FETUSES AT MATERNALLY TOXIC LEVELS OF 50 AND 100 MG/KG, RESPECTIVELY. IN AN INHALATION TERATOLOGY STUDY, RATS WERE EXPOSED TO THE ACTIVE INGREDIENT AT AEROSOL CONCENTRATIONS OF 14.0, 33.2, OR 113.7 MG/CUBIC METER FOR 6 HOURS PER DAY DURING GESTATION DAYS 6-15. THE NOEL FOR MATERNAL TOXICITY WAS 14.0 MG/CUBIC METER. NO FETOTOXIC OR TERATOGENIC EFFECTS IN 4 GAVAGE STUDIES USING RABBITS. IN THESE STUDIES, DAILY ORAL DOSES RANGING FROM 5 RO 120 MG/KG WERE ADMINISTERED DURING GESTATION DAYS 6-18. THE MATERNALNOEL DERIVED FROM ALL THESE STUDIES WAS 10 MG/KG.

THE NOEL FOR DEVELOPMENTAL TOXICITY WAS 20 MG/KG. AT THE MATERNALLY TOXIC LEVEL OF 120 MG/KG, AN INCREASE IN FETAL SKELETAL MALFORMATIONS WAS OBSERVED.

REPRODUCTION.....: IN REPRODUCTION STUDIES IN WHICH RATS WERE FED THE ACTIVE INGREDIENT AT DIETARY CONCENTRATIONS OF 50, 300, OR 1800 PPM, THE REPRODUCTIVE 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.

NEUROTOXICITY .....: LONG-TERM DELAYED NEUROTOXICITY HAS NOT BEEN INVESTIGATED ON THE ACTIVE INGREDIENT BECAUSE IT IS NOT AN ORGANOPHOSPHATE CHEMICAL.

XIII. FEDERAL 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 REGISTED UNDER FIFRA AND EXEMPT FORM TSCA FEGULATION UNDER SECTION 3 (2)(B)(II)

CERCLA REPORTABLE QUANTITY .....: NONE

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES .....: NONE

SECTION 311/312 HAZARDOUS CATEGORIES.....: IMMEDIATE HEALTH HAZARD

SECTION 313 TOXIC CHEMICALS.....: NONE

RCRA STATUS.....: IF DISCARDED IN ITS PURCHASED FORM, THIS PRODUCT WOULD NOT BE HAZARDOUS WASTE EITHER BY LISTING OR BY CHARACTERISTIC. HOWEVER, UNDER RCA, IT IS THE RESPONSIBILITY OF THE PRODUCT USER TO DETERMINE AT THE TIM 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 704M1RATINGS:	HEALTH	FLAMMABILITY	REACTIVITY	OTHER
	0	0	1	0

0=INSIGNIFICANT 1=SLIGHT 2=MODERATE 3=HIGH 4=EXTREME

XV. APPROVALS:

REASON FOR ISSUE .....: REVISE TO NEW FORMAT; REVISE SECTIONS 3, 5, 11, 12, 13, 14
PREPARED BY.....: V. C. DEAN
APPROVED BY.....: WILLIAM J. BRINKMAN
TITLE.....: INDUSTRIAL HYGIENE MANAGER
APPROVAL DATE.....: 06/07/91
SUPERSIDES DATE .....: 06/30/89
MSDS NUMBER .....: 08766