

Aluminum sulfate	10043-01-3 233-135-0	<5	Xi R36 R52/53	Eye Irritation Category 2A (H319) Aquatic Acute Category 3 (H402) Aquatic Chronic Category 3 (H412)
Aluminum ammonium sulfate	7784-26-1 232-055-3	<3	R52/53	Aquatic Acute Category 3 (H402) Aquatic Chronic Category 3 (H412)

See Section 16 for full text of GHS and EU Classifications.

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

First Aid

Eye contact: Immediately flush eye with water while lifting the upper and lower lids. Get medical attention if irritation develops.

Skin contact: Remove contaminated clothing immediately. Wash thoroughly with soap and water. Get medical attention if irritation develops. Launder contaminated clothing before reuse.

Inhalation: Remove victim to fresh air. Get medical attention if symptoms persist.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. If the victim is conscious and alert, have them rinse their mouth with water. Never give anything by mouth to an unconscious or drowsy person. Get immediate medical attention.

See Section 11 for more detailed information on health effects.

4.2 Most Important symptoms and effects, both acute and delayed: May cause eye irritation. Prolonged skin contact may cause mild skin irritation. Vapors or mists may cause respiratory irritation. May be harmful if swallowed.

4.3 Indication of any immediate medical attention and special treatment needed: Get immediate medical attention in case of ingestion.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing Media:

Use any media that is suitable for the surrounding fire.

5.2 Special Hazards Arising from the Substance or Mixture

Unusual Fire and Explosion Hazards: None known.

Combustion Products: Oxides of carbon, nitrogen and sulfur.

5.3 Advice for Fire-Fighters: Self-contained breathing apparatus and protective clothing should be worn in fighting large fires involving chemicals. Determine the need to evacuate or isolate the area according to your local emergency plan. Use water spray to keep fire exposed containers cool.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures:

Wear appropriate protective equipment.

6.2 Environmental Precautions:

Prevent entry in storm sewers and waterways. Report spill as required by local and federal regulations.

6.3 Methods and Material for Containment and Cleaning Up:

Stop spill at the source if it is safe to do so. Absorb with an inert material and place into an appropriate container for disposal.

6.4 Reference to Other Sections:

Refer to Section 8 for personal protective equipment, and Section 13 for disposal information.

SECTION 7: HANDLING and STORAGE

7.1 Precautions for Safe Handling:

Avoid contact with eyes skin and clothing. Avoid breathing vapors or mists. Use only with adequate ventilation. Wash thoroughly after handling. Remove contaminated clothing and laundry before re-use. Keep containers closed when not in use.

7.2 Conditions for Safe Storage, Including any Incompatibilities:

Protect containers from physical damage. Store in a cool area. Keep containers closed when not in use. Store away from oxidizers and other incompatible materials.

Empty containers retain product residues. Follow all SDS precautions in handling empty containers

7.3 Specific end use(s):

Industrial uses: None identified

Professional uses: Biological stain.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters:

Chemical Name	US OEL	EU IOEL	UK OEL	Germany OEL
Ethylene Glycol	100 ppm TWA ACGIH TLV	10 ppm TWA (particulate) 20 ppm TWA (vapor) 40 ppm STEL	20 ppm TWA 40 ppm STEL	10 ppm TWA 20 ppm STEL
Aluminum sulfate	None Established	None Established	2 mg/m ³ TWA (as Al)	None Established
Aluminum ammonium sulfate	None Established	None Established	2 mg/m ³ TWA (as Al)	None Established

Refer to local or national authority for exposure limits not listed above.

Chemical Name	Biological Limit Value
Ethylene Glycol	None Established
Aluminum sulfate	None Established
Aluminum ammonium sulfate	None Established

8.2 Exposure Controls:

Recommended Monitoring Procedures: Ethylene glycol: Collection on glass fiber filter and XAD tubes with analysis by gas chromatography. Aluminum: collection on filters with analysis by atomic emission spectrophotometry or ICP.

Appropriate Engineering Controls: Use with adequate general or local exhaust ventilation to maintain exposure levels below the occupational exposure limits.

Personal Protective Measurers

Eye/face Protection: Wear safety glasses or chemical goggles.

Skin Protection: Impervious clothing as needed to avoid skin contact.

Hands: Wear latex or nitrile gloves if needed to avoid contact.

Respiratory Protection: None needed with adequate ventilation. If the occupational exposure limit is exceeded, use an approved organic vapor/dust/mist respirator. Selection of respiratory protection depends on the contaminant type, form and concentration. Select in accordance with OSHA 1910.134 or other applicable regulations and good Industrial Hygiene practice.

