CORCO CHEMICAL CORPORATION

Manufacturers of ACS Reagents and Semiconductor Grade Chemicals

SAFETY DATA SHEET

Ethyl Alcohol (Denatured)
Reagent Alcohol, Anhydrous
ACS Reagent Grade

1. Identification

Product identifier: Alcohol, Anhydrous, ACS Reagent
Product Code Number: 1002
Trade Name: Alcohol, Anhydrous, Reagent
Synonyms: Reagent Alcohol, Ethyl Alcohol, Ethanol, Denatured Alcohol
Chemical Formula: C2H5OH

Product Use: Process chemical, Laboratory and scientific research and development
Restrictions on use: None known.

Company Identification: Corco Chemical Corporation
299 Cedar Lane
Fairless Hills, PA 19030
Phone: 215-295-5006
Fax: 215-295-0781

24 Hour Emergency Telephone Number:
CHEMTREC (U.S.): 1-800-424-9300
CHEMTREC (Outside U.S.): 1-703-527-3887

SDS Date of Preparation: 12/3/19

2. Hazard(s) identification

Classification of the Substance or Mixture:
Flammable Liquid Category 2
Acute Oral Toxicity Category 4
Eye Irritant Category 2
Specific Target Organ Toxicity Single Exposure Category 1

Label Elements:

Danger!

Hazard Statements:
H225 Highly flammable liquid and vapor.
H302 Harmful if swallowed.
H319 Causes serious eye irritation.
H370 Causes damage to optic nerve and central nervous system.

Precautionary Statements:
P210 Keep away from heat, sparks, open flames, and hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground or bond container and receiving equipment.
P241 Use explosion-proof electrical, ventilating, or lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe mist, vapors, or spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear eye protection.
P308+P311 IF exposed or concerned: Call a POISON CENTER or doctor.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical attention.
P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
P330 Rinse mouth.
P370+P378 In case of fire: Use water spray, dry chemical, alcohol foam, or carbon dioxide to extinguish.
P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P501 Dispose of contents and container in accordance with local and national regulations.

Other Hazards: None known

3. Composition/information on ingredients

Ingredient	CAS Number	Percent	Hazardous Chemical

Ethyl Alcohol (Ethanol)	64-17-5	90%	Yes
Methyl Alcohol (Methanol)	67-56-1	5%	Yes
Isopropyl Alcohol (Isopropanol)	67-63-0	5%	Yes

4. First-aid measures

Inhalation: If symptoms develop move victim to fresh air. Get medical attention if symptoms develop.

Skin contact: Flush thoroughly with water. Get medical attention if irritation or symptoms of exposure develop. Remove and launder contaminated clothing before re-use.

Eye contact: Immediately flush eyes with large quantities of water for several minutes, while holding the eyelids apart. Remove contact lenses if easy to do so. Continue rinsing. Get medical attention if irritation persists.

Ingestion: Rinse mouth with water. Do not induce vomiting unless directed to do so by a medical professional. Get medical attention.

Most important symptoms/effects, acute and delayed: Direct contact with liquid may cause moderate eye irritation. Inhalation of mists or vapors may cause headache, dizziness, nausea and other symptoms of central nervous system depression. Harmful if swallowed. May cause blindness if swallowed. Prolonged exposure to methanol may cause optic nerve and nervous system damage.

Indication of immediate medical attention and special treatment, if necessary: Immediate medical attention is not required.

5. Fire-fighting measures

Suitable (and unsuitable) extinguishing media: Use water spray, alcohol-resistant foam, carbon dioxide and dry chemical.

Specific hazards arising from the chemical: Highly flammable liquid and vapors. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Vapors may form explosive mixtures with air in confined areas. Sensitive to static discharge.

Special protective equipment and precautions for fire-Fighters: Wear an approved, positive pressure, self-contained breathing apparatus and full protective clothing. Water

spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Evacuate spill area and keep unprotected personnel away. Remove all ignition sources such as open flames, spark producing equipment, pilot lights, etc. Minimize generation of static electricity which may cause sparking. Prevent contact with the eyes, skin and clothing. Wear appropriate protective clothing. Do not breathe vapors or mists. Ventilate area with explosion proof equipment.

Methods and materials for containment and cleaning up: Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth,) and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and storage

Precautions for safe handling: Avoid contact with the eyes, skin and clothing. Wear protective clothing and equipment as described in Section 8. Do not breathe vapors or mists. Use with adequate ventilation. Wash hands with soap and water after use. Keep product away from heat, sparks, flames and all other sources of ignition. No smoking in storage or use areas. Keep containers closed when not in use. Use with non-sparking tools and explosion proof equipment. Electrically bond and ground containers for transfer.

