

MATERIAL SAFETY DATA SHEET

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Version 1.2

Section 1 - Product and Company Information

Product Name ETHANOL, 190 PROOF, FOR
MOLECULARBIOLOGY
Product Number E7148
Brand ALDRICH

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS MO 63103 US
Technical Phone: 314 771 5765
Emergency Phone: 414 273 3850 Ext. 5996
Fax: 800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
ETHYL ALCOHOL, NON-DENATURED, 190 PROOF	64-17-5	No
Formula	C ₂ H ₆ O	
RTECS Number:	KQ6300000	

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Flammable (USA) Highly Flammable (EU). Irritant.
Highly flammable. Irritating to eyes, respiratory system and skin.
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

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 Method: closed cup

EXPLOSION LIMITS

Lower: 3.3 % Upper: 19 %

AUTOIGNITION TEMP

363 °C

FLAMMABILITY

N/A

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, 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			
Remarks: check ACGIH TLV			
USA	NIOSH	TWA	1000 PPM

EXPOSURE LIMITS

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

Section 9 - Physical/Chemical Properties

Appearance Physical State: Clear liquid
Color: Colorless

Property	Value	At Temperature or Pressure
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	20 °C
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	0.816 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	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	57 °F 14 °C	Method: closed cup
Explosion Limits	Lower: 3.3 % Upper: 19 %	
Flammability	N/A	
Autoignition Temp	363 °C	
Refractive Index	1.362	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water:Complete	

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.

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.

Species: Mouse
Route of Application: Oral
Dose: 320 MG/KG
Exposure Time: 50W
Frequency: I
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Liver: Tumors. Blood: Lymphomas including Hodgkin's disease.

Species: Mouse
Route of Application: Rectal
Dose: 120 GM/KG
Exposure Time: 18W
Frequency: I
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Gastrointestinal: Tumors. Liver: Tumors.

Species: Mouse
Route of Application: Oral
Dose: 400 GM/KG
Exposure Time: 57W
Frequency: I
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Gastrointestinal: Tumors.

ACGIH CARCINOGEN LIST

Rating: A4

CHRONIC EXPOSURE - TERATOGEN

Species: Woman
Dose: 250 MG/KG
Route of Application: Oral
Exposure Time: (37W PREG)
Result: Effects on Embryo or Fetus: Other effects to embryo.

Species: Rat
Dose: 4 GM/KG
Route of Application: Oral
Exposure Time: (13D PREG)
Result: Effects on Embryo or Fetus: Cytological changes
(including somatic cell genetic material).

Species: Rat
Dose: 12 GM/KG
Route of Application: Oral
Exposure Time: (9-12D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death,
e.g., stunted fetus).

Species: Rat
Dose: 24 GM/KG
Route of Application: Oral
Exposure Time: (14-16D PREG)
Result: Specific Developmental Abnormalities: Central nervous
system. Specific Developmental Abnormalities: Other
developmental abnormalities.

Species: Rat
Dose: 4 GM/KG
Route of Application: Oral
Exposure Time: (6-15D PREG)
Result: Specific Developmental Abnormalities: Eye, ear. Specific
Developmental Abnormalities: Urogenital system.

Species: Rat
Dose: 44 GM/KG
Route of Application: Oral
Exposure Time: (7-17D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal
system. Specific Developmental Abnormalities: Urogenital system.

Species: Rat
Dose: 20000 PPM/7H
Route of Application: Inhalation
Exposure Time: (1-22D PREG)
Result: Specific Developmental Abnormalities: Other
developmental abnormalities.

Species: Rat
Dose: 2240 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (9-12D PREG)
Result: Effects on Embryo or Fetus: Extra embryonic structures
(e.g., placenta, umbilical cord).

Species: Rat
Dose: 600 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (8-15D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death,
e.g., stunted fetus).

Species: Rat
Dose: 600 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (8-15D PREG)

Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat

Dose: 4 GM/KG

Route of Application: Intravenous

Exposure Time: (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.

Species: Rat

Dose: 4 GM/KG

Route of Application: Intravenous

Exposure Time: (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.

Species: Mouse

Dose: 162 GM/KG

Route of Application: Oral

Exposure Time: (11-19D PREG)

Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).

Species: Mouse

Dose: 5800 MG/KG

Route of Application: Oral

Exposure Time: (7D PREG)

Result: Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Eye, ear.

Species: Mouse

Dose: 75600 MG/KG

Route of Application: Oral

Exposure Time: (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).

