MASTER SAFETY DATA SHEET

25/12/03

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

DOW EUROPE GMBH CH-8810 HORGEN SWITZERLAND

MEDICAL EMERGENCY PHONE NO from ... 31 115 694 982 (THE NETHERLANDS)
(ASK FOR MEDICAL DEPARTMENT)

Product Name: **DOWANOL* PE GLYCOL ETHER**

LV70: 15260 Issue Date: April 02 Ref: 00870
Revised: Nov. 03 (Section(s) 8, 9 & 12)

Use of the substance/preparation
Industrial solvent for cleaner and coating formulations.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Dangerous components (see section 16 for complete R-phrases):

			CAS	EC No
1-Ethoxy-2-propanol	>95 %	R10	001569-02-4	216-374-5

3. HAZARDS IDENTIFICATION

Flammable. This product is not hazardous to health and environment according to EC criteria.

4. FIRST-AID MEASURES

Never give fluids or induce vomiting if patient is unconscious or is having convulsions.

Inhalation
Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

Skin Contact
Wash skin with plenty of water.

Eye Contact
Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an opthalmologist.

Ingestion
If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Note to Physician
No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

Extinguishing Media
Water fog or fine spray. Carbon dioxide. Dry chemical fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Extinguishing Media to Avoid
Do not use direct water stream.

Hazardous Combustion Products
During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/ or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Protection of Firefighters
Wear positive-pressure self-contained breathing apparatus and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves). If protective equipment is not available or not used, fight fire from a protected location or a safe distance.

Specific Fire or Explosion Hazards
Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Vapours are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flashback may occur.

Specific Methods of Firefighting
Keep people away. Isolate fire area and deny unneccessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Do not use direct water stream. May spread fire. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Move containers from fire area if this is possible without hazard. Fight fire from a protected location or safe distance. Consider use of unmanned hose holder or monitor nozzles. Immediately withdraw all personnel from area in case of rising sound from venting safety device or discolouration of the container. Eliminate all ignition sources. Burning liquids may be moved by flushing with water to protect personnel and minimise property damage. Burning liquids may be extinguished by dilution with water.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Eliminate all sources of ignition in vicinity of spill or released vapour to avoid fire or explosion. Vapour explosion hazard, keep out of sewers.

Environmental Precautions
Avoid contamination of drinking water, natural water, ground water or any waterway.

Methods of Cleaning Up
Pump with explosion-proof equipment. If available, use foam to smother or suppress.

7. HANDLING AND STORAGE

Handling
No smoking, open flames or sources of ignition in handling and storage area. Use of non-sparking or explosion proof equipment may be necessary, depending upon type of operation. Containers, even those that have been emptied, can contain vapours. Do not cut, drill, grind, weld or perform similar operations on or near empty containers.

Storage
Minimise sources of ignition, such as static buildup, heat, spark or flame.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines
None established.

Engineering Controls
Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

Personal Protective Equipment

- Respiratory Protection
If respiratory irritation is experienced, use an approved air-purifying respirator.
Use a CE approved air-purifying respirator with cartridge/filter for: Organic vapours, type A (boiling point >65 deg.C).

- Protective Clothing
When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as face shield, gloves, boots, apron, or full body-suit will depend on operation. Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, gloves, boots, apron, or full body-suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly.

-Hand protection
Use chemical resistant gloves classified under standard EN 374: Protective gloves against chemicals and micro-organisms.

Examples of preferred glove barrier materials include:
Butyl rubber.
Chlorinated polyethylene.
Polyethylene.
Ethyl vinyl alcohol laminate ("EVAL").

Examples of acceptable glove barrier materials include:
Natural rubber ("latex").
Nitrile/butadiene rubber ("nitrile" or "NBR").
Polyvinyl chloride ("PVC" or "vinyl").
Viton.

When prolonged or frequently repeated contact may occur, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.

NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all requisite workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as the instructions/specifications provided by the glove supplier.

- Eye/Face Protection
Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: clear liquid
Colour	: colourless
Odour	: ethereal
Rel. density (water=1)	: 0.890-0.907
Vapour pressure	: 1 kPa (20 deg.C)
Boiling point/range	: 133 deg.C
Freezing point/range	: -90 deg.C
pH	: not applicable
Water solubility	: (20 deg.C) miscible in all proportions
Flash point	: 40 deg.C (PMCC)
Autoignition temperature	: 255 deg.C
Flammability-LFL	: 1.3 %vol/vol
Flammability-UFL	: 12.0 %vol/vol

10. STABILITY AND REACTIVITY

Chemical Stability
Stable under recommended storage conditions, see Section 7, Storage.