Conditions for safe storage, including any incompatibilities: Store in a cool, dry, well ventilated location away from heat and open flames. Keep away from incompatible materials. Protect container from physical damage. Keep containers closed when not in use. Keep out of the reach of children.

8. Exposure controls/personal protection

Chemical Name	Exposure Limits
Ethanol	1000 ppm STEL ACGIH TLV 1000 ppm TWA OSHA PEL
Methanol	200 ppm TWA, 250 ppm STEL ACGIH TLV (skin) 200 ppm TWA OSHA PEL

Isopropanol	200 ppm TWA, 400 ppm STEL ACGIH TLV 400 ppm TWA OSHA PEL

Appropriate engineering controls: A system of local and / or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Use explosion proof electrical equipment and wiring where required. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

Personal protective equipment:

Respiratory protection: If the exposure limit is exceeded and engineering controls are not feasible, an approved respirator with dust/mist cartridges or supplied air respirator should be used. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection: Use chemical safety goggles where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and chemical properties

Appearance: Clear
Physical state: Liquid
Form: Liquid
Color: Colorless
Odor: Alcoholic
Odor threshold: Not Available
pH: Not Available
Melting point/freezing point: -169°F (-112.005°C) estimated
Initial boiling point and boiling range: 172.4°F (78°C)
Flash point: 55.40 °F (13.00°C)
Evaporation rate: Not available
Flammability (solid, gas): Not applicable
Upper / Lower Flammability or Explosive Limits: LEL: 3.5% estimated, UEL: 24% estimated
Vapor pressure: 82.645284 hPa estimated
Vapor density: 1.6
Relative density: Not Available
Solubility(ies): Miscible
Partition coefficient (n-octanol/water): Not Available

Auto-ignition temperature: 677.21°F (358.45°C) estimated
Decomposition temperature: Not Available
Viscosity: Not Available

Other information:
Density: 0.79 g/cm3
Flammability class: Flammable IB estimated
Flash point class: Flammable IB
Percent volatile: 100 %
Specific gravity: 0.79
VOC (Weight %):100 % estimated

10. Stability and reactivity

Reactivity: Not reactive under normal conditions of use.

Chemical stability: Stable under ordinary conditions of use and storage.

Possibility of hazardous reactions: Hazardous polymerization will not occur.

Conditions to avoid: Keep away from heat, sparks, flames and other sources of ignition.

Incompatible materials: Strong oxidizing agents, acids, alkali metals, ammonia, hydrazine, peroxides, sodium, acid anhydrides, calcium hypochlorite, chromyl chloride, nitrosyl perchorate, bromine pentafluoride, perchloric acid, silver nitrate, mercuric nitrate, potassium tert-butoxide, magnesium perchlorate, acid chlorides, platinum, uranium hexafluoride, silver oxide, iodine heptafluoride, acetyl bromide, disulfuryl difluoride, tetrachlorosilane+water, acetyl chloride, permanganic acid, ruthenium (III) oxide, uranyl perchlorate, and potassium dioxide.

Hazardous decomposition products: Carbon Dioxide and Carbon Monoxide may form when heated to decomposition.

11. Toxicological information

Potential Health Effects:

Inhalation: Inhalation of mists or vapors may cause nose and throat irritation with the possibility of central nervous system depression. Symptoms of central nervous system depression include headache, dizziness, drowsiness, nausea and unconsciousness.

Skin Contact: Prolonged contact may cause skin irritation with drying and dermatitis.

Eye Contact: Direct contact with eyes may cause moderate eye irritation.

Ingestion: Harmful if swallowed. Swallowing may cause gastrointestinal irritation and central nervous system depression with symptoms similar to those described under inhalation. Methanol is very slowly eliminated from the body. Ingestion of methanol may cause nervous system effects, blurred vision, blindness, coma and death.

Chronic Exposure: Prolonged occupational overexposure to methanol may cause effects on vision, hearing and damage to the nervous system, blood system, liver and kidneys. Prolonged intentional abuse of methanol may damage many organ systems including: central and peripheral nervous systems, vision, hearing, liver, kidneys, lymphoid system, heart and blood. Such abuse has been associated with brain damage characterized by disturbances in gait, personality changes and loss of memory. Methanol has been found to cause adverse reproductive effects and/or birth defects in studies with laboratory animals.

Aggravation of Pre-existing Conditions: Persons with pre-existing eye and skin disorders or impaired respiratory function may be more susceptible to the effects of this material.

