THIS MSDS IS FOR A COMPONENT OF CATALOG #: E4389

SECTION 1. - - - - - - CHEMICAL IDENTIFICATION - - - - - - -

CATALOG #: E8875
NAME: B-ESTRADIOL

SECTION 2. - - - - COMPOSITION/INFORMATION ON INGREDIENTS - - - - -

CAS #: 50-28-2
MF: C18H24O2
EC NO: 200-023-8

SYNONYMS
ALTRAD * BARDIOL * DIHYDROFOLLICULAR HORMONE * DIHYDROFOLLICULIN *
DIHYDROMENORMON * DIHYDROTHEBELIN * 3,17-BETA-DIHYDROESTRA-1,3,5(10) *
-TRIENE * 3,17-BETA-DIHYDROXY-1,3,5(10)-ESTRADIENE * DIHYDROXYESTRIN *
3,17-BETA-DIHYDROXYESTRA-1,3,5-TRIENE * 3,17-BETA-DIHYDROXY-1,3,5(10)-
OESTRADIENE * DIHYDROXYESTRIN * DIMENFORMON * DIMENFOMPON *
PROLONGATUM * DIOGYN * DIOGYNETS * E(SUB 2) * 3,17-
EPIDIHYDROESTRADIENE * ESTRADIOL-17-BETA * ALPHA-ESTRADIOL * BETA-
ESTRADIOL * 3,17-BETA-ESTRADIOL * 17-BETA-ESTRADIOL * CIS-ESTRADIOL *
D-ESTRADIOL * D-3,17-BETA-ESTRADIOL * ESTRALDINE * Estra-1,3,5(10)-
TRIENE-3,17-BETA-DIOL * 17-BETA-ESTRA-1,3,5(10)-TRIENE-3,17-DIOL * 1,
3,5-ESTRADIENE-3,17-BETA-DIOL * ESTROVHTA * FEMESTRAL * FEMOGEN *
GYNERCON * GYNESTREL * GYNOESTRYL * LAMDIOL * MACRODIOL * MACROL *
MICRODIOL * NORDICOL * NSC-9895 * OESTERON * OESTRADIOL * ALPHA-
OESTRADIOL * BETA-OESTRADIOL * 3,17-BETA-OESTRADIOL * CIS-OESTRADIOL *
D-OESTRADIOL * D-3,17-BETA-OESTRADIOL * OESTRADIOL R * OESTRADIOL-17-
BETA * OESTRA-1,3,5(10)-TRIENE-3,17-BETA-DIOL * 17-BETA-OESTRA-1,3,
5(10)-TRIENE-3,17-DIOL * OESTROGLANDOL * OESTROGYNAL * 17-BETA-OH-
ESTRADIOL * 17-BETA-OH-OESTRADIOL * OVAHORMON * OVASTEROL * QVASTEVEOL *
OVOCICLINA * OVOCYCLIN * OVOCYCLINE * OVOCYLIN * PRIMOFOL *
PROFOLIOL * PROGYNON * PROGYNON-DH * SYNDIOL * THEBELIN, DIHYDRO-

SECTION 3. - - - - - - - HAZARDS IDENTIFICATION - - - - - -

LABEL PRECAUTIONARY STATEMENTS
TOXIC
MAY IMPAIR FERTILITY.
MAY CAUSE HARM TO THE UNBORN CHILD.
TARGET ORGAN(S):
FEMALE REPRODUCTIVE SYSTEM
MALE REPRODUCTIVE SYSTEM
AVOID EXPOSURE - OBTAIN SPECIAL INSTRUCTIONS BEFORE USE.
IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).
WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.
DO NOT BREATHE THE DUST.

CONTINUED ON NEXT PAGE
SECTION 4. - - - - - - - FIRST-AID MEASURES - - - - - - - - -

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH COPIOUS
AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED
CLOTHING AND SHOES.
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL
RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.
CALL A PHYSICIAN.
DISCARD CONTAMINATED CLOTHING AND SHOES.

SECTION 5. - - - - - - - FIRE FIGHTING MEASURES - - - - - - - - -

EXTINGUISHING MEDIA
WATER SPRAY.
CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

SPECIAL FIREFIGHTING PROCEDURES
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO
PREVENT CONTACT WITH SKIN AND EYES.