Other protection: Suitable washing facilities should be available.

SECTION 9: PHYSICAL and CHEMICAL PROPERTIES

9.1 Information on basic Physical and Chemical Properties

Appearance: Deep cherry red liquid

Odor Threshold: Not applicable

Melting/Freezing Point: -16°C (-70°F)

Flash Point: : >100°C (212°F)

Lower Flammability Limit: 3.2% (ethylene glycol)

Upper Flammability Limit: Not available

Vapor Density(Air=1): 2.1 (ethylene glycol)

Solubility: Soluble in water

Autoignition Temperature: 398°C (748°F) (ethylene glycol)

Viscosity: Not applicable

Oxidizing Properties: None

Molecular Formula: Mixture

Odor: No odor

pH: 2.0-3.0

Boiling Point: 87°C (190°F)

Evaporation Rate: Same as water

Vapor Pressure: Same as water

Relative Density: 1.06

Octanol/Water Partition Coefficient: Not available

Decomposition Temperature: Not established

Explosive Properties: Not explosive

Specific Gravity (H₂O= 1): 1.06

Molecular Weight: Mixture

9.2 Other Information: None available

SECTION 10: STABILITY and REACTIVITY

10.1 Reactivity: This material is not reactive under normal conditions.

10.2 Chemical Stability: Normally stable.

10.3 Possibility of Hazardous Reactions: Not expected to be reactive.

10.4 Conditions to Avoid: Avoid excessive heat.

10.5 Incompatible Materials: May react violently with chlorosulfonic acid, oleum, sulfuric acid, perchloric acid or phosphorus pentasulfide, bases and strong oxidizing agents.

10.6 Hazardous Decomposition Products: Thermal breakdown of this product during fire or very high heat conditions may evolve the following decomposition products: oxides of carbon, nitrogen and sulfur and ammonia gas. Reaction with bases will release ammonia.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects:

Potential Health Effects:

Eye Contact: May cause irritation with redness, tearing and swelling.

Skin contact: Prolonged skin contact may cause irritation or drying.

Inhalation: Vapors or mists may cause upper respiratory tract irritation with sneezing and coughing. High concentrations of vapors may cause nervous system effects.

Ingestion: Swallowing may cause gastrointestinal effects including gastrointestinal irritation, nausea and diarrhea. Large amounts may cause metabolic acidosis and kidney damage.

Acute toxicity:

Ethylene Glycol: Oral rat LD50 4,700 mg/kg; Oral mouse LD50 5,500 mg/kg

Aluminum sulfate: Oral mouse LD50 >5,000 mg/kg

Aluminum ammonium sulfate: No data available.

Skin corrosion/irritation: No data available for mixture. Aluminum sulfate is not irritating in rabbits.

Eye damage/ irritation: No data available for mixture. Ethylene glycol was shown to be non-irritating in rabbit eyes. Aluminum sulfate is a moderate to severe eye irritant in rabbits.

Respiratory Irritation: No data available for mixture. High concentrations of mists may be irritating to the respiratory system.

Respiratory Sensitization: No data available for mixture. None of the components are respiratory sensitizers.

Skin Sensitization: No data available for mixture. None of the components are skin sensitizers.

Germ Cell Mutagenicity: No data available for mixture. None of the components are germ cell mutagens.

Carcinogenicity: No data available for mixture. None of the components of this product are listed as carcinogens by OSHA, ACGIH, IARC, NTP, or the EU Dangerous Substances Directive.

Reproductive Toxicity: No data available for mixture. Ethylene glycol has been shown to cause developmental defects including cleft palates, facial defects, neural tube closure defects and skeletal abnormalities in studies with laboratory animals. Aluminum sulfate administered to rats during pregnancy resulted in developmental delays in the pups at doses of 0.2%, 1% and 3% in drinking water.

Specific Target Organ Toxicity:

Single Exposure: Ingestion of ethylene glycol have been shown to cause abdominal discomfort or pain, nausea, vomiting, dizziness, drowsiness, malaise, blurring of vision, irritability, back pain, decrease in urine output, kidney failure, and central nervous system effects, including irregular eye movements, convulsions and coma.

