



SIGMA-ALDRICH

Material Safety Data Sheet

Date Printed: 01/31/2006
Date Updated: 09/28/2004
Version 1.180

Section 1 - Product and Company Information

Product Name: Ethanol, absolute, 200 proof, for molecular biology
Product Number: E7023
Brand: Aldrich Chemical
Company: Sigma-Aldrich
Street Address: 3050 Spruce Street
City, State, Zip, Country: SAINT LOUIS, MO 63103 US
Technical Phone: 800-325-5832
Fax: 800-325-5052
Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

Table with 5 columns: Substance Name, CAS #, SARA 313, EC no, Annex 1 Index Number. Row 1: ETHYL ALCOHOL, NON-DENATURED, 200 PROOF, 64-17-5, No, 200-578-6, 603-002-00-5

Formula: C2H6O
Synonyms: Absolute ethanol, Aethanol (German), Aethylalkohol (German), Alcohol, Alcohol, anhydrous, Alcohol dehydrated, Alcool ethylique (French), Alcool etilico (Italian), Algrain, Alkohol (German), Alkoholol 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, Methylcarbinol, Molasses alcohol, NCI-C03134, Potato alcohol, SD alcohol 23-hydrogen, Spirits of wine, Spirt, Tecsol

Section 3 - Hazards Identification

Emergency Overview
Flammable (USA) Highly Flammable (EU). Irritant.
Highly flammable.
Target organ(s): Nerves. Liver.

HMIS Rating
Health: 2* Flammability: 3 Reactivity: 1

NFPA Rating
Health: 2 Flammability: 3 Reactivity: 1

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

Inhalation Exposure

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Dermal Exposure

In case of contact, immediately wash skin with soap and copious amounts of water.

Eye Exposure

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

Section 5 - Fire Fighting Measures

Flammable Hazards: Yes

Explosion Hazards

Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions.

Flash Point: 57 °F 14 °C

Explosion Limits: Lower: 3.3 % Upper: 19 %

Autoignition Temp: 363 °C Flammability: Yes

Extinguishing Media

Suitable
Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting

Protective Equipment

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s)

Flammable liquid. Emits toxic fumes under fire conditions.

Specific Method(s) of Fire Fighting

Use water spray to cool fire-exposed containers.

Section 6 - Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill

Evacuate area. Shut off all sources of ignition.

Procedure(s) of Personal Precaution(s)

Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up

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.

Section 7 - Handling and Storage

Handling

User Exposure

Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Storage
Suitable
Keep container closed. Keep away from heat, sparks, and open flame. Store in a cool dry place. Handle and store under nitrogen.

Special Requirements
Hygroscopic.

Section 8 - Exposure Controls / PPE

Engineering Controls
Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

Personal Protective Equipment

Respiratory
Government approved respirator.
Hand
Compatible chemical-resistant gloves.
Eye
Chemical safety goggles.

General Hygiene Measures
Wash thoroughly after handling. Wash contaminated clothing before reuse.

Exposure Limits

Country	Type	Value
Poland	NDS	1900 MG/M3
Poland	NDSch	-
Poland	NDSP	-

Exposure Limits, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	1000 PPM
USA	MSHA Standard-air	TWA	1000 PPM (1900 MG/M3)
USA	OSHA.	PEL	8H TWA 1000 PPM (1900 MG/M3)
New Zealand	OEL		
USA	NIOSH	TWA	1000 PPM

Remarks: check ACGIH TLV

Section 9 - Physical/Chemical Properties

Appearance
Physical State Clear liquid
Color Colorless

Molecular Weight: 46.07 AMU

pH N/A
BP/BP Range 78 - 80 °C
MP/MP Range -144 °C
Freezing Point N/A
Vapor Pressure 44.6 mmHg
Vapor Density N/A
Saturated Vapor Conc. N/A
SG/Density 0.79 g/cm3
Bulk Density N/A
Odor Threshold N/A
Volatile% N/A
VOC Content N/A

