ATTN: SAFETY DIRECTOR
MARY PINKERTON/CREDIT CARD ORD
UNIVERSITY OF WISCONSIN WHITewater
P.O. BOX 296
WHITewater WI 53190

EMERGENCY PHONE 1-414-273-3850
DATE 06/01/99
CUST#: 823216
PO#: CC/2444G REQ

ALDRICH CHEMICAL COMPANY, INC.
P.O. BOX 355
MILWAUKEE, WISCONSIN 53201, USA

MATERIAL SAFETY DATA SHEET PAGE 1

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

CATALOG #: 27764-9
NAME: ETHYL ALCOHOL, REAGENT, ANHYDROUS, DENATURED

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

CAS #: 64-17-5
MF: C2H6O
EC NO: 200-578-6

ADDITIONAL INFORMATION
CONTAINS METHYL ALCOHOL, CHEMICAL ABSTRACTS REGISTRY NUMBER 67-56-1.
CONTAINS 2-PROpanol (isopropyl alcohol), CHEMICAL ABSTRACTS REGISTRY NUMBER 67-63-0.

RTECS DATA AND SYNONYMS SUPPLIED ARE FOR THE MOST ABUNDANT HAZARDOUS COMPONENT OF THIS PRODUCT.

SYNONYMS
ABSOLUTE ETHANOL * AETHANOL (GERMAN) * AETHYLALKOHOL (GERMAN) *
ALCOHOL * ALCOHOL, ANHYDROUS * ALCOHOL DEHYDRATED * ALCOOL ETHYLIQUE (FRENCH) *
ALCOOL ETILICO (ITALIAN) * ALGRAIN * ALKOHOL (GERMAN) *
ALKOHOLU ETYLOWEGO (POLISH) * ANHYDROL * COLOGNE SPIRIT * ETANOlO (ITALIAN) *
ETHANOL (ACGIH;OSHA) * ETHYL ALCOHOL (DOT;OSHA) * ETHYL ALCOHOL, ANHYDROUS *
ETHYL HYDRATE * ETHYL HYDROXIDE * ETYLOWY ALKOHOL (POLISH) *
FERMENTATION ALCOHOL * GRAIN ALCOHOL * JAYSOL * JAYSOL S *
METHYL CARBINOL * MOLASSES ALCOHOL * NCI-C03134 * POTATO ALCOHOL * SD
ALCOHOL 23-HYDROGEN * SPIRITS OF WINE * SPIRIT * TECSOL *

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

LABEL PRECAUTIONARY STATEMENTS
FLAMMABLE (USA)
HIGHLY FLAMMABLE (EU)
HARMFUL
HARMFUL BY INHALATION AND IF SWALLOWED.
IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.
TARGET ORGAN(S):
NERVES
EYES
KEEP CONTAINER TIGHTLY CLOSED
KEEP AWAY FROM SOURCES OF IgnITION - NO SMOKING.
AVOID CONTACT WITH SKIN.
IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).
HYGROSCOPIC
KEEP TIGHTLY CLOSED.
HANDLE AND STORE UNDER NITROGEN.

CONTINUED ON NEXT PAGE

1427

We are Committed to the Success of our Customers through Science, Technology and Service.
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.
ASSURE ADEQUATE FLUSHING OF THE EYES BY SEPARATING THE EYELIDS
WITH FINGERS.
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.
WASH CONTAMINATED CLOTHING BEFORE REUSE.

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

EXTINGUISHING MEDIA
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.
USE WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS.
PLAMMABLE LIQUID.

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.

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

SHUT OFF ALL SOURCES OF IGNITION.
EVACUATE AREA.
WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY
RUBBER GLOVES.
ABSORB ON SAND OR VERMICULITE AND PLACE IN CLOSED CONTAINERS FOR
DISPOSAL.
USE NONSPARKING TOOLS.
VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

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

REFER TO SECTION 8.

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

WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR, CHEMICAL-RESISTANT
GLOVES, SAFETY GOGGLES, OTHER PROTECTIVE CLOTHING.
USE ONLY IN A CHEMICAL FUME HOOD.

CONTINUED ON NEXT PAGE
CATALOG #: 27764-9
NAME: ETHYL ALCOHOL, REAGENT, ANHYDROUS, DENATURED

SAFETY SHOWER AND EYE BATH.
DO NOT BREATHE VAPOR.
DO NOT GET IN EYES, ON SKIN, ON CLOTHING.
AVOID PROLONGED OR REPEATED EXPOSURE.
WASH THOROUGHLY AFTER HANDLING.
HARMFUL LIQUID.
IRRITANT.
KEEP TIGHTLY CLOSED.
KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME.
STORE IN A COOL DRY PLACE.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES
BOILING POINT: 78 C
MELTING POINT: -130 C
FLASHPOINT: 48 F

EXPLOSION LIMITS IN AIR:
UPPER: 24.5%
LOWER: 3.3%

AUTOIGNITION TEMPERATURE: 683 F
SPECIFIC GRAVITY: 0.785
VAPOR DENSITY: 1.59

SECTION 10. STABILITY AND REACTIVITY

STABILITY
STABLE.

