

3 . Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
Ethylene glycol	107-21-1	60 - 100
Dipotassium phosphate	7758-11-4	1 - 3
Sodium nitrite	7632-00-0	0.1 - 1

4 . First aid measures

Eye contact	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Inhalation	Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Ingestion	Get medical attention immediately. Wash out mouth with water. Move exposed person to fresh air. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. Never give anything by mouth to an unconscious person.
Notes to physician	: Treatment with ethyl alcohol is indicated if toxic ingestion is suspected or if there is metabolic acidosis following ingestion of this product. Administer ethyl alcohol sufficient to maintain blood ethyl alcohol levels of above 100 mg/dL.

4-Methylpyrazole (Fomepizole, Antizole) is also a recognized antidote for this product.

5 . Fire-fighting measures

Flash point	: Open cup: 126.7°C (260.1°F)
Products of combustion	: Decomposition products may include the following materials: carbon dioxide carbon monoxide
Extinguishing media	
Suitable	: Use an extinguishing agent suitable for the surrounding fire.
Not suitable	: None known.
Special exposure hazards	: In a fire or if heated, a pressure increase will occur and the container may burst. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions	: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
Environmental precautions	: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6 . Accidental release measures

Methods for cleaning up : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Avoid exposure during pregnancy. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Product name

Ethylene glycol

Exposure limits

ACGIH TLV (United States, 1/2007).
 C: 100 mg/m³ 0 hour(s). Form: Aerosol
OSHA PEL 1989 (United States, 3/1989).
 CEIL: 125 mg/m³ 0 hour(s).
 CEIL: 50 ppm 0 hour(s).

Consult local authorities for acceptable exposure limits.

Preventive Measures : Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering controls : Use local exhaust ventilation to maintain airborne concentrations below the TLV. Suitable respiratory equipment should be used in cases of insufficient ventilation or where operational procedures demand it. For guidance on engineering control measures refer to publications such as the ACGIH current edition of 'Industrial Ventilation, a manual of Recommended Practice.'

Personal protection

Eyes

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.

Skin

: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory

: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

8 . Exposure controls/personal protection

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

9 . Physical and chemical properties

General information

Appearance

Physical state : Liquid. [Liquid.]

Color : Clear.

Odor : Slight

Odor threshold : Not available.

Important health, safety and environmental information

pH : 10.2

Boiling point : 197.8°C (388°F)

Melting point : -13.3°C (8.1°F)

Flash point : Open cup: 126.7°C (260.1°F)

Oxidizing properties : Not available.

Vapor pressure : 0.013 kPa (0.1 mm Hg)

Relative density : 1.13

Octanol/water partition coefficient : Not available.

Viscosity : Kinematic: 0.187 cm²/s (18.7 cSt at 20°C)

Vapor density : 2.1 [Air = 1]

VOC content : Not available.

10 . Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Hazardous decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

11 . Toxicological information

Toxicity data

Acute toxicity

Product/ingredient name	test	Species	Result	Exposure
Ethylene glycol	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>4000 mg/kg	-

Conclusion/Summary : Ethylene glycol: There is no direct evidence to suggest that ethylene glycol produces birth defects in humans under normal conditions of use and exposure. Ethylene glycol has caused teratogenic and fetotoxic effects in rats and mice following the administration of high doses in drinking water or by gavage even in the absence of maternal toxicity.

Potential acute health effects

11 . Toxicological information

- Ingestion** : Very toxic if swallowed. Aspiration hazard if swallowed. Can enter lungs and cause damage.
- Inhalation** : Slightly irritating to the respiratory system.
- Eyes** : Slightly irritating to the eyes.
- Skin** : Harmful in contact with skin.

Potential chronic health effects

- Target organs** : Contains material which may cause damage to the following organs: kidneys, the reproductive system, liver, bladder.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : Contains material which can cause heritable genetic effects.
- Teratogenicity** : Contains material which can cause birth defects.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

12 . Ecological information

Aquatic ecotoxicity

<u>Product/ingredient name</u>	<u>test</u>	<u>Result</u>	<u>Species</u>	<u>Exposure</u>
Ethylene glycol	-	Acute LC50 8050 mg/L Fresh water	Fish	96 hours

Biodegradability

<u>Product/ingredient name</u>	<u>test</u>	<u>Result</u>	<u>Dose</u>	<u>Inoculum</u>
Ethylene glycol	-	>60 % - Readily - 28 days	-	-

<u>Product/ingredient name</u>	<u>Aquatic half-life</u>	<u>Photolysis</u>	<u>Biodegradability</u>
Ethylene glycol	-	-	Readily

Bioaccumulative potential

<u>Product/ingredient name</u>	<u>LogP_{ow}</u>	<u>BCF</u>	<u>Potential</u>
Ethylene glycol	-1.36	-	low

- Environmental effects** : No known significant effects or critical hazards.


13 . Disposal considerations

- Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Transportation Emergency Number 1-800-424-9300 (CHEMTREC).

14 . Transport information

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Sodium nitrite)	9	III		Reportable quantity 100 lbs. (45.4 kg)
TDG Classification	Not regulated.					-
IMDG Class	Not regulated.		-	-		-
IATA-DGR Class	Not regulated.		-	-		-

PG* : Packing group

15 . Regulatory information**United States**

HCS Classification : Highly toxic material
Target organ effects

U.S. Federal regulations : **United States inventory (TSCA 8b)**: All components are listed or exempted.

CERCLA: Hazardous substances.

Components	Concentration	Section 304 CERCLA Hazardous Substance	CERCLA Reportable Quantity	Product Reportable Quantity
Ethylene glycol	97.1454%	Listed	5000	5147
Sodium nitrite	0.6%	Listed	100	16667

Release of more than any reportable quantity to the environment in a 24 hour period requires notification to the National Response Center (800-424-8802 or 202-426-2675).

This product does not contain nor is it manufactured with ozone depleting substances.

SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
Form R - Reporting requirements	: Ethylene glycol	107-21-1	97.1%

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

California Prop 65 : No ingredients listed.

Canada

WHMIS (Canada) : Class D-2A: Material causing other toxic effects (Very toxic).
CEPA (DSL) : All components are listed or exempted.

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

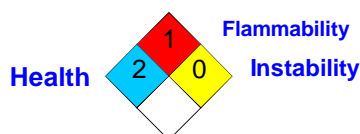
16 . Other information

Label requirements : MAY BE FATAL IF SWALLOWED. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE RESPIRATORY TRACT AND EYE IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. BIRTH DEFECT HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE BIRTH DEFECTS. CONTAINS MATERIAL WHICH CAN CAUSE HERITABLE GENETIC EFFECTS. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. THIS PRODUCT IS NOT TO BE USED IN FOOD, DRUG, COSMETIC, OR POTABLE WATER APPLICATIONS.

Hazardous Material Information System (U.S.A.) :

Health	*	2
Fire hazard		1
Reactivity		0

National Fire Protection Association (U.S.A.) :



Date of printing : 11/19/2008.

Date of issue : 19 November 2008

Date of previous issue : 6/28/2007

Notice to reader

While the information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.