

1 Identification of substance:

Product details:

Product name: Ethylene glycol

Stock number: A11591, L04633

Manufacturer/Supplier:

Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Emergency Phone: (978) 521-6300
CHEMTREC: (800) 424-9300
Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency information:

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:

Chemical characterization:

Description: (CAS#)

ethylene glycol (CAS# 107-21-1): 100%

Identification number(s):

EINECS Number: 203-473-3

Index number: 603-027-00-1

3 Hazards identification

Hazard description:



Xn Harmful

Information pertaining to particular dangers for man and environment

R 22 Harmful if swallowed.

Classification system

HMS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH	1
FIRE	1
REACTIVITY	1

Health (acute effects) = 1

Flammability = 1

Reactivity = 1

GHS label elements



Warning

3.1/4 - Harmful if swallowed.

Prevention:

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Response:

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

Rinse mouth.

Disposal:

Dispose of contents/container in accordance with local/regional/national/international regulations.

4 First aid measures

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.

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Seek immediate medical advice.

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After eye contact

Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing Seek immediate medical advice.

5 Fire fighting measures

Suitable extinguishing agents

Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Special hazards caused by the material, its products of combustion or resulting gases:

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures

Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Additional information:

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage

Handling

Information for safe handling:

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Information about protection against explosions and fires: No special measures required.

Storage

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility:

Store away from oxidizing agents.

Do not store together with acids.

Store away from strong bases.

Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

8 Exposure controls and personal protection

Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

Ethylene glycol

	ppm
Australia TWA	24
ACGIH TLV	100
Austria MAK	10 (skin)
Belgium	50-STEL
Denmark TWA	50

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Finland TWA	10 mg/m3; 20 mg/m3-STEL
France VLE	50
Germany MAK	10 (skin)
Hungary	50 mg/m3-STEL (skin)
Korea TLV	100
Netherlands MAC-TGG	50
Norway TWA	25
Polnd TWA	15 mg/m3; 50 mg/m3-STEL
Russia	5 mg/m3-STEL
Sweden NGV	10; 20-KTV (skin)
Switzerland MAK-W	50
United Kingdom TWA	60 mg/m3; 125 mg/m3-STEL (vapor)

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Additional information: No data

Personal protective equipment

General protective and hygienic measures

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Breathing equipment: Use suitable respirator when high concentrations are present.

Protection of hands: Impervious gloves

Eye protection: Safety glasses

Body protection: Protective work clothing.

9 Physical and chemical properties:

General Information	
Form:	Viscous liquid
Color:	Colorless
Odor:	Sweet
Change in condition	
Melting point/Melting range:	-12.4°C (10°F)
Boiling point/Boiling range:	196-198°C (385-388°F)
Sublimation temperature / start:	Not determined
Flash point:	110°C (230°F)
Ignition temperature:	410°C (770°F)
Decomposition temperature:	Not determined
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	3.2 Vol %
Upper:	53 Vol %
Vapor pressure at 20°C (68°F):	0.08 hPa
Density at 20°C (68°F):	1.1088 g/cm ³
Solubility in / Miscibility with	
Water:	Fully miscible
Viscosity:	
dynamic at 20°C (68°F):	21 mPas

10 Stability and reactivity

Thermal decomposition / conditions to be avoided:

Decomposition will not occur if used and stored according to specifications.

Materials to be avoided:

- Water/moisture
- Oxidizing agents
- Acids
- Bases

Dangerous reactions No dangerous reactions known

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Product name: Ethylene glycol
Dangerous products of decomposition: Carbon monoxide and carbon dioxide

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11 Toxicological information

Acute toxicity:
LD/LC50 values that are relevant for classification:

Oral	LD50	1650 mg/kg (cat)
		6600 mg/kg (guinea pig)
		5500 mg/kg (mouse)
		4700 mg/kg (rat)
Dermal	LDLo	389 mg/kg (human)
	LD50	9530 mg/kg (rabbit)
Inhalative	LC	>200 mg/m ³ /2H (mouse)
		>200 mg/m ³ /4H (rat)
Irritation of skin	mild	555 mg (rabbit)

Primary irritant effect:
on the skin: Irritant to skin and mucous membranes.

on the eye: Irritating effect.

Sensitization: No sensitizing effects known.

Other information (about experimental toxicology):

Mutagenic effects have been observed on tests with human lymphocytes.

Reproductive effects have been observed on tests with laboratory animals.

Mutagenic effects have been observed on tests with laboratory animals.

Subacute to chronic toxicity:

Ethylene glycol may cause central nervous system effects, stimulation followed by depression. Causes kidney damage which can be fatal. Exposure may also result in damage to the eyes, cardiovascular system, or liver. Animal tests indicate a possible risk of reproductive disorders and fetal malformation.

Subacute to chronic toxicity:

Brain and Coverings - increased intracranial pressure.

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Behavioral - alteration of classical conditioning.

Behavioral - general anesthetic.

Behavioral - convulsions or effect on seizure threshold.

Behavioral - excitement.

