Section 1 - Product and Company Information

Product Name               DI(ETHYLENE GLYCOL) METHYL ETHER, >=99.0%
Product Number             579548
Brand                      ALDRICH

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             DI(ETHYLENE GLYCOL) METHYL ETHER
CAS #                      111-77-3
SARA 313                   Yes

Formula                    C5H12O3
Synonyms                   Diethylene glycol methyl ether * Diethylene glycol monomethyl ether * Diglycol monomethyl ether * Dowanol 16 * Dowanol DM * Ethylene diglycol monomethyl ether * MECB * Methoxydiglycol * 2-(2-Methoxyethoxy)ethanol * beta-Methoxy-beta'-hydroxydiethyl ether * Methyl carbitol * Methyl karbitol (Czech) * Poly-Solv DM
RTECS Number:             KL6125000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Harmful.
Possible risk of harm to the unborn child. Possible risk of impaired fertility. Irritating to eyes.
Target organ(s): Liver. Kidneys. Combustible.

HMIS RATING
HEALTH: 2*
FLAMMABILITY: 2
REACTIVITY: 1

NFPA RATING
HEALTH: 2
FLAMMABILITY: 2
REACTIVITY: 1

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
188.6 °F   87 °C   Method: closed cup

EXPLOSION LIMITS
Lower: 1.38 %   Upper: 22.7 %

AUTOIGNITION TEMP
221 °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.

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 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: Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE
Suitable: Keep tightly closed.

SPECIAL REQUIREMENTS
Store under inert gas. Hygroscopic.

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.

Section 9 - Physical/Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Weight</td>
<td>120.15 AMU</td>
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<tr>
<td>pH</td>
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<td>BP/BP Range</td>
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<tr>
<td>MP/MP Range</td>
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<td>Freezing Point</td>
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<tr>
<td>Vapor Pressure</td>
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<td>SG/Density</td>
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</tr>
<tr>
<td>Odor Threshold</td>
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<tr>
<td>Volatile%</td>
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<tr>
<td>VOC Content</td>
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</tr>
<tr>
<td>Water Content</td>
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<tr>
<td>Evaporation Rate</td>
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<tr>
<td>Viscosity</td>
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<td>Decomposition Temp.</td>
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<tr>
<td>Explosion Limits</td>
<td>Lower: 1.38 %</td>
<td>Upper: 22.7 %</td>
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<tr>
<td>Flammability</td>
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<td>Autoignition Temp</td>
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<tr>
<td>Refractive Index</td>
<td>1.426</td>
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</tbody>
</table>
Section 10 - Stability and Reactivity

STABILITY
Stable: Stable.
Materials to Avoid: Strong oxidizing agents.

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

TARGET ORGAN(S) OR SYSTEM(S)

TOXICITY DATA
Skin
Rabbit
>20 ML/KG
LD50
Oral
Rat
> 7,000 mg/kg
LD50

Oral Oral
Rat Rat
4 ML/KG 4 ML/KG
LD50 LD50

Intraperitoneal Intraperitoneal
Rat Rat
2722 MG/KG 2722 MG/KG
LD50 LD50
Remarks: Autonomic Nervous System:Other (direct)

Oral Oral
Mouse Mouse
8222 mg/kg 8222 mg/kg
LD50 LD50
Remarks: Autonomic Nervous System:Other (direct)

**Intraperitoneal Intraperitoneal**

**Mouse Mouse**

2611 MG/KG 2611 MG/KG
LD50 LD50

**Oral Oral**

**Rabbit Rabbit**

7190 mg/kg 7190 mg/kg
LD50 LD50

**Skin Skin**

**Rabbit Rabbit**

2500 UL/KG 2500 UL/KG
LD50 LD50

**Oral Oral**

**Guinea pig Guinea pig**

4160 mg/kg 4160 mg/kg
LD50 LD50

**IRRITATION DATA**

**Eyes Eyes**

**Rabbit Rabbit**

500 mg 500 mg
Remarks: Moderate irritation effect Moderate irritation effect

**Eyes Eyes**

**Rabbit Rabbit**

500 mg 500 mg
24H 24H
Remarks: Mild irritation effect Mild irritation effect

**CHRONIC EXPOSURE - TERATOGEN**

Result: Possible risk of congenital malformation in the fetus.

Species: Rat Rat
Dose: 6600 MG/KG 6600 MG/KG
Route of Application: Oral Oral
Exposure Time: (7-17D PREG) (7-17D PREG)
Result: Effects on Newborn: Physical. Specific Developmental Abnormalities: Musculoskeletal system. Effects on Embryo or
Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Newborn: Physical. Specific Developmental Abnormalities: Musculoskeletal system. Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rabbit Rabbit
Dose: 3250 MG/KG 3250 MG/KG
Route of Application: Skin Skin
Exposure Time: (6-18D PREG) (6-18D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Musculoskeletal system.

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD
Result: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Species: Rat Rat
Dose: 19800 MG/KG 19800 MG/KG
Route of Application: Oral Oral
Exposure Time: (7-17D PREG) (7-17D PREG)
Result: Maternal Effects: Parturition. Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Specific Developmental Abnormalities: Cardiovascular (circulatory) system. Specific Developmental Abnormalities: Cardiovascular (circulatory) system. Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Maternal Effects: Parturition.

Species: Rat Rat
Dose: 21650 MG/KG 21650 MG/KG
Route of Application: Oral Oral
Exposure Time: (7-16D PREG) (7-16D PREG)
Result: Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Cardiovascular (circulatory) system. Specific Developmental Abnormalities: Cardiovascular (circulatory) system. 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).

Species: Rat Rat
Dose: 19800 MG/KG 19800 MG/KG
Route of Application: Oral Oral
Exposure Time: (7-17D PREG) (7-17D 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: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Urogenital system. Specific Developmental Abnormalities: Urogenital system. Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Mouse Mouse
Dose: 32 GM/KG 32 GM/KG
Route of Application: Oral Oral
Exposure Time: (7-14D PREG) (7-14D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g.,
dead and/or resorbed implants per total number of implants). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive).

Species: Rabbit
Dose: 13 GM/KG
Route of Application: Skin
Exposure Time: (6-18D PREG)
Result: Maternal Effects: Other effects. Effects on Fertility:
Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

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. This combustible material may be burned 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: Combustible liquid, n.o.s.
UN#: NA1993
Class: COMBUSTIBLE LIQUID
Packing Group: Packing Group III
Hazard Label: None
PIH: Not PIH

IATA
Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION
Symbol of Danger: Xn
Indication of Danger: Harmful.
R: 63
Risk Statements: Possible risk of harm to the unborn child.
S: 36/37
Safety Statements: Wear suitable protective clothing and gloves.

US CLASSIFICATION AND LABEL TEXT
Indication of Danger: Harmful.
Risk Statements: Possible risk of harm to the unborn child. Possible risk of impaired fertility. Irritating to eyes.
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.
UNITED STATES REGULATORY INFORMATION
SARA LISTED: Yes
DEMINIMIS: 1 %
NOTES: This product is subject to SARA section 313 reporting requirements - glycol ethers.
TSCA INVENTORY ITEM: Yes 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 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. Copyright 2008 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.