INCOMPATIBILITIES
OXIDIZING AGENTS
PEROXIDES
ACIDS
ACID CHLORIDES
ACID ANHYDRIDES
ALKALI METALS
AMMONIA
PROTECT FROM MOISTURE.

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

HAZARDOUS POLYMERIZATION
WILL NOT OCCUR.

SECTION 11. TOXICOLOGICAL INFORMATION

ACUTE EFFECTS

CONTINUED ON NEXT PAGE

1429
CATALOG #: 27764-9
NAME: ETHYL ALCOHOL, REAGENT, ANHYDROUS, DENATURED

HARMFUL IF INHALED OR SWALLOWED. MAY BE HARMFUL IF ABSORBED THROUGH THE SKIN. VAPOR OR MIST IS IRRITATING TO THE EYES, MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT. CAUSES SKIN IRRITATION. CAN CAUSE CNS DEPRESSION. EXPOSURE CAN CAUSE: GASTROINTESTINAL DISTURBANCES NAUSEA, DIZZINESS AND HEADACHE NARCOTIC EFFECT PROLONGED OR REPEATED EXPOSURE TO SKIN CAUSES DEFATTING AND DERMATITIS. MAY CAUSE CONVULSIONS.

CHRONIC EFFECTS
TARGET ORGAN(S):
NERVES EYES LIVER KIDNEYS HEART CARDIOVASCULAR SYSTEM G.I. SYSTEM TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.
RTECS DATA AND SYNONYMS SUPPLIED ARE FOR THE MOST ABUNDANT HAZARDOUS COMPONENT OF THIS PRODUCT.

RTECS #: KO6300000 ETHYL ALCOHOL

IRRITATION DATA
SKN-RBT 400 MG OPEN MLD UCDS** 7/22/1970
SKN-RBT 20 MG/24H MOD 85JCAE - 189, 1986
EYE-RBT 500 MG SEV AJOPAA 29, 136, 1946
EYE-RBT 500 MG/24H MLD 85JCAE - 189, 1986
EYE-RBT 100 MG/4S RINSE MOD FCTOD7 20, 573, 1982

TOXICITY DATA
ORL-CHD LDLO: 2 GM/KG ATXKA8 17, 183, 1958
ORL-HMN LDLO: 1400 MG/KG NPIRI* 1, 44, 1974
SCU-INF LDLO: 19440 MG/KG AJCPAI 5, 466, 1935
ORL-RAT LD50: 7060 MG/KG TXAPA9 16, 718, 1970
IHL-RAT LC50: 20000 PPM/10H NPIRI* 1, 44, 1974
IPR-RAT LD50: 3600 MG/KG PHMGBN 2, 27, 1869
IVN-RAT LD50: 1440 MG/KG TXAPA9 18, 60, 1971
IAT-RAT LD50: 11 MG/KG TXAPA9 18, 60, 1971
ORL-MUS LD50: 3450 MG/KG GISAAA 32(3), 31, 1967
IHL-MUS LC50: 39 GM/M3/4H GTPZAB 16(8) 13, 1982
IPR-MUS LD50: 528 MG/KG STRAAB 127, 245, 1965

CONTINUED ON NEXT PAGE

1430
MATERIAL SAFETY DATA SHEET

CATALOG #: 27764-9
NAME: ETHYL ALCOHOL, REAGENT, ANHYDROUS, DENATURED

SCU-MUS LD50: 8285 MG/KG
IVN-MUS LD50: 1973 MG/KG
ORL-RBT LD50: 6300 MG/KG
IPR-RBT LD50: 963 MG/KG
IVN-RBT LD50: 2374 MG/KG
ORL-GPG LD50: 1560 MG/KG
IPR-GPG LD50: 3414 MG/KG
IPR-HAM LD50: 5068 MG/KG
IPR-MAM LD50: 4300 MG/KG
FAONAU 48A, 99, 1970
HTTXAC 1,128, 1959
HTTXAC 1,130, 1959
EVHPAZ 61,321, 1985
EVHPAZ 61,321, 1985
EVHPAZ 61,321, 1985
EVHPAZ 61,321, 1985
TXAPA9 13,358, 1968

