MATERIAL SAFETY DATA SHEET

Date Printed: 01/17/2008
Date Updated: 02/05/2006
Version 1.8

Section 1 - Product and Company Information

Product Name	2-ETHOXYETHANOL, STANDARD FOR GC
Product Number	79109
Brand	FLUKA
Company	Sigma-Aldrich Canada, Ltd
Address	2149 Winston Park Drive Oakville ON L6H 6J8 CA
Technical Phone:	9058299500
Fax:	9058299292
Emergency Phone:	800-424-9300

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
2-ETHOXYETHANOL	110-80-5	Yes

Formula	C4H10O2
Synonyms	Athylenglykol-monoathylather (German) * Cellosolve (OSHA) * Cellosolve solvent * Celosolv (Czech) * Dowanol 8 * Dowanol EE * Ektasolve EE * Ether monoethylique de l'ethylene-glycol (French) * 2-Ethoxyethanol (ACGIH:OSHA) * Ethyl cellosolve * Ethylene glycol ethyl ether * Ethylene glycol monoethyl ether * Etoksyetylowy alkohol (Polish) * Glycol monoethyl ether (OSHA) * Jeffersol EE * NCI-C54853 * Oxitol * Poly-Solv EE * RCRA waste number U227 * RCRA waste number U359
RTECS Number:	KK8050000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Combustible (USA) Flammable (EU). Toxic.
May impair fertility. May cause harm to the unborn child. Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin.
Calif. Prop. 65 developmental hazard. Readily absorbed through skin. Target organ(s): Liver. Kidneys.

HMIS RATING

HEALTH: 2*
FLAMMABILITY: 2
REACTIVITY: 0

NFPA RATING

HEALTH: 2
FLAMMABILITY: 2
REACTIVITY: 0

*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 immediately.

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 skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

EYE EXPOSURE
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

FLASH POINT
107.6 °F 42 °C Method: closed cup

EXPLOSION LIMITS
Lower: 1.8 % Upper: 14 %

AUTOIGNITION TEMP
238 °C

FLAMMABILITY
N/A

EXTINGUISHING MEDIA
Suitable: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

FIREFIGHTING
Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Specific Hazard(s): Emits toxic fumes under fire conditions. Combustible liquid.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL
Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Wear disposable coveralls and discard them after use.

METHODS FOR CLEANING UP
Cover with an activated carbon adsorbent, take up and place in

closed containers. Transport outdoors. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed. Keep away from heat and open flame.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Use only in a chemical fume hood. Safety shower and eye bath.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.
Hand: Compatible chemical-resistant gloves.
Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	5 PPM
Remarks: Skin			
USA	MSHA Standard-air	TWA	100 PPM (370 MG/M3) (SKIN)
USA	OSHA.	PEL	8H TWA 200 PPM (740 MG/M3) (SK
USA	NIOSH	TWA	0.5 PPM (SK)

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	20 MG/M3
Poland		NDSCh	80 MG/M3
Poland		NDSP	-

Section 9 - Physical/Chemical Properties

Appearance: Physical State: Liquid

Property	Value	At Temperature or Pressure
Molecular Weight	90.12 AMU	
pH	N/A	
BP/BP Range	133.0 - 135.0 ˚C	
MP/MP Range	- 90.0 ˚C	
Freezing Point	N/A	
Vapor Pressure	3.8 mmHg	20 ˚C
Vapor Density	3.1 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	0.931 g/cm3	

Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
Water Content	< 0.1 %	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	0.002 Pas	20 ˚C
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	107.6 ˚F 42 ˚C	Method: closed cup
Explosion Limits	Lower: 1.8 % Upper: 14 %	
Flammability	N/A	
Autoignition Temp	238 ˚C	
Refractive Index	1.408	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water:miscible	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY
Stable: Stable.
Conditions to Avoid: May form peroxides on contact with air.
Materials to Avoid: Oxidizing agents, Copper.

HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION
Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE
Skin Contact: Causes skin irritation.
Skin Absorption: Harmful if absorbed through skin. Readily absorbed through skin.
Eye Contact: Causes eye irritation.
Inhalation: Harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.
Ingestion: Harmful if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)
Blood. Central nervous system. Liver. Kidneys.