UNUSUAL FIRE AND EXPLOSIONS HAZARDS
EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

SECTION 6. - - - - - - - ACCIDENTAL RELEASE MEASURES - - - - - - -

EVACUATE AREA.
WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY
RUBBER GLOVES.
WEAR DISPOSABLE COVERALLS AND DISCARD THEM AFTER USE.
SWEET UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL.
VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

SECTION 7. - - - - - - - HANDLING AND STORAGE - - - - - - - - -

REFER TO SECTION 8.

SECTION 8. - - - - - - EXPOSURE CONTROLS/PERSONAL PROTECTION - - - - -

WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR, CHEMICAL-RESISTANT
GLOVES, SAFETY GOGGLES, OTHER PROTECTIVE CLOTHING.
SAFETY SHOWER AND EYE BATH.
USE ONLY IN A CHEMICAL FUMÉ HOOD.
DO NOT BREATHE DUST.
AVOID ALL CONTACT.
WASH THOROUGHLY AFTER HANDLING.
KEEP TIGHTLY CLOSED.
STORE IN A COOL DRY PLACE.

SECTION 9. - - - - - - PHYSICAL AND CHEMICAL PROPERTIES - - - - - - -

APPEARANCE AND ODOR

CONTINUED ON NEXT PAGE
MATERIAL SAFETY DATA SHEET

CUST#: 2-097-94816
PO#: Q1277

THIS MSDS IS FOR A COMPONENT OF CATALOG #: E4389

CATALOG #: E8875
NAME: B-ESTRADIOL

WHITE POWDER

PHYSICAL PROPERTIES
MELTING POINT: 178 C TO 179 C

SECTION 10. - - - - - - - - STABILITY AND REACTIVITY - - - - - - - -

INCOMPATIBILITIES
STRONG OXIDIZING AGENTS

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS
TOXIC FUMES OR:
CARBON MONOXIDE, CARBON DIOXIDE

SECTION 11. - - - - - - - - TOXICOLOGICAL INFORMATION - - - - - - - -

ACUTE EFFECTS
MAY BE HARMFUL BY INHALATION, INGESTION, OR SKIN ABSORPTION.
MAY CAUSE EYE IRRITATION.
MAY CAUSE SKIN IRRITATION.
MATERIAL MAY BE IRRITATING TO MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.

CHRONIC EFFECTS
MAY CAUSE CONGENITAL MALFORMATION IN THE FETUS.
MAY CAUSE REPRODUCTIVE DISORDERS.

TARGET ORGAN(S):
FEMALE REPRODUCTIVE SYSTEM
MALE REPRODUCTIVE SYSTEM

THERE IS SUFFICIENT EVIDENCE FOR THE CARCINOGENICITY OF B-ESTRADIOL IN EXPERIMENTAL ANIMALS. IN THE ABSENCE OF ADEQUATE DATA IN HUMANS, IT IS REASONABLE, FOR PRACTICAL PURPOSES, TO REGARD B-ESTRADIOL AS IF IT PRESENTED A CARCINOGENIC RISK TO HUMANS.

STUDIES IN HUMANS STRONGLY SUGGEST THAT THE ADMINISTRATION OF ESTROGENS IS CAUSALLY RELATED TO AN INCREASED INCIDENCE OF ENDOMETRIAL CARCINOMA; THERE IS NO EVIDENCE THAT B-ESTRADIOL IS DIFFERENT FROM OTHER ESTROGENS IN THIS RESPECT.

IARC MONOGRAPH, VOLUME 21, PAGE 312, 1979.

RTECS #: KG2975000
ESTRADIOL

TARGET ORGAN DATA
LUNGS, THORAX OR RESPIRATION (BRONCHOGENIC CARCINOMA)
KIDNEY, URETER, BLADDER (BLADDER TUMORS)
KIDNEY, URETER, BLADDER (KIDNEY TUMORS)
ENDOCRINE (CHANGE IN LH)
ENDOCRINE (TUMORS)
SKIN AND APPENDAGES (TUMORS)
PATERNAL EFFECTS (SPERMATOGENESIS)
PATERNAL EFFECTS (TESTES, EPIDIDYMIS, SPERM DUCT)
PATERNAL EFFECTS (PROSTATE, SEMINAL VESICLE, COWPER'S, ACCESSORY GLANDS