Carcinogenicity: None of the components of this product are listed as a carcinogen or suspected carcinogen by OSHA, IARC, and NTP.

Reproductive Effects: Reproductive harm is not expected from this product.

Mutagenic Effects: Not expected to cause mutagenic activity.

Acute Toxicity:
Ethanol: Oral rat LD50: 10470 mg/kg, Inhalation rat LC50: 124.7 mg/L/4 hr, Skin rat LD50: 158000 mg/kg
Methanol: Oral rat LD50: 5628 mg/kg, Skin rabbit LD50: 15800 mg/kg, Inhalation rat LC50: 64000 ppm/4hr
Isopropyl Alcohol: Oral rat LD50: 4396 mg/kg, Dermal rabbit LD50: 12800 mg/kg, Inhalation rat LC50: 16970 mg/L/4hr

12. Ecological information

Exotoxicity:

Product	**Species**	**Test Results**
Methanol	Fathead minnows	29.4 g/L 96 hr LC50
	Rainbow trout	19,000 mg/L 96 hr LC50
Isopropyl Alcohol	Lepomis macrochirus	>1400 mg/L 96 hr LC50
	Daphnia	13299 mg/L 48 hr LC50
	Algae	1000 mg/L 72 hr IC50

This material is not expected to be toxic to aquatic life.

Persistence and Degradability: Methanol: Readily biodegradable - 83-91% after 3days. Isopropanol: Readily biodegradable. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals.

Bioaccumulative Potential: This material is not expected to significantly bioaccumulate.

Mobility in Soil: When released into the soil, this material is expected to quickly evaporate.

Other adverse effects: None known.

13. Disposal considerations

Disposal instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations: Not available.

Hazardous waste code D001: Waste Flammable material with a flash point <140 F

Waste from residues / unused products: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transportation Information

	UN Number	**Proper shipping name**	**Hazard Class**	**Packing Group**	**Environmental Hazard**
US DOT	UN1987	Alcohols n.o.s.*	3	II	Not applicable
IMDG	UN1987	Alcohols n.o.s.	3	II	Not applicable
IATA	UN1987	Alcohols n.o.s.	3	II	Not applicable

*** Hazardous Substance (49CFR172.101):** Methanol (RQ5,000 lbs)- (100,000 lbs. product)

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

Special Precautions for User: Not applicable

15. Regulatory information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not on regulatory list.

CERCLA Hazardous Substance List (40 CFR 302.4)
This product has a Reportable Quantity (RQ) of 100,000 lbs. (based on the RQ for Methanol of 5,000 lbs present at 5%). Releases above the RQ must be reported to the National Response Center. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories:
SARA 311/312
Refer to Section 2 for OSHA Hazard Classification.

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements:
Methanol 67-56-1 5%

SARA 302 Extremely hazardous substance
None

Other federal regulations:

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
METHYL ALCOHOL (CAS 67-56-1)
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
Safe Drinking Water Act (SDWA)
Not regulated.
Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number
Not listed.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Not regulated.

DEA Exempt Chemical Mixtures Code Number

Not regulated.

Food and Drug Administration (FDA)

Not regulated.

US state regulations California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This product can expose you to chemicals including Methanol, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

US. Massachusetts RTK - Substance List

ETHYL ALCOHOL (CAS 64-17-5)
ISOPROPYL ALCOHOL (CAS 67-63-0)
METHYL ALCOHOL (CAS 67-56-1)

US. New Jersey Worker and Community Right-to-Know Act

METHYL ALCOHOL (CAS 67-56-1) 500 LBS

US. Pennsylvania RTK - Hazardous Substances

ETHYL ALCOHOL (CAS 64-17-5)
ISOPROPYL ALCOHOL (CAS 67-63-0)
METHYL ALCOHOL (CAS 67-56-1)

US. Rhode Island RTK

ISOPROPYL ALCOHOL (CAS 67-63-0)
METHYL ALCOHOL (CAS 67-56-1)

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT):

METHYL ALCOHOL (CAS 67-56-1)

International Inventories:

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List	Yes

	(ECL)	
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

16. Other information

Date of Current Revision: 12/3/19
Revision Summary: Updated all sections.
Date of Previous Revision: N/A

Disclaimer - The information in the SDS is based on the data available at the time. While believed to be accurate, Corco does not claim it to be all inclusive. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. It is not intended to provide product performance or applicability information, and no express or implied warranty of any kind is made with respect to the product, the underlying product data, or the information contained herein. We will not provide advice on such matters, or be responsible for any injury or damage resulting from the use of the product described herein.