

SIGMA CHEMICAL COMPANY  
 POST OFFICE BOX 14508  
 SAINT LOUIS, MISSOURI 63178, USA

**SIGMA-ALDRICH**

ATTN: SAFETY DIRECTOR  
 UNIV OF WISC-WHITEWATER  
 PURCHASING OFFICE  
 800 W MAIN ST  
 WHITEWATER WI 53190

EMERGENCY PHONE 1-314-771-5765

DATE 10/20/97  
 CUST#: 2-097-94816  
 PO#: Q1277

M A T E R I A L   S A F E T Y   D A T A   S H E E T                      P A G E   1

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 \*  
 DIHYDROMENFORMON \* DIHYDROTHEELIN \* 3,17-BETA-DIHYDROXYESTRA-1,3,5(10)-  
 -TRIENE \* 3,17-BETA-DIHYDROXY-1,3,5(10)-ESTRATRIENE \* DIHYDROXYESTRIN  
 \* 3,17-BETA-DIHYDROXYOESTRA-1,3,5-TRIENE \* 3,17-BETA-DIHYDROXY-1,3,  
 5(10)-OESTRATRIENE \* DIHYDROXYOESTRIN \* DIMENFORMON \* DIMENFORMON  
 PROLONGATUM \* DIOGYN \* DIOGYNETS \* E(SUB 2) \* 3,17-  
 EPIDIHYDROXYESTRATRIENE \* 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-ESTRATRIENE-3,17-BETA-DIOL \* ESTROVITE \* FEMESTRAL \* FEMOGEN \*  
 GYNERGON \* GYNESTREL \* GYNOESTRYL \* LAMDIOL \* MACRODIOL \* MACROL \*  
 MICRODIOL \* NORDICOL \* NSC-9895 \* OESTERGON \* 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 \* OVASTEVOL  
 \* OVOCICLINA \* OVOCYCLIN \* OVOCYCLINE \* OVOCYCLIN \* PRIMOFOL \*  
 PROFOLIOL \* PROGYNON \* PROGYNON-DH \* SYNDIOL \* THEELIN, 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 DUST.

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2304

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M A T E R I A L S A F E T Y D A T A S H E E T PAGE 2

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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.  
SWEEP 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 - - - - -

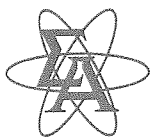
WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR, CHEMICAL-RESISTANT GLOVES, SAFETY GOGGLES, OTHER PROTECTIVE CLOTHING.  
SAFETY SHOWER AND EYE BATH.  
USE ONLY IN A CHEMICAL FUME HOOD.  
DO NOT BREATHE DUST.  
AVOID ALL CONTACT.  
WASH THOROUGHLY AFTER HANDLING.  
KEEP TIGHTLY CLOSED.  
STORE IN A COOL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

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

APPEARANCE AND ODOR

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2305



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PAGE 3

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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 OF:  
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)

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2306

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PATERNAL EFFECTS (OTHER EFFECTS ON MALE)  
MATERNAL EFFECTS (OVARIES, FALLOPIAN TUBES)  
MATERNAL EFFECTS (UTERUS, CERVIX, VAGINA)  
MATERNAL EFFECTS (MENSTRUAL CYLCE 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 FETUS (FETOTOXICITY)  
EFFECTS ON EMBRYO OR FETUS (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

CONTINUED ON NEXT PAGE

2307



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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 IMEMDT 21,279,1979  
IARC CANCER REVIEW:ANIMAL SUFFICIENT EVIDENCE IMEMDT 6,99,1974  
NOHS 1974: HZD 80407; NIS 1; TNF 68; NOS 6; TNE 2770  
NOES 1983: HZD 80407; NIS 4; TNF 151; NOS 5; TNE 9083; TFE 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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2308

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