Behavioral - irritability.

Behavioral - somnolence (general depressed activity).

Behavioral - muscle weakness.

Behavioral - headache.

Behavioral - fluid intake.

Behavioral - coma.

Behavioral - tetany.

Behavioral - tremor.

Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - transaminases.

Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - dehydrogenases.

Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - multiple enzyme effects.

Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - phosphatases.

Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol).

Blood - changes in spleen.

Blood - other changes.

Blood - changes in bone marrow (not otherwise specified).

Brain and Coverings - other degenerative changes.

Brain and Coverings - recordings from specific areas of CNS.

Brain and Coverings - changes in brain weight.

Cardiac - change in rate.

Cardiac - other changes.

Gastrointestinal - ulceration or bleeding from small intestine.

Gastrointestinal - nausea or vomiting.

Gastrointestinal - other changes.

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Gastrointestinal - hypermotility, diarrhea.
Kidney, Ureter, Bladder - other changes in urine composition.
Kidney, Ureter, Bladder - renal function tests depressed.
Kidney, Ureter, Bladder - changes in both tubules and glomeruli.
Kidney, Ureter, Bladder - proteinuria.
Kidney, Ureter, Bladder - changes in tubules (including acute renal failure, acute tubular necrosis).
Kidney, Ureter, Bladder - other changes.
Kidney, Ureter, Bladder - changes in bladder weight.
Kidney, Ureter, Bladder - urine volume decreased.
Liver - other changes.
Liver - liver function tests impaired.
Liver - hepatitis (hepatocellular necrosis), zonal
Liver - changes in liver weight.
Lungs, Thorax, or Respiration - acute pulmonary edema.
Lungs, Thorax, or Respiration - chronic pulmonary edema.
Lungs, Thorax, or Respiration - other changes.
Lung, Thorax, or Respiration - cough.
Lungs, Thorax, or Respiration - respiratory stimulation.
Nutritional and Gross Metabolic - metabolic acidosis.
Nutritional and Gross Metabolic - changes in phosphorus.
Nutritional and Gross Metabolic - changes in calcium.
Nutritional and Gross Metabolic - weight loss or decreased weight gain.
Peripheral Nerve and Sensation - sensory change involving peripheral nerve.
Related to Chronic Data - death.
Reproductive - Paternal Effects - testes, epididymis, sperm duct.
Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).
Reproductive - Specific Developmental Abnormalities - other developmental abnormalities.
Reproductive - Effects on Newborn - growth statistics (e.g., reduced weight gain).
Reproductive - Effects on Newborn - live birth index (measured after birth)
Reproductive - Specific Developmental Abnormalities - craniofacial (including nose and tongue).
Reproductive - Specific Developmental Abnormalities - musculoskeletal system.
Reproductive - Effects on Newborn - delayed effects.
Reproductive - Effects on Newborn - stillbirth.
Reproductive - Fertility - pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea)
Reproductive - Fertility - post-implantation mortality (e.g. dead/or resorbed implants per total number of implants).
Reproductive - Effects on Newborn - viability index (e.g., # alive at day 4 per # born live).
Reproductive - Fertility - other measures of fertility.
Reproductive - Effects on Newborn - sex ratio.
Reproductive - Specific Developmental Abnormalities - skin and skin appendages.
Reproductive - Specific Developmental Abnormalities - blood and lymphatic systems (including spleen and marrow).
Reproductive - Maternal Effects - uterus, cervix, vagina.
Reproductive - Maternal Effects - other effects.
Reproductive - Effects on embryo or fetus - maternal/fetal exchange.
Reproductive - Fertility - litter size (e.g. # fetuses per litter; measured before birth).
Sense Organs and Special Senses (Eye) - conjunctive irritation.
Sense Organs and Special Senses (Eye) - lacrimation.
Sense Organs and Special Senses (Eye) - corneal damage.
Sense Organs and Special Senses (Eye) - effect, not otherwise specified.
Sense Organs and Special Senses (Eye) - mydriasis (pupillary dilation).
Vascular - BP lowering not characterized in autonomic section.
Vascular - other changes.

Additional toxicological information:

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals.

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12 Ecological information:

Additional ecological information:

General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations

Product:

Recommendation Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

Not a hazardous material for transportation.

DOT regulations:

Hazard class: None

Hazardous substance: 5000 lbs, 2270 kg

Land transport ADR/RID (cross-border)

ADR/RID class: None

Maritime transport IMDG:

IMDG Class: None

Marine pollutant: No

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: None

Transport/Additional information: Not dangerous according to the above specifications.

15 Regulations

Product related hazard informations:

Hazard symbols:

Xn Harmful

Risk phrases:

22 Harmful if swallowed.

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

Information about limitation of use:

For use only by technically qualified individuals.

This substance is subject to a Significant New Use Rule (SNUR) promulgated under Section 5(a)(2) of the Toxic Substances Control Act (TSCA). See 40 CFR 721. This product is being sold for research and development use only for the significant new use listed.

This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.

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Contact: Zachariah Holt

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Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

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