TARGET ORGAN DATA
BEHAVIORAL (SLEEP)
BEHAVIORAL (CHANGE IN MOTOR ACTIVITY)
BEHAVIORAL (ATAXIA)
BEHAVIORAL (ANTIPSYCHOTIC)
BEHAVIORAL (HEADACHE)
BEHAVIORAL (CHANGE IN PSYCHOPHYSIOLOGICAL TESTS)
LUNGS, THORAX OR RESPIRATION (CHRONIC PULMONARY EDEMA OR CONGESTION)
LUNGS, THORAX OR RESPIRATION (DYSPNÆA)
LUNGS, THORAX OR RESPIRATION (OTHER CHANGES)
GASTROINTESTINAL (ALTERATION IN GASTRIC SECRETION)
GASTROINTESTINAL (HYPERMOTILITY, DIARRHEA)
GASTROINTESTINAL (NAUSEA OR VOMITING)
GASTROINTESTINAL (OTHER CHANGES)
LIVER (FATTY LIVER DEGENERATION)
LIVER (TUMORS)
BLOOD (OTHER CHANGES)
BLOOD (LYMPHOMA INCLUDING HODGKIN'S DISEASE)
EFFECTS ON FERTILITY (FEMALE FERTILITY INDEX)
EFFECTS ON FERTILITY (MALE FERTILITY INDEX)
EFFECTS ON FERTILITY (POST-IMPLANTATION MORTALITY)
EFFECTS ON FERTILITY (OTHER MEASURES OF FERTILITY)
EFFECTS ON EMBRYO OR FETUS (EXTRA EMBRYONIC STRUCTURES)
EFFECTS ON EMBRYO OR FETUS (CYTOLOGICAL CHANGES)
EFFECTS ON EMBRYO OR FETUS (FETOTOXICITY)
EFFECTS ON EMBRYO OR FETUS (FETAL DEATH)
EFFECTS ON EMBRYO OR FETUS (OTHER EFFECTS TO EMBRYO OR FETUS)
SPECIFIC DEVELOPMENTAL ABNORMALITIES (EYE, EAR)
SPECIFIC DEVELOPMENTAL ABNORMALITIES (CRANIOFACIAL)
SPECIFIC DEVELOPMENTAL ABNORMALITIES (MUSCULOSKELETAL SYSTEM)
SPECIFIC DEVELOPMENTAL ABNORMALITIES (RESPIRATORY SYSTEM)
EFFECTS ON NEWBORN (GROWTH STATISTICS)
TUMORIGENIC (EQUIVOCAL TUMORIGENIC AGENT BY RTECS CRITERIA)
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.

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CATALOG #: 27764-9
NAME: ETHYL ALCOHOL, REAGENT, ANHYDROUS, DENATURED

SECTION 13. DISPOSAL CONSIDERATIONS

BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS HIGHLY FLAMMABLE. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. TRANSPORT INFORMATION

CONTACT ALDRICH CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. REGULATORY INFORMATION

EUROPEAN INFORMATION
- EC INDEX NO: 603-002-00-5
- HIGHLY FLAMMABLE
- HARMFUL R 11
- HIGHLY FLAMMABLE.
- R 20/22
- HARMFUL BY INHALATION AND IF SWALLOWED. S 7
- KEEP CONTAINER TIGHTLY CLOSED.
- S 16
- KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING.
- S 24
- AVOID CONTACT WITH SKIN.
- S 45
- IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).

TLV AND SOURCE
- FOR METHYL ALCOHOL - SKIN:
  - ACGIH TLV-TWA: 200 ppm (260 mg/m³); STEL: 250 ppm (310 mg/m³).
  - OSHA PEL: 8-Hour TWA 200 ppm (260 mg/m³); STEL: 250 ppm (310 mg/m³).
- FOR 2-PROPANOL (ISOPROPYL ALCOHOL):
  - ACGIH TLV-TWA: 400 ppm (983 mg/m³); STEL: 500 ppm (1230 mg/m³).
  - OSHA PEL: 8-Hour TWA: 400 ppm (983 mg/m³); STEL: 500 ppm (1225 mg/m³).

RTECS DATA AND SYNONYMS SUPPLIED ARE FOR THE MOST ABUNDANT HAZARDOUS COMPONENT OF THIS PRODUCT.

REVIEWS, STANDARDS, AND REGULATIONS

OEL-MK:
- ACGIH TLV - NOT CLASSIFIABLE AS A HUMAN CARCINOGEN. DTLVS* TLV/BEL 1997
- ACGIH TLV-TWA 1880 MG/M³ (1000 PPM) DTLVS* TLV/BEL 1997
- IARC CANCER REVIEW: ANIMAL INADEQUATE EVIDENCE IMEMDT 1985
- EPA FIFRA 1988 PESTICIDE SUBJECT TO REGISTRATION OR RE-REGISTRATION FEREC 54, 7740, 1989