SIGNS AND SYMPTOMS OF EXPOSURE
In laboratory studies with this material, birth defects, fetotoxicity, embryolethality, anemia, bone marrow damage, hemolysis, immunosuppression, and damage to the male reproductive tissues have been observed.

TOXICITY DATA

Oral
Rat
2125 mg/kg
LD50
Remarks: Lungs, Thorax, or Respiration:Respiratory depression.

Behavioral:Somnolence (general depressed activity).
Behavioral:Withdrawal.

Inhalation
Rat
2,000 ppm
LC50

Skin
Rat
3900 mg/kg
LD50

Intraperitoneal
Rat
2800 MG/KG
LD50

Subcutaneous
Rat
3400 MG/KG
LD50

Intravenous
Rat
2400 MG/KG
LD50

Oral
Mouse
2451 mg/kg
LD50

Inhalation
Mouse
1,820 ppm
LC50
Remarks: Kidney, Ureter, Bladder:Hematuria. Lungs, Thorax, or Respiration:Dyspnea. Behavioral:Analgesia.

Intraperitoneal
Mouse
1707 MG/KG
LD50
Remarks: Blood:Changes in spleen. Lungs, Thorax, or Respiration:Chronic pulmonary edema. Kidney, Ureter, Bladder:Changes in tubules (including acute renal failure, acute tubular necrosis).

Intravenous
Mouse
3900 MG/KG
LD50
Remarks: Lungs, Thorax, or Respiration:Dyspnea. Behavioral:Convulsions or effect on seizure threshold. Behavioral:Altered sleep time (including change in righting reflex).

Oral
Rabbit
1275 mg/kg
LD50

Skin
Rabbit
3300 mg/kg
LD50

Subcutaneous
Rabbit
2 GM/KG
LD50

Intravenous
Rabbit
900 MG/KG
LD50
Remarks: Lungs, Thorax, or Respiration:Dyspnea.
Behavioral:Altered sleep time (including change in righting reflex). Behavioral:Convulsions or effect on seizure threshold.

Oral
Guinea pig
1400 mg/kg
LD50
Remarks: Kidney, Ureter, Bladder:Other changes.
Behavioral:General anesthetic. Gastrointestinal:Other changes.

IRRITATION DATA

Eyes
Human
6,000 ppm

Skin
Rabbit
500 mg
Remarks: Open irritation test

Eyes
Rabbit
50 mg
Remarks: Moderate irritation effect

Eyes
Rabbit
500 mg
24H
Remarks: Mild irritation effect

Eyes
Guinea pig
0.01 mg
Remarks: Mild irritation effect

CHRONIC EXPOSURE - TERATOGEN
Result: May cause congenital malformation in the fetus.

Species: Rat
Dose: 600 MG/KG
Route of Application: Oral
Exposure Time: (10-12D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Cardiovascular

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

Species: Rat
Dose: 1800 MG/KG
Route of Application: Oral
Exposure Time: (7-15D PREG)
Result: Effects on Embryo or Fetus: Fetal death.

Species: Rat
Dose: 200 PPM/7H
Route of Application: Inhalation
Exposure Time: (1-19D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Cardiovascular (circulatory) system.

Species: Rat
Dose: 50 GM/KG
Route of Application: Skin
Exposure Time: (7-16D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Cardiovascular (circulatory) system.

Species: Rat
Dose: 1955 MG/KG
Route of Application: Subcutaneous
Exposure Time: (1-21D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rabbit
Dose: 160 PPM/7H
Route of Application: Inhalation
Exposure Time: (1-18D PREG)
Result: Specific Developmental Abnormalities: Body wall. Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Cardiovascular (circulatory) system.

Species: Rabbit
Dose: 175 PPM/6H
Route of Application: Inhalation
Exposure Time: (6-18D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rabbit
Dose: 160 PPM/7H
Route of Application: Inhalation
Exposure Time: (1-18D PREG)
Result: Specific Developmental Abnormalities: Urogenital system.

