



Material Safety Data Sheet
Denatured Fuel Ethanol

Date of Preparation: January 8, 1997

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Section 1 – Chemical Product and Company Identification	
Product Name:	Denatured Fuel Ethanol
CAS Number:	64-17-5
NIOSH/RTECS No.:	KQ6300000
Manufacturer:	Cargill Sweeteners P.O. Box 5662 Minneapolis, MN 55440-5662 952/742-6011
Emergency Telephone Number:	800/215-7754

Section 2 – Composition / Information on Ingredients			
HAZARDOUS COMPONENTS/CAS NO.:	% COMP	OSHA PEL	ACGIH TLV
Ethyl Alcohol / 64-17-5	95%	1,000 ppm	1,000 ppm
Natural Gasoline/8006-61-9	2 – 5%	300 ppm	500 ppm-STEL

Section 3 – Hazards Identification		
WARNING: THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, AND OTHER REPRODUCTIVE HARM.		
Routes of Entry:	Eyes:	Yes
	Ingestion:	Yes
	Inhalation:	Yes
	Skin Absorption:	Yes
Health Hazards – Acute:	Eyes:	Eye exposure at vapor concentrations of 1,000 – 10,000 ppm may cause temporary irritation. Continuous tearing occurs at levels greater than 15,000 ppm. Direct eye contact causes moderate to severe irritation.



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Health Hazards – Acute (continued):	Ingestion:	Ingestion first acts as stimulant, but increased volume can produce stupor. Ingestion may cause irritation to the gastrointestinal tract with nausea, vomiting, and abdominal pain. Ingestion may also cause headaches, tremors, fatigue, central nervous system depression, narcosis, or coma.
	Inhalation:	Excessive inhalation is irritating to the eyes and upper respiratory tract and can cause symptoms of intoxication. Aspiration into lungs may cause pulmonary edema and chemical pneumonitis. May also cause unconsciousness, coma, respiratory failure, or death. Recovery from inhalation of concentrations less than 10,000 ppm for brief periods occurs in a few minutes.
	Skin:	Denatured fuel ethanol may cause redness and/or a mild burning sensation of the skin with acute exposure to the liquid. Removes natural oils and fats from skin, causing dermatitis.
Effects of Overexposure:	Acute:	Can be fatal or cause blindness if inhaled, swallowed, or absorbed through the skin.
	Chronic:	This material contains natural gasoline. Chronic overexposure to natural gasoline can cause damage to gastrointestinal tract, liver, kidneys, and cardiovascular system and is a potential cancer hazard.
Signs and Symptoms of Exposure:	Coughing, eye and nose irritation. May cause drowsiness, dizziness, or loss of balance and coordination. Other symptoms include blurred vision, ataxia, euphoria, headache, nausea, vomiting, staggering, stupor, or coma.	
Reproductive Hazard:	Ethanol is implicated as a reproductive hazard in humans. Ethanol has demonstrated reproductive problems in animals.	
Carcinogenicity:	Natural Gasoline has been classified as a Group 2B carcinogen by IARC.	
Medical Conditions Generally Aggravated by Exposure:	Asthma and other respiratory conditions.	



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Section 4 – First Aid Measures		
First Aid and Emergency Procedures:	Eyes:	Flush immediately with large amounts of water for 15 minutes. Get immediate medical attention.
	Ingestion:	If conscious, induce vomiting. If breathing is difficult, give oxygen. Get immediate medical attention.
	Inhalation:	Remove to fresh air. Give artificial respiration if breathing has stopped. Get immediate medical attention.
	Skin:	Remove contaminated clothing and wash with large amounts of water for 15 minutes. Soap or mild detergent may be used. Get medical attention, if necessary.

Section 5 – Fire Fighting Measures		
Flash Point (Method Used):	50 – 55° F	
Flammable Limits:	Lower Explosive Limit:	3.3%
	Upper Explosive Limit:	19.0%
Flammability Class (OSHA):	1B	
Autoignition Temperature:	> 689° F	
Fire and Explosive Hazards:	Vapors heavier than air may travel some distance to an ignition source and flash back. Liquid is flammable.	
Extinguishing Media:	Carbon dioxide, polar solvent foam, alcohol resistant foam, dry chemical extinguishers, or large quantities of water. Do not use ordinary foam. Water spray may be ineffective in extinguishing large fires, but useful to dilute and flush small spills.	
Special Firefighting Procedures:	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Use water spray to cool equipment and disperse vapors. Water is not effective until alcohol contains approximately 80% water.	

Section 6 – Accidental Release Measures	
Spill or Leak Procedures:	Eliminate all ignition sources and evacuate area. Wear approved respirator. Flush spill with water to decrease the fire hazard. Small spills can be taken up with sand, vermiculite, or other absorbent material with non-sparking tools for later disposal. Larger spills should be contained and collected for appropriate disposal. Notify safety personnel of leaks or spills. Provide explosion proof ventilation in closed areas.