Water Content N/A
Solvent Content N/A
Evaporation Rate N/A
Viscosity N/A
Partition Coefficient N/A
Decomposition Temp. N/A
Flash Point °F 57 °F
Flash Point °C 14 °C
Explosion Limits Lower: 3.3 %
Upper: 19 %
Flammability N/A
Autoignition Temp 363 °C
Refractive Index 1.362
Solubility
Solubility in Water: Complete

Method: closed cup
Method: closed cup

N/A = not available

Section 10 - Stability and Reactivity

Stability
Stable
Stable.
Conditions to Avoid
Protect from moisture.
Materials to Avoid
Alkali metals, Ammonia, Oxidizing agents, Peroxides.

Hazardous Decomposition Products
Hazardous Decomposition Products
Nature of decomposition products not known.

Hazardous Polymerization
Hazardous Polymerization
Will not occur.

Section 11 - Toxicological Information

Route of Exposure
Skin Contact
Causes skin irritation.
Skin Absorption
May be harmful if absorbed through the skin.
Eye Contact
Causes eye irritation.
Inhalation
May be harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.
Ingestion
May be harmful if swallowed.

Target Organ(s) or System(s)
Nerves. Liver. Heart.

Signs and Symptoms of Exposure
Can cause CNS depression. Narcotic effect. Damage to the heart. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

RTECS Number: KQ6300000

Toxicity Data

Inhalation - Rat: 20,000 ppm(LC50)
 Oral - Rat: 7,060 mg/kg(LD50)
 Oral - Human: 1,400 mg/kg(LD50)
 Oral - Child: 2000 mg/kg (LDLO)
 Remarks: Lungs, Thorax, or Respiration:Other changes.
 Liver:Fatty liver degeneration.
 Blood:Other changes.

Oral - Human: 1400 mg/kg (LDLO)
 Remarks: Behavioral:Sleep.
 Behavioral:Headache.
 Gastrointestinal:Nausea or vomiting.

Subcutaneous - Infant: 19440 MG/KG (LDLO)
 Remarks: Behavioral:Convulsions or effect on seizure threshold.
 Behavioral:Coma.
 Nutritional and Gross Metabolic:Changes in:Body temperature decrease.

Oral - Rat: 7060 mg/kg (LD50)
 Remarks: Lungs, Thorax, or Respiration:Other changes.

Inhalation - Rat: 20,000 ppm (LC50)
 Intraperitoneal - Rat: 3600 UG/KG (LD50)
 Intravenous - Rat: 1440 MG/KG (LD50)
 Remarks: Lungs, Thorax, or Respiration:Dyspnea.

Intraarterial - Rat: 11 MG/KG (LD50)
 Remarks: Lungs, Thorax, or Respiration:Chronic pulmonary edema.
 Lungs, Thorax, or Respiration:Dyspnea.

Oral - Mouse: 3450 mg/kg (LD50)
 Inhalation - Mouse: 39,000 mg/m3 (LC50)
 Intraperitoneal - Mouse: 528 MG/KG (LD50)
 Subcutaneous - Mouse: 8285 MG/KG (LD50)
 Intravenous - Mouse: 1973 MG/KG (LD50)
 Oral - Rabbit: 6300 mg/kg (LD50)
 Intraperitoneal - Rabbit: 963 MG/KG (LD50)
 Intravenous - Rabbit: 2374 MG/KG (LD50)
 Oral - Guinea pig: 5560 mg/kg (LD50)
 Intraperitoneal - Guinea pig: 3414 MG/KG (LD50)
 Intraperitoneal - Hamster: 5068 MG/KG (LD50)
 Intraperitoneal - Mammal: 4300 MG/KG (LD50)
 Remarks: Behavioral:Somnolence (general depressed activity).
 Behavioral:Convulsions or effect on seizure threshold.
 Behavioral:Change in motor activity (specific assay).