CHRONIC EXPOSURE - MUTAGEN

Species: Rat
Route: Oral
Dose: 23400 MG/KG
Exposure Time: 5W
Mutation test: sperm

Species: Hamster
Dose: 6830 MG/L
Cell Type: ovary
Mutation test: Cytogenetic analysis

Species: Hamster
Dose: 3170 MG/L
Cell Type: ovary
Mutation test: Sister chromatid exchange

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD
Result: May cause reproductive disorders.

Species: Rat
Dose: 500 MG/KG
Route of Application: Oral
Exposure Time: (5D MALE)
Result: Effects on Fertility: Other measures of fertility

Species: Rat
Dose: 7820 MG/KG
Route of Application: Oral
Exposure Time: (1-21D PREG)
Result: Effects on Fertility: Abortion. Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat
Dose: 4500 MG/KG
Route of Application: Oral
Exposure Time: (6W MALE)
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology,motility, and count).

Species: Rat
Dose: 10 PPM/6H
Route of Application: Inhalation
Exposure Time: (6-15D PREG)
Result: Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat
Dose: 600 PPM/7H
Route of Application: Inhalation
Exposure Time: (7-13D PREG)
Result: Effects on Embryo or Fetus: Fetal death. Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat
Dose: 100 PPM/7H
Route of Application: Inhalation
Exposure Time: (14-20D PREG)
Result: Maternal Effects: Parturition. Effects on Newborn: Behavioral.

Species: Rat
Dose: 50 GM/KG
Route of Application: Skin
Exposure Time: (7-16D PREG)

Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat
Dose: 50 GM/KG
Route of Application: Skin
Exposure Time: (7-16D PREG)
Result: Specific Developmental Abnormalities: Urogenital system. Specific Developmental Abnormalities: Central nervous system. Maternal Effects: Uterus, cervix, vagina.

Species: Mouse
Dose: 25 GM/KG
Route of Application: Oral
Exposure Time: (25D MALE)
Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Mouse
Dose: 252 GM/KG
Route of Application: Oral
Exposure Time: (18W PRE)
Result: Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Stillbirth.

Species: Mouse
Dose: 5600 MG/KG
Route of Application: Oral
Exposure Time: (8-14D 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: Mouse
Dose: 12600 MG/KG
Route of Application: Oral
Exposure Time: (8-14D PREG)
Result: Specific Developmental Abnormalities: Other developmental abnormalities. Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rabbit
Dose: 400 PPM/6H
Route of Application: Inhalation
Exposure Time: (65D MALE)
Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Rabbit
Dose: 617 PPM/7H
Route of Application: Inhalation
Exposure Time: (1-18D PREG)
Result: Maternal Effects: Uterus, cervix, vagina. Effects on Fertility: Other measures of fertility

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION
Contact a licensed professional waste disposal service to dispose of this material. 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

DOT
Proper Shipping Name: Ethylene glycol monoethyl ether
UN#: 1171
Class: 3
Packing Group: Packing Group III
Hazard Label: Flammable liquid
PIH: Not PIH

IATA
Proper Shipping Name: Ethylene glycol monoethyl ether
IATA UN Number: 1171
Hazard Class: 3
Packing Group: III

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION
Symbol of Danger: T
Indication of Danger: Toxic.
R: 60-61-10-20/21/22
Risk Statements: May impair fertility. May cause harm to the unborn child. Flammable. Also harmful by inhalation, in contact with skin and if swallowed.
S: 53-45
Safety Statements: Restricted to professional users. Attention - 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).

US CLASSIFICATION AND LABEL TEXT
Indication of Danger: Combustible (USA) Flammable (EU). Toxic.
Risk Statements: May impair fertility. May cause harm to the unborn child. Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin.
Safety Statements: Restricted to professional users. Attention - 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).
US Statements: Calif. Prop. 65 developmental hazard. Readily absorbed through skin. Target organ(s): Liver. Kidneys.

UNITED STATES REGULATORY INFORMATION
SARA LISTED: Yes
DEMINIMIS: 1 %
NOTES: This product is subject to SARA section 313 reporting requirements.
TSCA INVENTORY ITEM: Yes

UNITED STATES - STATE REGULATORY INFORMATION

CALIFORNIA PROP - 65
California Prop - 65: This product is or contains chemical(s)

known to the state of California to cause male developmental toxicity.

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 R&D use only. Not for drug, household or other uses.

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.