MATERIAL SAFETY DATA SHEET

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name: Denatured Fuel Ethanol

Synonyms: Ethanol, ethyl alcohol

Empirical Formula: C_2H_6O

Molecular Weight: 46.07

Manufacturer:
Cargill, Inc.
1 Cargill Drive
Eddyville, Iowa 52553

Emergency Telephone: 1-800-424-9300
1-703-527-3887

Non-Emergency Telephone: 1-888-734-3627

2 HAZARDS IDENTIFICATION

Emergency Overview

Physical State: Liquid
Color: Colorless
Odor: Mild characteristic

WARNING!
Flammable liquid and vapor.
May cause severe eye irritation.
Causes moderate skin irritation.
Mist or vapor can cause irritation to eyes and the respiratory system.
High vapor concentration may cause central nervous system effects.

Potential Health Effects

Inhalation: Mist or vapor can cause irritation to the respiratory system and central nervous system effects. Exposure may cause coughing, breathlessness, nausea and dizziness.

Eye Contact: May cause severe eye irritation. Exposure may cause irritation, redness, and tearing.

Skin Contact: Causes moderate skin irritation. Exposure may cause redness, itching, and inflammation.

Ingestion: May cause irritation. Exposure may cause vomiting, nausea, and diarrhea.

Chronic Health Effects: Ethanol may cause reproductive effects. Repeated or prolonged exposure to the substance can produce target organ damage.

Target Organ(s): Eyes, skin, kidney, respiratory system, central nervous system

OSHA Regulatory Status: Hazardous

3 COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS- No.	Concentration
ethanol	64-17-5	95.24 – 98.04%
natural gasoline	8006-61-9	1.96 – 4.76%

Components not listed are not hazardous or are below reportable limits.

4 FIRST AID MEASURES

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Eye Contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention immediately.

Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean contaminated shoes before reuse.

Ingestion: If swallowed, DO NOT induce vomiting. Get medical attention immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

5 FIRE-FIGHTING MEASURES

Extinguishing Media: Water spray, dry chemicals, carbon dioxides, alcohol foam

Unsuitable Extinguishing Media: Not applicable

Special Fire Fighting Procedures: Wear self-contained breathing apparatus and protective clothing. Use water spray to keep fire-exposed containers cool. Use water with caution. Water may be ineffective in fighting the fire. Prevent buildup of vapors or gases to explosive concentrations.

Unusual Fire & Explosion Hazards: The fire could easily be spread by the use of water in an area where the water could not be contained. Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back.

Hazardous Combustion Products: Carbon oxides

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate personal protective equipment. See Section 8.

Spill Cleanup Methods: Small Liquid Spills: Eliminate all ignition sources. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Large Spillages: Eliminate all ignition sources. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas.

7 HANDLING AND STORAGE

Handling: Personal Precautionary Measures: Wear appropriate personal protective equipment. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling.

Prevention of Fire and Explosion: Keep away from heat and ignition sources. Keep from contact with oxidizing materials.

Storage: Keep container tightly closed and store in well-ventilated areas.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

Chemical Name	Source	Type	Exposure Limits	Notes
Ethanol	ACGIH	TWA	1000 ppm	Irritation
Ethyl alcohol	NIOSH	IDLH	3300 ppm	--
Ethyl alcohol	OSHA	TWA	1000 ppm	--
Ethyl alcohol	Cal OSHA	TWA	1000 ppm	--
Ethanol (ethyl alcohol)	Alberta	TWA	1000 ppm	Irritation
Ethanol	British Columbia	TWA	1000 ppm	--
Ethanol	Ontario	TWAEV	1000 ppm	--
Ethyl alcohol	Quebec	TWA	1000 ppm	--
Alcohol etilio (etanol)	Mexico	TWA	1000 ppm	--
Gasoline	OSHA	TWA	300 ppm	--
Gasoline	OSHA	STEL	500 ppm	--
Gasoline	Cal OSHA	TWA	300 ppm	--
Gasoline	Cal OSHA	STEL	500 ppm	--
Gasoline	Alberta	TWA	300 ppm	--
Gasoline	Alberta	STEL	500 ppm	--
Gasoline	Quebec	TWA	300 ppm	--
Gasoline	Quebec	STEL	500 ppm	--

Engineering Controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures,

local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Respiratory Protection: If engineering controls do not keep airborne concentrations below established exposure limits, wear a NIOSH-approved respirator that has been selected by a technically qualified person for the specific work conditions where there may be potential for airborne exposure. If respirators are used, OSHA requires compliance with its respiratory protection program (29 CFR 1910.134). Contact health and safety professionals for specific information.

Eye Protection: Wear splash goggles and a face shield where a splash hazard exists. Wear a full-face respirator, if needed.

Hand Protection: Wear chemical-resistant gloves. Contact health and safety professionals for additional information.

Skin Protection: Wear disposable coveralls, lab coat, or apron to prevent skin contact.