Species: Mouse

Dose: 5500 MG/KG

Route of Application: Oral

Exposure Time: (9D PREG)

Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Mouse

Dose: 5800 MG/KG

Route of Application: Intraperitoneal

Exposure Time: (10D PREG)

Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse

Dose: 5800 MG/KG

Route of Application: Intraperitoneal
Exposure Time: (7D PREG)
Result: Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Eye, ear. Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Mouse
Dose: 5622 UG/KG
Route of Application: Intraperitoneal
Exposure Time: (10D PREG)
Result: Effects on Embryo or Fetus: Fetal death. Specific Developmental Abnormalities: Eye, ear. Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse
Dose: 4 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (10D PREG)
Result: Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).

Species: Monkey
Dose: 32400 MG/KG
Route of Application: Oral
Exposure Time: (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).

Species: Monkey
Dose: 43200 MG/KG
Route of Application: Oral
Exposure Time: (1-24W PREG)
Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).

Species: Rabbit
Dose: 15 MG/KG
Route of Application: Intravenous
Exposure Time: (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.

Species: Guinea pig
Dose: 240 GM/KG
Route of Application: Oral
Exposure Time: (2-61D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Central nervous system.

Species: Guinea pig
Dose: 72 GM/KG
Route of Application: Oral
Exposure Time: (45-62D PREG)
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Domestic Animals

Dose: 94 GM/KG
Route of Application: Intravenous
Exposure Time: (14-21W PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Domestic Animals
Dose: 40 GM/KG
Route of Application: Intravenous
Exposure Time: (14-17W PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Newborn: Biochemical and metabolic.

Species: Domestic Animals
Dose: 1 GM/KG
Route of Application: Intravenous
Exposure Time: (18W PREG)
Result: Specific Developmental Abnormalities: Respiratory system.

Species: Mammal
Dose: 31500 MG/KG
Route of Application: Oral
Exposure Time: (15-35D PREG)
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

CHRONIC EXPOSURE - MUTAGEN

Species: Human
Dose: 220 MMOL/L
Cell Type: lymphocyte
Mutation test: DNA inhibition

Species: Human
Dose: 1160 GM/L
Cell Type: lymphocyte
Mutation test: Cytogenetic analysis

Species: Human
Dose: 12000 PPM
Cell Type: fibroblast
Mutation test: Cytogenetic analysis

Species: Human
Dose: 1 PPH/72H-C
Cell Type: leukocyte
Mutation test: Cytogenetic analysis

Species: Human
Dose: 500 PPM
Exposure Time: 72H
Cell Type: lymphocyte
Mutation test: Sister chromatid exchange

Species: Rat
Route: Oral
Dose: 4 GM/KG
Mutation test: DNA damage

Species: Rat
Route: Intraperitoneal

Dose: 250 GM/KG
Exposure Time: 16D
Mutation test: Other mutation test systems

Species: Rat
Route: Oral
Dose: 3 GM/KG
Mutation test: Other mutation test systems

Species: Rat
Route: Oral
Dose: 2 GM/KG
Mutation test: Cytogenetic analysis

Species: Mouse
Route: Intraperitoneal
Dose: 1240 MG/KG
Exposure Time: 2D
Mutation test: Micronucleus test

Species: Mouse
Route: Oral
Dose: 40 GM/KG
Mutation test: Cytogenetic analysis

Species: Mouse
Route: Oral
Dose: 420 MG/KG
Exposure Time: 3W
Mutation test: Sister chromatid exchange

Species: Mouse
Route: Oral
Dose: 5 GM/KG
Mutation test: SLN

Species: Mouse
Route: Oral
Dose: 3720 MG/KG
Exposure Time: 3D
Mutation test: Dominant lethal test

Species: Mouse
Route: Oral
Dose: 1500 MG/KG
Exposure Time: 50D
Mutation test: sperm

Species: Hamster
Dose: 100 PPM
Cell Type: ovary
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 1 PPH
Cell Type: Embryo
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 160 MMOL/L
Cell Type: ovary
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 3900 MG/L
Cell Type: ovary
Mutation test: Sister chromatid exchange

Species: Dog
Dose: 400 UMOL/L
Cell Type: lymphocyte
Mutation test: Micronucleus test

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Woman
Dose: 41 GM/KG
Route of Application: Oral
Exposure Time: (41W PREG)
Result: Effects on Newborn: Apgar score (human only). Effects on Newborn: Other neonatal measures or effects. Effects on Newborn: Drug dependence.

Species: Woman
Dose: 8 GM/KG
Route of Application: Intravenous
Exposure Time: (32W PREG)
Result: Effects on Newborn: Apgar score (human only). Effects on Newborn: Other neonatal measures or effects.

Species: Woman
Dose: 200 MG/KG
Route of Application: Intrauterine
Exposure Time: (5D PRE)
Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated).

Species: Rat
Dose: 78 GM/KG
Route of Application: Oral
Exposure Time: (7-19D PREG)
Result: Effects on Newborn: Biochemical and metabolic.