Conditions to Avoid
Product can oxidise at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Materials to Avoid
Avoid contact with: Strong acids. Strong oxidising agents.

Hazardous Decomposition Products
Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products may include and are not limited to: Aldehydes. Ketones. Organic acids.

Hazardous Polymerisation
Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

- Ingestion
Very low toxicity if swallowed. The oral LD50 for rats is >5000 mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury.

- Skin Contact
Prolonged skin contact with very large amounts may cause dizziness or drowsiness. The LD50 for skin absorption in rabbits is >8000 mg/kg for 24 hours.

- Inhalation
Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. A single excessive exposure may cause: Slight kidney effects.

Irritation

- Skin
Prolonged exposure is not likely to cause significant skin irritation. Repeated contact may cause drying or flaking of skin.

- Eyes
May cause moderate eye irritation. May cause moderate corneal injury. Vapours may cause eye irritation experienced as mild discomfort and redness.

- Inhalation
Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

Developmental/Reproductive Effects
Birth defects are unlikely. Even exposures having an adverse effect on the mother should have no effect on the fetus.

Mutagenicity
In vitro genetic toxicity studies were negative.

Carcinogenicity
No relevant information is available.

Other Information
Repeated excessive exposure may cause: Central nervous system effects. Kidney injury.

12. ECOLOGICAL INFORMATION

Mobility and Bioaccumulation Potential
Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Log octanol/water partition coefficient (log Pow) is estimated using a structural fragment method to be 0.00. Potential for mobility in soil is very high (Koc between 0 and 50). Soil organic carbon/water partition coefficient (Koc) is estimated to be 37. Henry's Law Constant (H) is estimated to be 9.29E-07 atm.m3/mol.

Degradation
Material is readily biodegradable. Passes OECD Test(s) for ready biodegradability. Biodegradation reached in DOC Die-Away Test (Modified AFNOR Test, OECD Test No. 301 A) after 28 days: >87 %. The rate constant for the vapour phase reaction with photochemically produced hydroxyl radicals at 25 deg.C is estimated to be 2.18E-11 cm3/molecule-sec. In the atmospheric environment the material is estimated to have a tropospheric half-life of 5.9 hours.

Aquatic Toxicity
Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50 greater than 100 mg/L in most sensitive species). Acute LC50 for fathead minnow (Pimephales promelas) is >10.000 mg/L. Acute LC50 for water flea Daphnia magna is >10.000 mg/L. The 16 hour growth inhibition EC50 in bacteria is >10.000 mg/L.

13. DISPOSAL CONSIDERATIONS

Any disposal practice must be in compliance with all local and national laws and regulations.

14. TRANSPORT INFORMATION

Road & Rail

Proper shipping name:	1987 ALCOHOLS, N.O.S. (1-ETHOXY-2-PROPANOL)		
Truck/Rail ADR/RID	: 3	Label	: 3
Classification Code	: F1		
Packing Group	: III		
Kemler Code	: 30	UN Number	: 1987
Tremcard Nr. CEFIC	: 30GF1-III		

Sea

Proper shipping name:	ALCOHOLS, N.O.S. (1-ETHOXY-2-PROPANOL)		
Sea - IMO/IMDG Class:	3	UN Nr : 1987	Label: 3
Packing Group	: III	EMS : 3-07	
Marine Pollutant	: N (Y/N)		

Air

Proper shipping name: ALCOHOLS, N.O.S. (1-ETHOXY-2-PROPANOL)

Air-ICAO/IATA Class	: 3	UN Nr : 1993	Label: FL
Sub Class	: -		
Packing Group	: III	Pack Instr. Passenger	: 309
		Pack Instr. Cargo	: 310

Remarks : Sample shipment not allowed by mail.

15. REGULATORY INFORMATION

EC Classification and User Label Information

Classification according to EC criteria.

Risk Phrases : Flammable (R10).

Safety Phrases : Avoid contact with skin (S24).

EINECS Status

This product is listed on EINECS.

16. OTHER INFORMATION

Risk-phrases in Section 2

R10 - Flammable.