Repeat Exposure: Prolonged overexposure to ethylene glycol has been shown to cause kidney and liver damage in mice and rats. In rats 5% aluminum sulfate in diet decrease inorganic phosphorus in serum and phosphorus in femoral bone. Aluminum sulfate has also demonstrated neurotoxicity in animal studies.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity:

Ethylene glycol: 96 hr LC50 fathead minnow 49,000-57,000 mg/L; EC50 daphnia magna 46,300 mg/L; 72 hr EC50 Selenastrum capricornut (algae) 6,500-13,000 mg/L
 Aluminum Sulfate: LC50 Pimephales promelas (Fathead minnow) 33.9 mg/L/96 hr; LC50 Carassius auratus (Goldfish) about 100 mg/L/96 hr
 Aluminum Ammonium Sulfate: LC50 Daphnia magna (Water flea) 59.6 mg/L/48 hr

12.2 Persistence and degradability: Ethylene glycol is readily biodegradable in screening tests. Biodegradability is not applicable to inorganic materials such as aluminum sulfate and aluminum ammonium sulfate.

12.3 Bioaccumulative Potential: The BCF for ethylene glycol is 10 in fish which suggests the potential for bioaccumulation in aquatic organisms is low.

12.4 Mobility in Soil: Ethylene glycol is expected to have a very high mobility in soil.

12.5 Results of PVT and vPvB assessment: Not required.

12.6 Other Adverse Effects: No data available.

SECTION 13: DISPOSAL CONSIDERATIONS
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13.1 Waste Treatment Methods:

Dispose in accordance with local, state and national regulations.

SECTION 14: TRANSPORTATION INFORMATION

	14.1 UN Number	14.2 UN Proper Shipping Name	14.3 Hazard Class(s)	14.4 Packing Group	14.5 Environmental Hazards
US DOT		Not Regulated			
Canadian TDG		Not Regulated			
EU ADR/RID		Not Regulated			
IMDG		Not Regulated			
IATA/ICAO		Not Regulated			

14.6 Special Precautions for User: None

14.7 Transport in Bulk According to Annex III MARPOL 73/78 and the IBC Code: Not determined.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

INTERNATIONAL INVENTORIES

EPA TSCA INVENTORY: All of the components are listed on the TSCA inventory.

CANADIAN ENVIRONMENTAL PROTECTION ACT: All of the ingredients are listed on the Canadian Domestic Substances List.

EUROPEAN UNION: All of the components of this product are listed on the European Inventory of New and Existing Chemical Substances (EINECS) inventory.

AUSTRALIA: All of the ingredients of this product are listed on the Australian Inventory of Chemical Substances (AICS).

CHINA: All of the ingredients of this product are listed on the Inventory of Existing Chemical Substance in China (IECSC).

NEW ZEALAND: All of the components of this product are listed on the New Zealand Inventory of Chemicals (NzIoC).

PHILIPPINES: All of the components of this product are listed on the Philippine Inventory of Chemicals and Chemical Substances (PICCS).

U.S. REGULATIONS

OSHA HAZARD CLASSIFICATION: Irritant, Target Organ Effects

EPA SARA 302: This product does not contain chemicals regulated under SARA Section 302.

CERCLA Section 103: The RQ for the product, based on the RQ for Ethylene Glycol (30% maximum) of 5000 lbs, is 16,666 lbs. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

EPA SARA 311 HAZARD CLASSIFICATION: Acute Health, Chronic Health

EPA SARA 313: This product contains the following chemicals that are regulated under SARA Title III, section 313:
Ethylene Glycol 107-21-1 <30%

CALIFORNIA PROPOSITION 65: This product contains the following chemicals which are known to the State of California to cause cancer, reproductive toxicity or birth defects (developmental toxicity): None known

INTERNATIONAL REGULATIONS

WHMIS CLASSIFICATION: Class D-2-A

SECTION 16: OTHER INFORMATION

Revision History: Updated Logo and website.

EU Classes and Risk Phrases for Reference (See Sections 2 and 3)

Xn Harmful

Xi Irritant

R22 Harmful if swallowed.

R36 Irritating to eyes.

R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

CLP/GHS Classification and H Phrases for Reference (See Section 3)

H302 Harmful if swallowed.

H319 Causes serious eye irritation.

H402 Harmful to aquatic life.

H412 Harmful to aquatic life with long-lasting effects.

NFPA Rating: Health: 1 Fire: 0 Instability: 0

HMIS Rating: Health: 2 Fire: 0 Physical Hazard: 0

This Safety Data Sheet has been prepared in accordance with the REACH regulation in the EU and the Globally Harmonized System for the Classification and Labelling of Chemicals (GHS). It complies with the requirements of the Canadian Controlled Products Regulations and US 29CFR 1910.1200. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries makes any warranty of merchantability or any other warranty, expressed or implied, which respect to such information, and we assume no liability resulting from its use. In no event shall Leica Biosystems be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages resulting from use of or reliance upon this information.