CONTINUED ON NEXT PAGE
SIGMA CHEMICAL COMPANY
POST OFFICE BOX 14508
SAINT LOUIS, MISSOURI 63178, USA

CUST#: 2-097-94816
PO#: Q1277

MATERIAL SAFETY DATA SHEET  PAGE 4

THIS MSDS IS FOR A COMPONENT OF CATALOG #: E4389

CATALOG #: E8875
NAME: B-ESTRADIOL

PATERNAL EFFECTS (OTHER EFFECTS ON MALE)
MATERNAL EFFECTS (OVARIES, FALLOPIAN TUBES)
MATERNAL EFFECTS (UTERUS, CERVIX, VAGINA)
MATERNAL EFFECTS (MENSTRUAL CYCLE CHANGES OR DISORDERS)
MATERNAL EFFECTS (PARTURITION)
MATERNAL EFFECTS (OTHER EFFECTS ON FEMALE)
EFFECTS ON FERTILITY (FEMALE FERTILITY INDEX)
EFFECTS ON FERTILITY (MALE FERTILITY INDEX)
EFFECTS ON FERTILITY (PRE-IMPLANTATION MORTALITY)
EFFECTS ON FERTILITY (POST-IMPLANTATION MORTALITY)
EFFECTS ON FERTILITY (LITTER SIZE)
EFFECTS ON FERTILITY (ABORTION)
EFFECTS ON FERTILITY (OTHER MEASURES OF FERTILITY)
EFFECTS ON EMBRYO OR FOETUS (FETOTOXICITY)
EFFECTS ON EMBRYO OR FOETUS (FETAL DEATH)
SPECIFIC DEVELOPMENTAL ABNORMALITIES (ENDOCRINE SYSTEM)
SPECIFIC DEVELOPMENTAL ABNORMALITIES (UROGENITAL SYSTEM)
TUMORIGENIC EFFECTS (UTERINE TUMORS)
EFFECTS ON NEWBORN (DELAYED EFFECTS)
TUMORIGENIC (CARCINOGENIC BY RTECS CRITERIA)
TUMORIGENIC (EQUIVOCAL TUMORIGENIC AGENT BY RTECS CRITERIA)
TUMORIGENIC (TUMORS AT SITE OF APPLICATION)
TUMORIGENIC (APPEARANCE OF TUMOR TYPES MAY NOT BE SPONTANEOUS)
ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES
(RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR
COMPLETE INFORMATION.

SECTION 12. ECOLOGICAL INFORMATION DATA NOT YET AVAILABLE.

SECTION 13. DISPOSAL CONSIDERATIONS

DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A
CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.
OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. TRANSPORT INFORMATION

CONTACT SIGMA CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. REGULATORY INFORMATION

EUROPEAN INFORMATION

TOXIC
R 60
MAY IMPAIR FERTILITY.
R 61
MAY CAUSE HARM TO THE UNBORN CHILD.
S 53
AVOID EXPOSURE - OBTAIN SPECIAL INSTRUCTIONS BEFORE USE.
S 45

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MATERIAL SAFETY DATA SHEET  PAGE 5

THIS MSDS IS FOR A COMPONENT OF CATALOG #: E4389

CATALOG #: E8875  
NAME: B-ESTRADIOL

IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).
S 36/37/39
WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.
S 22
DO NOT BREATHE DUST.

REVIEWS, STANDARDS, AND REGULATIONS

OEL=MAK
IARC CANCER REVIEW: ANIMAL SUFFICIENT EVIDENCE IMMEDIATELY 21, 1979
IARC CANCER REVIEW: ANIMAL SUFFICIENT EVIDENCE IMMEDIATELY 6, 1979
NOHS 1974: HZD 80407: NIS 1; TNF 68; NOS 6; TNE 2770
NOES 1983; HZD 80407: NIS 4; TNF 151; NOS 5; TNE 9083; TPE 8217
EPA GENETOX PROGRAM 1988, POSITIVE: CARCINOGENICITY-MOUSE/RAT; SPERM MORPHOLOGY-RAT
EPA GENETOX PROGRAM 1988, POSITIVE: SPERM MORPHOLOGY-MOUSE
EPA TSCA SECTION 8(d) UNPUBLISHED HEALTH/SAFETY STUDIES
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, APRIL 1997
NTP 7TH ANNUAL REPORT ON CARCINOGENS, 1992 : ANTICIPATED TO BE CARCINOGEN

U.S. INFORMATION
CALIFORNIA PROPOSITION 65:
THIS PRODUCT IS OR CONTAINS CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

SECTION 16. OTHER INFORMATION
THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT PURPORT TO BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. SIGMA SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM HANDLING OR FROM CONTACT WITH THE ABOVE PRODUCT. SEE REVERSE SIDE OF INVOICE OR PACKING SLIP FOR ADDITIONAL TERMS AND CONDITIONS OF SALE.

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