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Section 7 – Handling and Storage	
Handling and Storage Requirements:	Store in cool areas in tightly closed containers. Provide adequate ventilation. Locate storage area well away from heat, sparks, open flame and other fire hazards. Electrically bond and ground metal containers when storing/transferring. Avoid incompatible materials.
Other Precautions:	Post storage areas to prevent smoking or striking of matches. Do not store near oxidizing agents. Use explosion-proof electrical equipment and storage and non-sparking tools. Ground electrical equipment and storage and handling equipment to prevent static charges. Storage and use containers must be suitable for an OSHA Class 1B flammable material. Launder contaminated clothes before reuse. Close unused containers. Use grounding during transfer between containers. Transportation data per 49 CFR 172.101-2.

Section 8 – Exposure Controls / Personal Protection		
Respiratory Protection:	Wear appropriate NIOSH/MSHA approved respirator (cartridge units are not adequate) or air line respirator when exposure time limits are exceeded.	
Ventilation:	Local Exhaust:	As necessary to meet PEL or TLV limits.
	Mechanical:	Use non-sparking equipment.
	Special:	N/A (N/A = not applicable)
	Other:	Explosion-proof equipment.
Protective Gloves:	Rubber, neoprene, or nitrile equivalent and/or chemically resistant.	
Eye Protection:	Use safety goggles, full facemask, or glasses with side shields when appropriate.	
Other Protective Clothing or Equipment:	Eyewash station and safety shower should be available in work areas. Use general splash protection when appropriate. Use non-sparking tools or explosion-proof equipment to protect against an OSHA Class 1B flammable liquid.	
Work/Hygienic Practices:	Comply with all Bureau of Alcohol, Tobacco, and Firearms regulations pertaining to the production, procurement, and use of ethyl alcohol.	
Skin Protection:	Use chemically resistant outer garments.	



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Section 9 – Physical and Chemical Properties	
Appearance and Odor:	Colorless liquid with mild characteristic odor.
Physical Description:	Liquid
Reid Vapor Pressure (ASTM D5191):	3.99 (Natural Gasoline Denaturant)
Vapor Density (Air = 1) @ 78° C:	1.6
Boiling Point:	165 - 175° F
Melting Point:	< -173° F
Solubility in Water:	Complete
Evaporation Rate (Butyl Acetate = 1):	3.2
Percent Volatile by Volume:	100%
Specific Gravity (Water = 1) @ 60° F:	0.789
Chemical Formula:	C ₂ H ₅ OH/H ₃ CH ₂ OH

Section 10 – Stability and Reactivity	
Stability:	Stable
Conditions to Avoid:	Avoid heat, sparks, open flames, excessive storage temperatures, and/or open containers.
Incompatibility (Materials to Avoid):	Strong acids, oxidizing agents, peroxides, alkali metals, ammonia
Hazardous Decomposition or Byproducts:	Aldehydes, carbon monoxide, carbon dioxide. Unknown hydrocarbons may result from low oxygen combustion.
Hazardous Polymerization:	Will not occur
Decomposition Products:	Carbon dioxide, carbon monoxide

Section 11 – Toxicological Information		
Product Toxicology:	Inhalation Toxicity:	No information on denatured fuel ethanol per se.
	Dermal Toxicity:	No information on denatured fuel ethanol per se.
	Eye Irritation:	No information on denatured fuel ethanol per se.
	Oral Toxicity:	LD50 0.5 to 5 g/kg

Section 12 – Ecological Information
This product may contain 2 – 5% natural gasoline. Natural gasoline is known to cause moderate toxicity in fish. Spills will produce reportable sheens. Spills to sewers or other sub-surface drains must be immediately reported to local authorities.



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Section 13 – Disposal Considerations

Waste Disposal Method:	Do not allow to enter sewers where vapors may be ignited. Burn in an incinerator where permitted by federal, state, and local regulations or disposal in a site designed for flammable, hazardous materials.
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Section 14 – Transport Information

Shipping Name:	Alcohols, n.o.s. (Ethanol, Gasoline)
DOT Hazard Class:	Packing Group 3
DOT Identification No.:	UN 1987
Label:	Flammable Liquid

Section 15 – Regulatory Information

Comply with all Bureau of Alcohol, Tobacco and Firearms regulations pertaining to the production, procurement, and use of ethyl alcohol.

If a company's product contains benzene at levels above 0.1%, the company will be subject to supplier notification requirements under Section 313 of the Superfund Amendments and Reauthorization Act (SARA), 40 CFR part 370 subpart C and hazardous substance release reporting under Section 302 of the Comprehensive Environmental Response and Conservation Act where the quantity of benzene released in a 24-hour period exceeds the reportable quantity (RQ). This product is also subject to MSDS and Chemical Inventory Reporting under Sections 311 and 312 of SARA.

Section 16 – Other Information

The information given and the recommendations made herein apply to our product(s) alone and are not combined with other product(s). Such are based on our research and on data from other reliable sources that are believed to be accurate. No guaranty of accuracy is made. It is the purchaser's responsibility before using any product to verify this data under their own operation conditions and to determine whether the product is suitable for their purposes.

The above product information describes typical product characteristics but is not guaranteed and should not be construed as product specifications. Such information is, to the best of our knowledge, true and accurate. However, since the conditions of use are beyond our control, all recommendations or suggestions are made without guarantee, express or implied, on our part. We disclaim all liability in connection with the use of the information contained herein and all such risks are assumed by the user. Nothing contained herein shall be construed to infer freedom from patent infringement. WE FURTHER DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, OF PRODUCT MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.