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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

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

CATALOG #: 240699
 NAME: EPICHLOROHYDRIN, 99+%

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

CAS #: 106-89-8
 MF: C3H5CLO
 EC NO: 203-439-8

SYNONYMS

1-CHLOOR-2,3-EPOXY-PROPAAN (DUTCH) * 1-CHLOR-2,3-EPOXY-PROPAN (GERMAN)
 * 1-CHLORO-2,3-EPOXYPROPANE * 3-CHLORO-1,2-EPOXYPROPANE * 1-CHLORO-2,
 3-EPOXYPROPANE (OSHA) * EPI-CHLOROXYDRIN * (CHLOROMETHYL)ETHYLENE
 OXIDE * CHLOROMETHYLOXIRANE * 2-(CHLOROMETHYL)OXIRANE * 3-CHLORO-1,2-
 PROPANE OXIDE * CHLOROPROPYLENE OXIDE * GAMMA-CHLOROPROPYLENE OXIDE *
 3-CHLORO-1,2-PROPYLENE OXIDE * 1-CLORO-2,3-EPOSSIPROPANO (ITALIAN) *
 ECH * EPICHLORHYDRINE (DUTCH) * EPICHLORHYDRIN * EPICHLORHYDRINE
 (FRENCH) * EPICHLOROXYDRIN (ACGIH:OSHA) * ALPHA-EPICHLOROXYDRIN * (DL)
 -ALPHA-EPICHLOROXYDRIN * EPICHLOROXYDRINA (POLISH) * EPICHLOROPHYDRIN
 * EPICLORIDRINA (ITALIAN) * 1,2-EPOXY-3-CHLOROPROPANE * 2,3-
 EPOXYPROPYL CHLORIDE * GLYCEROL EPICHLORHYDRIN * OXIRANE,
 (CHLOROMETHYL)- * OXIRANE, 2-(CHLOROMETHYL) * RCRA WASTE NUMBER U041 *
 SKEKHG *

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

LABEL PRECAUTIONARY STATEMENTS

FLAMMABLE
 TOXIC
 MAY CAUSE CANCER.
 MAY CAUSE HERITABLE GENETIC DAMAGE.
 TOXIC BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
 CAUSES BURNS.
 MAY CAUSE SENSITIZATION BY SKIN CONTACT.
 PROBABLE CARCINOGEN (US)
 READILY ABSORBED THROUGH SKIN.
 TARGET ORGAN(S):
 KIDNEYS
 LIVER
 CALIF. PROP. 65 CARCINOGEN & REPRODUCTIVE HAZARD.
 MUTAGEN.
 IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE
 IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).
 KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING.
 WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE
 PROTECTION.
 DO NOT BREATHE VAPOR.

SECTION 4. - - - - - FIRST-AID MEASURES- - - - -

IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.
 CALL A PHYSICIAN IMMEDIATELY.
 IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL
 RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
 IN CASE OF SKIN CONTACT, FLUSH WITH COPIOUS AMOUNTS OF WATER
 FOR AT LEAST 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND
 SHOES. CALL A PHYSICIAN.
 IN CASE OF CONTACT WITH EYES, FLUSH WITH COPIOUS AMOUNTS OF WATER
 FOR AT LEAST 15 MINUTES. ASSURE ADEQUATE FLUSHING BY SEPARATING
 THE EYELIDS WITH FINGERS. CALL A PHYSICIAN.

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

EXTINGUISHING MEDIA
 APPROPRIATE FOAM.
 CARBON DIOXIDE.

SPECIAL FIREFIGHTING PROCEDURES
 WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO
 PREVENT CONTACT WITH SKIN AND EYES.
 USE WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS.

UNUSUAL FIRE AND EXPLOSIONS HAZARDS
 EMITS TOXIC FUMES UNDER FIRE CONDITIONS.
 VAPOR MAY TRAVEL CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND
 FLASH BACK.
 CONTAINER EXPLOSION MAY OCCUR UNDER FIRE CONDITIONS.
 FORMS EXPLOSIVE MIXTURES IN AIR.

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

WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY
 RUBBER GLOVES.
 COVER WITH DRY-LIME, SAND, OR SODA ASH. PLACE IN COVERED CONTAINERS
 USING NON-SPARKING TOOLS AND TRANSPORT OUTDOORS.
 VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.
 EVACUATE AREA.
 SHUT OFF ALL SOURCES OF IGNITION.

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

REFER TO SECTION 8.