Irritation Data

Skin - Rabbit: 400 mg
 Remarks: Open irritation test

Skin - Rabbit: 20 mg 24H
 Remarks: Moderate irritation effect

Eyes - Rabbit: 500 mg
 Remarks: Severe irritation effect

Eyes - Rabbit: 500 mg 24H
 Remarks: Mild irritation effect

Eyes - Rabbit: 100 mg 4S
 Remarks: Rinsed

Chronic Exposure - Carcinogen
 Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Mouse - Oral: 320 MG/KG 50W I
 Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Liver:Tumors. Blood:Lymphomas including Hodgkin's disease.

Mouse - Rectal: 120 GM/KG 18W I
 Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Gastrointestinal:Tumors. Liver:Tumors.

Mouse - Oral: 400 GM/KG 57W I
 Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Gastrointestinal:Tumors.

ACGIH Carcinogen List
Rating
 A4

Chronic Exposure - Teratogen

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
Woman	250 MG/KG	Oral	(37W PREG)
			Result:Effects on Embryo or Fetus: Other effects to embryo.
Rat	4 GM/KG	Oral	(13D PREG)
			Result:Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).
Rat	12 GM/KG	Oral	(9-12D PREG)
			Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).
Rat	24 GM/KG	Oral	(14-16D PREG)
			Result:Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Other developmental abnormalities.
Rat	4 GM/KG	Oral	(6-15D PREG)
			Result:Specific Developmental Abnormalities: Eye, ear. Specific Developmental Abnormalities: Urogenital system.
Rat	44 GM/KG	Oral	(7-17D PREG)
			Result:Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Urogenital system.
Rat	20000 PPM/7H	Inhalation	(1-22D PREG)
			Result:Specific Developmental Abnormalities: Other developmental abnormalities.
Rat	2240 MG/KG	Intraperitoneal	(9-12D PREG)
			Result:Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).
Rat	600 MG/KG	Intraperitoneal	(8-15D PREG)
			Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).
Rat	600 MG/KG	Intraperitoneal	(8-15D PREG)
			Result:Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Musculoskeletal system.
Rat	4 GM/KG	Intravenous	(6-7D PREG)
			Result:Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Embryo or Fetus: Other effects to embryo. Specific Developmental Abnormalities: Musculoskeletal system.
Rat	4 GM/KG	Intravenous	(6-7D PREG)
			Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Other developmental abnormalities.
Mouse	162 GM/KG	Oral	(11-19D PREG)
			Result:Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).
Mouse	5800 MG/KG	Oral	(7D PREG)
			Result:Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Eye, ear.
Mouse	75600 MG/KG	Oral	(5-11D PREG)
			Result:Specific Developmental Abnormalities: Urogenital system. Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Growth statistics (e.g., reduced weight gain).
Mouse	5500 MG/KG	Oral	(9D PREG)
			Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Mouse	5800 MG/KG	Intraperitoneal	(10D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.			
Mouse	5800 MG/KG	Intraperitoneal	(7D PREG)
Result: Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Eye, ear. Specific Developmental Abnormalities: Craniofacial (including nose and tongue).			
Mouse	5622 UG/KG	Intraperitoneal	(10D PREG)
Result: Effects on Embryo or Fetus: Fetal death. Specific Developmental Abnormalities: Eye, ear. Specific Developmental Abnormalities: Musculoskeletal system.			
Mouse	4 MG/KG	Intraperitoneal	(10D PREG)
Result: Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).			
Monkey	32400 MG/KG	Oral	(2-19W PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Craniofacial (including nose and tongue).			
Monkey	43200 MG/KG	Oral	(1-24W PREG)
Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).			
Rabbit	15 MG/KG	Intravenous	(15-29D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Embryo or Fetus: Other effects to embryo.			
Guinea pig	240 GM/KG	Oral	(2-61D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Central nervous system.			
Guinea pig	72 GM/KG	Oral	(45-62D PREG)
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue).			
Domestic Animals	94 GM/KG	Intravenous	(14-21W PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).			
Domestic Animals	40 GM/KG	Intravenous	(14-17W PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Newborn: Biochemical and metabolic.			
Domestic Animals	1 GM/KG	Intravenous	(18W PREG)
Result: Specific Developmental Abnormalities: Respiratory system.			
Mammal	31500 MG/KG	Oral	(15-35D PREG)
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue).			