Species: Rat
Dose: 322 GM/KG
Route of Application: Oral
Exposure Time: (35D MALE)
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Paternal Effects: Testes, epididymis, sperm duct.

Species: Rat
Dose: 132 GM/KG
Route of Application: Oral
Exposure Time: (1-22D PREG)
Result: Maternal Effects: Parturition. Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Behavioral.

Species: Rat
Dose: 354 GM/KG
Route of Application: Oral
Exposure Time: (10D POST)

Result: Effects on Newborn: Biochemical and metabolic.

Species: Rat

Dose: 35295 MG/KG

Route of Application: Oral

Exposure Time: (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).

Species: Rat

Dose: 15 GM/KG

Route of Application: Intraperitoneal

Exposure Time: (8-13D PREG)

Result: Effects on Newborn: Behavioral. Effects on Newborn: Physical.

Species: Rat

Dose: 600 MG/KG

Route of Application: Intraperitoneal

Exposure Time: (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).

Species: Rat

Dose: 3 GM/KG

Route of Application: Intravenous

Exposure Time: (6-7D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat

Dose: 5 MG/KG

Route of Application: Intracerebral

Exposure Time: (1D PRE)

Result: Effects on Fertility: Other measures of fertility

Species: Rat

Dose: 60 GM/KG

Route of Application: Unreported

Exposure Time: (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.

Species: Rat

Dose: 400 MG/KG

Route of Application: Intratesticular

Exposure Time: (1D MALE)

Result: Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).

Species: Rat

Dose: 2400 MG/KG

Route of Application: Intrauterine
Exposure Time: (10D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat
Dose: 642 GM/KG
Route of Application: Multiple
Exposure Time: (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).

Species: Rat
Dose: 373 GM/KG
Route of Application: Multiple
Exposure Time: (23D POST)
Result: Effects on Newborn: Behavioral. Effects on Newborn: Physical.

Species: Mouse
Dose: 21 GM/KG
Route of Application: Oral
Exposure Time: (1-21D PREG)
Result: Effects on Newborn: Biochemical and metabolic. Effects on Newborn: Behavioral.

Species: Mouse
Dose: 1680 GM/KG
Route of Application: Oral
Exposure Time: (70D MALE)
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Species: Mouse
Dose: 4300 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (10D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Dog
Dose: 21600 MG/KG
Route of Application: Oral
Exposure Time: (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).

Species: Dog
Dose: 260 GM/KG
Route of Application: Oral
Exposure Time: (1-62D PREG)
Result: Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive).

Species: Dog
Dose: 221 GM/KG
Route of Application: Oral
Exposure Time: (1-47D PREG)

Result: Effects on Fertility: Abortion.

Species: Dog

Dose: 100 MG/KG

Route of Application: Intratesticular

Exposure Time: (1D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Monkey

Dose: 78 GM/KG

Route of Application: Oral

Exposure Time: (4-23W PREG)

Result: Effects on Fertility: Abortion.

Species: Monkey

Dose: 400 MG/KG

Route of Application: Oral

Exposure Time: (2-21W PREG)

Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Monkey

Dose: 206 GM/KG

Route of Application: Oral

Exposure Time: (90D PRE)

Result: Maternal Effects: Menstrual cycle changes or disorders.

Species: Rabbit

Dose: 3945 MG/KG

Route of Application: Oral

Exposure Time: (1D PRE)

Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated).

Species: Rabbit

Dose: 3750 MG/KG

Route of Application: Oral

Exposure Time: (1D PRE)

Result: Effects on Fertility: Other measures of fertility

Species: Pig

Dose: 2648 GM/KG

Route of Application: Oral

Exposure Time: (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).

Species: Guinea pig

Dose: 90 GM/KG

Route of Application: Oral

Exposure Time: (1-68D PREG)

Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Behavioral.

Species: Guinea pig

Dose: 264 GM/KG

Route of Application: Oral

Exposure Time: (2-67D PREG)

Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Biochemical and metabolic.

Section 12 - Ecological Information

ACUTE ECOTOXICITY TESTS

Test Type: LC50 Fish
Species: Onchorhynchus mykiss (Rainbow trout)
Time: 96 h
Value: 13,000 mg/l

Test Type: EC50 Daphnia
Species: Daphnia magna
Time: 48 h
Value: 9.3 mg/l

Test Type: LC50 Fish
Species: Onchorhynchus mykiss (Rainbow trout)
Time: 96 h
Value: 10,400 mg/l

Test Type: LC50 Fish
Species: Pimephales promelas (Fathead minnow)
Time: 96 h
Value: 15,300 mg/l

Test Type: LC50 Fish
Species: other fish
Time: 24 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.

R: 11
Risk Statements: Highly flammable.
S: 7 16
Safety Statements: 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. Irritating to eyes, respiratory system and skin.
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 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.