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

SAFETY SHOWER AND EYE BATH.
 USE NONSPARKING TOOLS.
 USE ONLY IN A CHEMICAL FUME HOOD.
 DO NOT BREATHE VAPOR.
 AVOID CONTACT WITH EYES, SKIN AND CLOTHING.
 AVOID PROLONGED OR REPEATED EXPOSURE.
 NIOSH/MSHA-APPROVED RESPIRATOR.
 COMPATIBLE CHEMICAL-RESISTANT GLOVES.
 CHEMICAL SAFETY GOGGLES.
 KEEP CONTAINER CLOSED.
 KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME.
 STORE IN A COOL DRY PLACE.
 WASH THOROUGHLY AFTER HANDLING.
 REMOVE AND WASH CONTAMINATED CLOTHING PROMPTLY.
 DISCARD CONTAMINATED SHOES.

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

APPEARANCE AND ODOR
 COLORLESS LIQUID

PHYSICAL PROPERTIES

BOILING POINT:	115 C TO 117 C
MELTING POINT:	-57 C
FLASHPOINT	93 F
EXPLOSION LIMITS IN AIR:	
UPPER	21%
LOWER	3.8%
AUTOIGNITION TEMPERATURE:	779 F
VAPOR PRESSURE:	13.8MM 21.1 C
SPECIFIC GRAVITY:	1.183
VAPOR DENSITY:	3.2

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

STABILITY
 STABLE.

INCOMPATIBILITIES
 DO NOT MIX WITH...

ACIDS
 BASES
 AMMONIA
 AMINES
 SODIUM
 ZINC
 MAGNESIUM
 ALUMINUM

AND THEIR ALLOYS.

HALIDES

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS

HYDROGEN CHLORIDE GAS

PHOSGENE GAS

HAZARDOUS POLYMERIZATION

MAY UNDERGO AUTOPOLYMERIZATION.

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

ACUTE EFFECTS

DIRECT CONTACT OF LIQUID EPICHLOROHYDRIN MAY CAUSE CLOUDING OF THE CORNEA AND TISSUE DEATH. AVOID HIGH CONCENTRATIONS OF UNREACTED EPICHLOROHYDRIN IN REACTION SYSTEMS. RUBBER OR NEOPRENE ARE SLOWLY PENETRATED BY EPICHLOROHYDRIN. USE POLYETHYLENE.

MATERIAL IS EXTREMELY DESTRUCTIVE TO TISSUE OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT, EYES AND SKIN.

INHALATION MAY RESULT IN SPASM, INFLAMMATION AND EDEMA OF THE LARYNX AND BRONCHI, CHEMICAL PNEUMONITIS AND PULMONARY EDEMA.

SYMPTOMS OF EXPOSURE MAY INCLUDE BURNING SENSATION, COUGHING, WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA AND VOMITING.

CAUSES BURNS.

TOXIC IF ABSORBED THROUGH SKIN.

READILY ABSORBED THROUGH SKIN.

TOXIC IF INHALED.

MATERIAL IS EXTREMELY DESTRUCTIVE TO THE TISSUE OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.

TOXIC IF SWALLOWED.

MAY CAUSE ALLERGIC SKIN REACTION.

CHRONIC EFFECTS

THIS PRODUCT IS OR CONTAINS A COMPONENT THAT HAS BEEN REPORTED TO BE PROBABLY CARCINOGENIC BASED ON ITS IARC, OSHA, ACGIH, NTP OR EPA CLASSIFICATION.

TARGET ORGAN(S):

KIDNEYS

LIVER

LUNGS

MAY ALTER GENETIC MATERIAL.

RTECS #: TX4900000

PROPANE, 1-CHLORO-2,3-EPOXY-

IRRITATION DATA

SKN-RBT 10 MG/24H OPEN

JIHTAB 30,63,1948

EYE-RBT 100 MG SEV

AJOPAA 29,1363,1946

EYE-RBT 100 MG/24H MOD

85JCAE -,769,1986

TOXICITY DATA

ORL-RAT LD50:90 MG/KG

JIHTAB 30,63,1948

IHL-RAT LC50:250 PPM/8H

NPIRI* 1,41,1974

IPR-RAT LD50:113 MG/KG

JPMSAE 61,1712,1972

SCU-RAT LD50:150 MG/KG

AMPMAR 28,505,1967

IVN-RAT LD50:154 MG/KG

NPIRI* 1,41,1974

ORL-MUS LD50:195 MG/KG

GISAAA 33(1),46,1968

SKN-MUS LD50:250 MG/KG

85GMAT -,64,1982

IPR-MUS LD50:170 MG/KG

JPMSAE 61,1712,1972

ORL-RBT LD50:345 MG/KG

GISAAA 33(1),46,1968

SKN-RBT LD50:515 MG/KG

WOLMA# 18JAN1977

IPR-RBT LD50:160 MG/KG

JPMSAE 61,1712,1972

ORL-GPG LD50:280 MG/KG

GISAAA 33(1),46,1968

IPR-GPG LD50:118 MG/KG

JPMSAE 61,1712,1972

TARGET ORGAN DATA

SENSE ORGANS AND SPECIAL SENSES (OTHER OLFACTION EFFECTS)