Chronic Exposure - Mutagen

Species	Dose	Cell Type	Mutation test
Human	220 MMOL/L	lymphocyte	DNA inhibition
Human	1160 GM/L	lymphocyte	Cytogenetic analysis
Human	12000 PPM	fibroblast	Cytogenetic analysis
Human	1 PPH/72H-C	leukocyte	Cytogenetic analysis
Human	500 PPM	lymphocyte	Sister chromatid exchange
Rat	4 GM/KG	Oral	DNA damage
Rat	250 GM/KG	Intraperitoneal	16D
Rat	3 GM/KG	Oral	Other mutation test systems
Rat	2 GM/KG	Oral	Other mutation test systems
Mouse	1240 MG/KG	Intraperitoneal	2D
Mouse	40 GM/KG	Oral	Cytogenetic analysis
Mouse	420 MG/KG	Oral	3W
Mouse	5 GM/KG	Oral	Sister chromatid exchange
Mouse	3720 MG/KG	Oral	3D
Mouse	1500 MG/KG	Oral	50D
Hamster	100 PPM	ovary	Cytogenetic analysis
Hamster	1 PPH	Embryo	Cytogenetic analysis
Hamster	160 MMOL/L	ovary	Cytogenetic analysis
Hamster	3900 MG/L	ovary	Sister chromatid exchange
Dog	400 UMOL/L	lymphocyte	Micronucleus test

Chronic Exposure - Reproductive Hazard

Species	Dose	Route of Application	Exposure Time
Woman	41 GM/KG	Oral	(41W PREG)
Result: Effects on Newborn: Apgar score (human only). Effects on Newborn: Drug dependence. Effects on Newborn: Other neonatal measures or effects.			
Woman	8 GM/KG	Intravenous	(32W PREG)
Result: Effects on Newborn: Apgar score (human only). Effects on Newborn: Other neonatal measures or effects.			
Woman	200 MG/KG	Intrauterine	(5D PRE)
Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated).			
Rat	78 GM/KG	Oral	(7-19D PREG)
Result: Effects on Newborn: Biochemical and metabolic.			
Rat	322 GM/KG	Oral	(35D MALE)
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Paternal Effects: Testes, epididymis, sperm duct.			
Rat	132 GM/KG	Oral	(1-22D PREG)
Result: Maternal Effects: Parturition. Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Behavioral.			
Rat	354 GM/KG	Oral	(10D POST)
Result: Effects on Newborn: Biochemical and metabolic.			
Rat	35295 MG/KG	Oral	(1-15D PREG)
Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated). Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).			
Rat	15 GM/KG	Intraperitoneal	(8-13D PREG)
Result: Effects on Newborn: Behavioral. Effects on Newborn: Physical.			
Rat	600 MG/KG	Intraperitoneal	(8-15D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).			
Rat	3 GM/KG	Intravenous	(6-7D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).			
Rat	5 MG/KG	Intracerebral	(1D PRE)
Result: Effects on Fertility: Other measures of fertility			
Rat	60 GM/KG	Unreported	(9-14D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetal death.			
Rat	400 MG/KG	Intratesticular	(1D MALE)
Result: Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).			
Rat	2400 MG/KG	Intrauterine	(10D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).			
Rat	642 GM/KG	Multiple	(1-21D PREG/23D POST)
Result: Maternal Effects: Parturition. Effects on Newborn: Weaning or lactation index (e.g., # alive at weaning per # alive at day 4). Effects on Newborn: Growth statistics (e.g., reduced weight gain).			
Rat	373 GM/KG	Multiple	(23D POST)
Result: Effects on Newborn: Behavioral. Effects on Newborn: Physical.			
Mouse	21 GM/KG	Oral	(1-21D PREG)
Result: Effects on Newborn: Biochemical and metabolic. Effects on Newborn: Behavioral.			
Mouse	1680 GM/KG	Oral	(70D MALE)
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).			
Mouse	4300 MG/KG	Intraperitoneal	(10D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).			
Dog	21600 MG/KG	Oral	(1-60D PREG)
Result: Effects on Newborn: Stillbirth. Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Growth statistics (e.g., reduced weight gain).			
Dog	260 GM/KG	Oral	(1-62D PREG)
Result: Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive).			
Dog	221 GM/KG	Oral	(1-47D PREG)
Result: Effects on Fertility: Abortion.			
Dog	100 MG/KG	Intratesticular	(1D MALE)
Result: Paternal Effects: Testes, epididymis, sperm duct.			
Monkey	78 GM/KG	Oral	(4-23W PREG)
Result: Effects on Fertility: Abortion.			