Hygiene Measures: Eyewash, washing facility

9 PHYSICAL AND CHEMICAL PROPERTIES

Color: Colorless
Odor: Mild characteristic
Odor Threshold: No data available
Physical State: Liquid
pH: No data available
Freezing Point: < -113.89°C (< -173 °F)
Boiling Point: 73.89 - 79.45°C (165 -175°F)
Flash Point: 10 – 12.78°C (50 -55°F)
Upper Explosive Limit: 19.0%
Lower Explosive Limit: 3.3%
Autoignition Temperature: > 365°C (> 689°F)
Evaporation Rate: 3.2 (Butyl acetate = 1)
Flammability: Flammability liquid
Reid Vapor Pressure: 3.99 (Natural gasoline denaturant)
Vapor Density (Air=1): 1.6
Specific Gravity: 0.789
Viscosity (25° C): 1.074 x 10^{-3} Pa-S
Viscosity (40° C): 8.34 x 10^{-4} Pa-S
Solubility in Water: Complete
Partition Coefficient (n-Octanol/water) (log_{10} K_{ow}): -0.284
Decomposition Temperature: No data available
Percent Volatile by Volume: 100%

10 STABILITY AND REACTIVITY

Stability: Stable

Conditions to Avoid: None known

Incompatible Materials: Strong oxidizing agent

Hazardous Decomposition Products: Carbon oxides

Possibility of Hazardous Reactions: Will not occur.

11 TOXICOLOGICAL INFORMATION

Specified Substances

Acute Toxicity

Chemical Name	Test Results
Ethanol	Inhalation LC50 (Rat): 20000 ppm/10H
Ethanol	Oral LD50 (Rat): 7060 mg/kg
Ethanol	Oral LD50 (Rabbit): 6300 mg/kg
Ethanol	Oral LD50 (Mouse): 3450 mg/kg
Ethanol	Dermal LDLo (Rabbit): 20 gm/kg
Ethanol	Skin (Rabbit): 20 mg/24H, Moderate irritation
Ethanol	Eye (Rabbit): 500 mg, Severe irritation
Natural gasoline	Inhalation LC50 (Rat): 300 mg/m^3/5M
Natural gasoline	Eye (Human): 500 ppm/1H, Moderate irritation

Listed Carcinogens:

Chemical Name	IARC	NTP	OSHA	ACGIH
Alcoholic beverages	1- Carcinogenic to human	--	--	--
Alcoholic beverage consumption	--	Known carcinogen	--	--
Gasoline	2B - Possibly carcinogenic to humans	--	--	--

12 ECOLOGICAL INFORMATION

There are no data on the ecotoxicity of this product.

13 DISPOSAL CONSIDERATIONS

Disposal Methods: Dispose of waste and residues in accordance with local authority requirements. Incinerate.

Container: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14 TRANSPORT INFORMATION

DOT :
UN No.: 1987
Proper Shipping Name: Alcohols, n.o.s.

Class: 3
Packaging Group: II
Label(s): 3
Emergency Response Guide Number: 127

TDG:
UN No.: 1987
Proper Shipping Name: Alcohols, n.o.s.
Class: 3
Packaging Group: II
Emergency Response Guide Number: 127

IATA:
UN No.: 1987
Proper Shipping Name: Alcohols, n.o.s.
Class: 3
Packaging Group: II
Label(s): Flammable liquid

IMDG:
UN No.: 1987
Proper Shipping Name: Alcohols, n.o.s.
Class: 3
Packaging Group: II
EMS No: C_3, SR-D

15 REGULATORY INFORMATION

Canadian Controlled Products Regulations: This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations, Section 33, and the MSDS contains all required information.

WHMIS Classification: B2, D2A, D2B

Mexican Dangerous Statement: This is classified as a hazardous material in Mexico.
PPE Code: H

Inventory Status

This product or all components of this product are listed on the following inventories:
TSCA, DSL

US Regulations

CERCLA Hazardous Substance List (40 CFR 302.4): None above de minimis concentration

SARA Title III

Section 302Extremely Hazardous Substance (40 CFR 355, Appendix A): None

Section 311/312 (40 CFR 370):

X	Acute (Immediate)	X	Chronic (Delayed)	X	Fire		Reactive		Pressure Generating

Section 313 Toxic Release Inventory (40 CFR 372): None above de minimis concentration

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40CFR 68.130): None

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3): None above de minimis concentration

Drug Enforcement Act

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f) (2)): None

FDA Status: Ethyl Alcohol GRAS (21 CFR 184).

Canada FDR: None

Kosher Status: None

Halal Status: None

State Regulations

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING: This product contains a chemical known to the state of California to cause cancer and birth defects or other reproductive harm.

California Prop 65 chemicals: Alcoholic beverages, when associated with alcohol abuse; ethylbenzene; toluene; benzene

Massachusetts Right-To-Know List: Ethanol; gasoline
Minnesota Hazardous Substances List: Ethyl alcohol; gasoline
New Jersey Right-To-Know List: Ethanol; gasoline
Pennsylvania Right-To-Know List: Ethanol
Rhode Island Right-To-Know List: Ethanol; gasoline

16 OTHER INFORMATION

Hazard Ratings

	Health Hazard	Fire Hazard	Reactivity Hazard
HMIS	2*	3	0

	Health Hazard	Fire Hazard	Reactivity Hazard	Special Hazard
NFPA	2	3	0	--

*- Chronic health effect; 0 – Minimal; 1 – Slight; 2 – Moderate; 3 – Serious; 4 – Severe

Revision Information: Update MSDS to the current ANSI standards. Key changes: Section 1, update contact information; Section 2, update hazard identifications; Section 14, update transportation classification.

References:

1. Ethanol, CAS Number 64-17-5, Reprotox, Record Number 1290, 1/1/2006.
2. Ethyl alcohol, CAS Number 64-17-5, Registry of Toxic Effects of Chemical Substances, RTECS Number KQ6300000, November 2006.
3. Natural gasoline, CAS Number 8006-61-9, Registry of Toxic Effects of Chemical Substances, RTECS Number LX3300000, November 2006.

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Supercedes Date: 11/15/05

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