SENSE ORGANS AND SPECIAL SENSES (OLFACTION TUMORS)

SENSE ORGANS AND SPECIAL SENSES (OTHER EYE EFFECTS)

BEHAVIORAL (SOMNOLENCE)

BEHAVIORAL (TREMOR)

BEHAVIORAL (MUSCLE WEAKNESS)

BEHAVIORAL (ATAXIA)

LUNGS, THORAX OR RESPIRATION (ACUTE PULMONARY EDEMA)

LUNGS, THORAX OR RESPIRATION (CHRONIC PULMONARY EDEMA OR CONGESTION)

LUNGS, THORAX OR RESPIRATION (DYSPPNAE)
 LUNGS, THORAX OR RESPIRATION (OTHER CHANGES)
 LUNGS, THORAX OR RESPIRATION (TUMORS)
 KIDNEY, URETER, BLADDER (CHANGES IN TUBULES)
 KIDNEY, URETER, BLADDER (URINE VOLUME INCREASED)
 BLOOD (LYMPHOMA INCLUDING HODGKIN'S DISEASE)
 SKIN AND APPENDAGES (HAIR)
 SKIN AND APPENDAGES (TUMORS)
 PATERNAL EFFECTS (SPERMATOGENESIS)
 PATERNAL EFFECTS (TESTES, EPIDIDYMIS, SPERM DUCT)
 MATERNAL EFFECTS (OTHER EFFECTS ON FEMALE)
 EFFECTS ON FERTILITY (MALE FERTILITY INDEX)
 EFFECTS ON FERTILITY (PRE-IMPLANTATION MORTALITY)
 EFFECTS ON FERTILITY (POST-IMPLANTATION MORTALITY)
 EFFECTS ON EMBRYO OR FETUS (FETOTOXICITY)
 TUMORIGENIC (CARCINOGENIC BY RTECS CRITERIA)
 TUMORIGENIC (EQUIVOCAL TUMORIGENIC AGENT BY RTECS CRITERIA)
 TUMORIGENIC (TUMORS AT SITE OF APPLICATION)
 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 - - - - -
 DATA NOT AVAILABLE

SECTION 14. - - - - - TRANSPORT INFORMATION - - - - -
 CONTACT ALDRICH CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. - - - - - REGULATORY INFORMATION - - - - -

EUROPEAN INFORMATION

EC INDEX NO: 603-026-00-6

FLAMMABLE

TOXIC

R 45

MAY CAUSE CANCER.

R 10

FLAMMABLE.

R 34

CAUSES BURNS.

R 43

MAY CAUSE SENSITIZATION BY SKIN CONTACT.

S 45

IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE

IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).

REVIEWS, STANDARDS, AND REGULATIONS

OEL=MAK

ACGIH TLV-CONFIRMED ANIMAL CARCINOGEN

DTLVS* TLV/BEI,1999

ACGIH TLV-TWA 0.5 PPM (SKIN)

DTLVS* TLV/BEI,1999

IARC CANCER REVIEW:ANIMAL SUFFICIENT EVIDENCE IMEMDT 11,131,1976

IARC CANCER REVIEW:ANIMAL SUFFICIENT EVIDENCE IMEMDT 71,603,1999

IARC CANCER REVIEW:HUMAN INADEQUATE EVIDENCE IMSUDL 7,202,1987

IARC CANCER REVIEW:HUMAN INADEQUATE EVIDENCE IMEMDT 71,603,1999

IARC CANCER REVIEW:GROUP 2A IMEMDT 71,603,1999

MSHA STANDARD-AIR:TWA 5 PPM (19 MG/M3) (SKIN)

DTLVS* 3,98,1971

OSHA PEL (GEN INDU):8H TWA 5 PPM (19 MG/M3) (SKIN)

CFRGBR 29,1910.1000,1994

OSHA PEL (CONSTRUC):8H TWA 5 PPM (19 MG/M3) (SKIN)

CFRGBR 29,1926.55,1994

OSHA PEL (SHIPYARD):8H TWA 5 PPM (19 MG/M3) (SKIN)

CFRGBR 29,1915.1000,1993

OSHA PEL (FED CONT):8H TWA 5 PPM (19 MG/M3) (SKIN)