Monkey	400 MG/KG	Oral	(2-21W PREG)
Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain).			
Monkey	206 GM/KG	Oral	(90D PRE)
Result: Maternal Effects: Menstrual cycle changes or disorders.			
Rabbit	3945 MG/KG	Oral	(1D PRE)
Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated).			
Rabbit	3750 MG/KG	Oral	(1D PRE)
Result: Effects on Fertility: Other measures of fertility			
Pig	2648 GM/KG	Oral	(78W PRE/1-16W PREG)
Result: Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Growth statistics (e.g., reduced weight gain).			
Guinea pig	90 GM/KG	Oral	(1-68D PREG)
Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Behavioral.			
Guinea pig	264 GM/KG	Oral	(2-67D PREG)
Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Biochemical and metabolic. Effects on Newborn: Physical.			

Section 12 - Ecological Information

Acute Ecotoxicity Tests

Test Type

LC50 Fish

Species

Onchorhynchus mykiss (Rainbow trout)

Time: 96.0 h
Value: 13,000 mg/l

Test Type

EC50 Daphnia

Species

Daphnia magna

Time: 48.0 h
Value: 9.3 mg/l

Test Type

LC50 Fish

Species

Onchorhynchus mykiss (Rainbow trout)

Time: 96.0 h
Value: 10,400 mg/l

Test Type

LC50 Fish

Species

Pimephales promelas (Fathead minnow)

Time: 96.0 h
Value: 15,300 mg/l

Test Type

LC50 Fish

Species

other fish

Time: 24.0 h
Value: 10,000 mg/l

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material.

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

DOT

Proper Shipping Name: Ethanol [or] Ethyl alcohol [or] Ethanol solutions [or] Ethyl alcohol solutions

UN#: 1170

Class: 3

Packing Group: Packing Group II

Hazard Label: Flammable liquid

PIH: Not PIH

IATA

Proper Shipping Name: Ethanol

IATA UN Number: 1170

Hazard Class: 3

Packing Group: II

Section 15 - Regulatory Information

EU Directives Classification

Symbol of Danger: F

Indication of Danger

Highly Flammable.

Risk Statements R: 11

Highly flammable.

Safety Statements S: 7 16

Keep container tightly closed. Keep away from sources of ignition - no smoking.

US Classification and Label Text

Indication of Danger

Flammable (USA) Highly Flammable (EU). Irritant.

Risk Statements

Highly flammable.

Safety Statements

Keep container tightly closed. Keep away from sources of ignition - no smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

US Statements

Target organ(s): Nerves. Liver.

United States Regulatory Information

SARA Listed: No

TSCA Inventory Item: Yes

Canada Regulatory Information

WHMIS Classification

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

Disclaimer

For Industrial Use Only; Not for Beverage Consumption

Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., 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. Copyright 2006 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.