CONTINUED ON NEXT PAGE
CATALOG #: 27764-9
NAME: ETHYL ALCOHOL, REAGENT, ANHYDROUS, DENATURED

MSHA STANDARD-AIR: TWA 1000 PPM (1900 MG/M3)
DTLV* 3.103, 1971
OSHA PEL (GEN INDU): 8H TWA 1000 PPM (1900 MG/M3)
CFLGBR 29 8.100 1.100, 1994
OSHA PEL (CONSTRUC): 8H TWA 1000 PPM (1900 MG/M3)
CFLGBR 29 8.265, 55, 1994
OSHA PEL (SHIPYARD): 8H TWA 1000 PPM (1900 MG/M3)
CFLGBR 29 8.115.1000, 1993
OSHA PEL (FED CONT): 8H TWA 1000 PPM (1900 MG/M3)
CFLGBR 41 150-204. 50, 1994
OEL AUSTALIA: TWA 1000 PPM (1900 MG/M3) JAN 1993
OEL BELGIUM: TWA 1000 PPM (1880 MG/M3) JAN 1993
OEL DENMARK: TWA 1000 PPM (1900 MG/M3) JAN 1993
OEL FINLAND: TWA 1000 PPM (1900 MG/M3); STEL 1250 PPM (2400 MG/M3) JAN 1993
OEL FRANCE: TWA 1000 PPM (1900 MG/M3); STEL 5000 PPM JAN 1993
OEL GERMANY: TWA 1000 PPM (1900 MG/M3) JAN 1993
OEL HUNGARY: TWA 1000 MG/M3; STEL 3000 MG/M3 JAN 1993
OEL THE NETHERLANDS: TWA 1000 PPM (1900 MG/M3) JAN 1993
OEL THE PHILIPPINES: TWA 1000 PPM (1900 MG/M3) JAN 1993
OEL POLAND: TWA 1000 PPM JAN 1993
OEL RUSSIA: STEL 1000 MG/M3 JAN 1993
OEL SWEDEN: TWA 1000 PPM (1900 MG/M3) JAN 1993
OEL SWITZERLAND: TWA 1000 PPM (1900 MG/M3) JAN 1993
OEL THAILAND: TWA 1000 PPM (1900 MG/M3) JAN 1993
OEL TURKEY: TWA 1000 PPM (1900 MG/M3) JAN 1993
OEL UNITED KINGDOM: TWA 1000 PPM (1900 MG/M3) JAN 1993
OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA CHECK ACGIH TLV
OEL IN NEW ZEALAND, SINGAPORE, VIETNAM CHECK ACGIH TLV
NIOSH REL TO ETHYL ALCOHOL-AIR:10H TWA 1000 PPM
NIOSH* DHHS #92-100, 1992
NOHS 1974: H2D 31500; NIS 430; TNF 157709; NOS 242; TNE 2088926
NOES 1983: H2D 31500; NIS 334; TNF 86077; NOS 222; TNE 2069125; TFE 1014002

EPA GENETOX PROGRAM 1988: POSITIVE: RODENT DOMINANT LETHAL
EPA GENETOX PROGRAM 1988: NEGATIVE: ASPERGILLUS-FORWARD MUTATION;
SHE-CLONAL ASSAY
EPA GENETOX PROGRAM 1988: NEGATIVE: CELL TRANSFORM.—RLV P344 RAT EMBRYO
EPA GENETOX PROGRAM 1988: NEGATIVE: IN VITRO CYTOGENETICS-NONHUMAN;
MAMMALIAN MICRONUCLEUS
EPA GENETOX PROGRAM 1988: NEGATIVE: N CRASSA-AINEUPOLOGY; HISTIDINE
REVERSION-AMES TEST
EPA GENETOX PROGRAM 1988: NEGATIVE: IN VITRO SCE-HUMAN LYMPHOCYTES; IN
VITRO SCE-HUMAN
EPA GENETOX PROGRAM 1988: NEGATIVE: IN VITRO SCE-NONHUMAN; SPERM
MORPHOLOGY-MOUSE
EPA GENETOX PROGRAM 1988: NEGATIVE/LIMITED: CARCINOGENICITY-MOUSE/RAT
EPA TSCA SECTION 8 (B) CHEMICAL INVENTORY
EPA TSCA SECTION 8 (D) UNPUBLISHED HEALTH/SAFETY STUDIES
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, MARCH 1999
NIOSH ANALYTICAL METHOD, 1994: ETHANOL IN BLOOD, 8002

CONTINUED ON NEXT PAGE
CATALOG #: 27764-9
NAME: ETHYL ALCOHOL, REAGENT, ANHYDROUS, DENATURED

NIOSH ANALYTICAL METHOD, 1994: ALCOHOLS I, 1400
NTP CARCINOGENESIS STUDIES; ON TEST (TWO YEAR STUDIES), FEBRUARY 1999

U.S. INFORMATION
5.0% METHANOL 67-56-1
THIS PRODUCT IS SUBJECT TO SARA SECTION 313 REPORTING REQUIREMENTS.

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. ALDRICH SHALL NOT BE
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