CFRGBR 41,50-204.50,1994

OEL-ARAB REPUBLIC OF EGYPT: TWA 2 PPM (10 MG/M3), SKIN, JAN1993

OEL-AUSTRALIA: TWA 2 PPM (10 MG/M3), SKIN, JAN1993

OEL-AUSTRIA: SKIN, CARCINOGEN, JAN1999

OEL-BELGIUM: TWA 2 PPM (7.6 MG/M3), SKIN, JAN1993

OEL-FINLAND: TWA 0.5 PPM (1.9 MG/M3), SKIN, CARCINOGEN, JAN1999

OEL-FRANCE: VLE 2 PPM (10 MG/M3), C2 CARCINOGEN, JAN1999
 OEL-GERMANY: SKIN, CARCINOGEN, JAN1999
 OEL-HUNGARY: STEL 1 MG/M3, SKIN, CARCINOGEN, JAN1999
 OEL-THE NETHERLANDS: MAC-TGG 1 PPM (4 MG/M3), MAC-K 4 PPM, SKIN, CARCINOGEN, JAN1999
 OEL-NORWAY: TWA 0.5 PPM (1.9 MG/M3), JAN1999
 OEL-THE PHILIPPINES: TWA 5 PPM (19 MG/M3), SKIN, JAN1993
 OEL-POLAND: MAC(TWA) 1 MG/M3, STEL 8 MG/M3, JAN1999
 OEL-SWEDEN: NGV 0.5 PPM (1.9 MG/M3), KTV 1 PPM (4 MG/M3), SKIN, JAN1999
 OEL-SWITZERLAND: MAK-W 2 PPM (8 MG/M3), SKIN, CARCINOGEN, JAN1999
 OEL-TURKEY: TWA 5 PPM (19 MG/M3), SKIN, JAN1993
 OEL-UNITED KINGDOM: TWA 0.5 PPM (1.9 MG/M3), STEL 1.5 PPM, CARCINOGEN, SEP2000
 OEL IN ARGENTINA, BULGARIA, COLOMBIA, JORDAN, KOREA CHECK ACGIH TLV;
 OEL IN NEW ZEALAND, SINGAPORE, VIETNAM CHECK ACGIH TLV
 NIOSH REL TO EPICHLOROHYDRIN-AIR:CA LOWEST FEASIBLE CONCENTRATION
 NIOSH* DHHS #92-100,1992
 NOHS 1974: HZD 29010; NIS 40; TNF 2004; NOS 58; TNE 41380
 NOES 1983: HZD 29010; NIS 75; TNF 4249; NOS 87; TNE 80170; TFE 14921
 EPA GENETOX PROGRAM 1988, POSITIVE: CARCINOGENICITY-MOUSE/RAT
 EPA GENETOX PROGRAM 1988, POSITIVE: IN VITRO CYTOGENETICS-HUMAN LYMPHOCYTE
 EPA GENETOX PROGRAM 1988, POSITIVE: IN VIVO CYTOGENETICS-HUMAN LYMPHOCYTE
 EPA GENETOX PROGRAM 1988, POSITIVE: N CRASSA-FORWARD MUTATION; N CRASSA-REVERSION
 EPA GENETOX PROGRAM 1988, POSITIVE: E COLI POLA WITHOUT S9; HISTIDINE REVERSION-AMES TEST
 EPA GENETOX PROGRAM 1988, POSITIVE: D MELANOGASTER SEX-LINKED LETHAL; S POMBE-FORWARD MUTATION
 EPA GENETOX PROGRAM 1988, POSITIVE: S POMBE-REVERSION
 EPA GENETOX PROGRAM 1988, NEGATIVE: SPERM MORPHOLOGY-HUMAN; SPERM MORPHOLOGY-MOUSE
 EPA GENETOX PROGRAM 1988, INCONCLUSIVE: MAMMALIAN MICRONUCLEUS
 EPA TSCA SECTION 8(B) CHEMICAL INVENTORY
 EPA TSCA 8(A) PRELIMINARY ASSESSMENT INFORMATION, FINAL RULE
 FEREAC 47,26992,82
 EPA TSCA SECTION 8(D) UNPUBLISHED HEALTH/SAFETY STUDIES
 ON EPA IRIS DATABASE
 EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JANUARY 2001
 NIOSH CURRENT INTELLIGENCE BULLETIN 30, 1978
 NIOSH ANALYTICAL METHOD, 1994: EPICHLOROHYDRIN, 1010
 NTP 9TH REPORT ON CARCINOGENS,2000:REASONABLY ANTICIPATED TO BE HUMAN CARCINOGEN

U.S. INFORMATION

THIS PRODUCT IS SUBJECT TO SARA SECTION 313 REPORTING REQUIREMENTS.
 THIS PRODUCT IS OR CONTAINS CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.
 THIS PRODUCT IS OR CONTAINS CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE MALE REPRODUCTIVE TOXICITY.

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, ALDRICH, FLUKA 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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