

Material Safety Data Sheet

Denatured Fuel Ethanol

1. Product and company identification

Product name	: Denatured Fuel Ethanol
Material uses	: Analytical chemistry. 2 ml ampoule
Supplier/Manufacturer	: Agilent Technologies, Inc. Logistics Center - Americas 500 Ships Landing Way New Castle, Delaware 19720 800-227-9770
Part No.	: G3440-85032
Validation date	: 11/12/2012
<u>In case of emergency</u>	: Chemtrec: 1-800-424-9300

2. Hazards identification

Physical state	: Liquid.
Odor	: Alcohol-like. / Characteristic. / Gasoline-like [Strong]
OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview

Signal word	: WARNING!
Hazard statements	: FLAMMABLE LIQUID AND VAPOR. INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA. CONTAINS MATERIAL WHICH MAY CAUSE HERITABLE GENETIC EFFECTS.

Precautions	: Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not get on skin or clothing. Avoid contact with eyes. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
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Potential acute health effects

Inhalation	: Can cause central nervous system (CNS) depression. Irritating to respiratory system.
Ingestion	: Can cause central nervous system (CNS) depression.
Skin	: Irritating to skin. Defatting to the skin.
Eyes	: Irritating to eyes.

Potential chronic health effects

Chronic effects	: Contains material that may cause target organ damage, based on animal data. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
Carcinogenicity	: Contains material which may cause cancer, based on animal data. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: Contains material which may cause heritable genetic effects.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
Target organs	: Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, liver, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

2. Hazards identification

Over-exposure signs/symptoms

- Inhalation** : Adverse symptoms may include the following:
nausea or vomiting
respiratory tract irritation
coughing
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
- Ingestion** : No specific data.
- Skin** : Adverse symptoms may include the following:
irritation
redness
dryness
cracking
- Eyes** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Medical conditions aggravated by over-exposure** : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

3. Composition/information on ingredients

Name	CAS number	%
Ethanol	64-17-5	60 - 100
Gasoline	86290-81-5	1 - 5
Gasoline, natural	8006-61-9	1 - 5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. 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. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

- Flammability of the product** : Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
- Extinguishing media**
- Suitable** : Use dry chemical, CO₂, water spray (fog) or foam.
- Not suitable** : Do not use water jet.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Avoid exposure - obtain special instructions before use. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Ingredient	Exposure limits
Ethanol	<p>ACGIH TLV (United States, 3/2012). STEL: 1000 ppm 15 minutes.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 1000 ppm 8 hours. TWA: 1900 mg/m³ 8 hours.</p> <p>NIOSH REL (United States, 6/2009). TWA: 1000 ppm 10 hours. TWA: 1900 mg/m³ 10 hours.</p> <p>OSHA PEL (United States, 6/2010). TWA: 1000 ppm 8 hours. TWA: 1900 mg/m³ 8 hours.</p>
Gasoline	<p>ACGIH TLV (United States, 3/2012). STEL: 1480 mg/m³ 15 minutes. STEL: 500 ppm 15 minutes. TWA: 890 mg/m³ 8 hours. TWA: 300 ppm 8 hours.</p>
Gasoline, natural	<p>OSHA PEL 1989 (United States, 3/1989). STEL: 1500 mg/m³ 15 minutes. STEL: 500 ppm 15 minutes. TWA: 900 mg/m³ 8 hours. TWA: 300 ppm 8 hours.</p>

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

8. Exposure controls/personal protection

- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- Other protection** : Not available.

9. Physical and chemical properties

- Physical state** : Liquid.
- Flash point** : Closed cup: 10 to 13°C (50 to 55.4°F)
- Auto-ignition temperature** : >365°C (>689°F)
- Flammable limits** : Not available.
- Color** : Colorless.
- Odor** : Alcohol-like. / Characteristic. / Gasoline-like [Strong]
- pH** : Not available.
- Boiling/condensation point** : 73.89 to 79.45°C (165 to 175°F)
- Melting/freezing point** : <-113.89°C (<-173°F)
- Specific gravity** : 0.79
- Vapor pressure** : Not available.
- Vapor density** : 1.6 [Air = 1]
- Volatility** : 100% (v/v)
- Odor threshold** : Not available.
- Evaporation rate** : 1.7 (butyl acetate = 1)
- Solubility** : Soluble in the following materials: cold water and hot water.

10. Stability and reactivity

- Chemical stability** : The product is stable.
- Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
- Materials to avoid** : Reactive or incompatible with the following materials:
oxidizing materials
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethanol	LC50 Inhalation Vapor	Rat	124700 mg/m ³	4 hours
	LD50 Oral	Rat	7 g/kg	-
Gasoline	LC50 Inhalation Vapor	Rat	>5.2 mg/l	4 hours
	LD50 Oral	Rat	13.6 g/kg	-

Chronic toxicity

- Conclusion/Summary** : Not available.

11. Toxicological information

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Ethanol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	0.066666667 minutes 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	100 microliters	-
	Skin - Mild irritant	Rabbit	-	400 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-

Sensitizer

Conclusion/Summary : Not available.

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Ethanol	A3	1	-	-	-	-
Gasoline	A3	-	-	-	-	-
Gasoline, natural	-	2B	-	+	-	-

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

12. Ecological information

Ecotoxicity : This material is toxic to aquatic life. This material is harmful to aquatic life with long lasting effects.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Ethanol	Acute EC50 17.921 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franchiscana - Larvae	48 hours
	Acute LC50 42000 µg/l Fresh water	Fish - Oncorhynchus mykiss	4 days
	Chronic NOEC 4.995 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.375 ul/L Fresh water	Fish - Gambusia holbrooki - Larvae	12 weeks
Gasoline	Acute EC50 56 mg/l	Algae	72 hours
	Acute LC50 119 mg/l	Fish	96 hours
Gasoline, natural	Acute EC50 17.5 mg/l Marine water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute EC50 1.5 mg/l Marine water	Daphnia - Daphnia magna - Neonate	48 hours

Other adverse effects : No known significant effects or critical hazards.

13. Disposal considerations



Waste disposal : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.


The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT	UN1993	Flammable liquids, n. o.s. (Ethanol, Gasoline, natural, Gasoline)	3	II		<p>Limited quantity Yes.</p> <p>Packaging instruction Passenger aircraft Quantity limitation: 5 L</p> <p>Cargo aircraft Quantity limitation: 60 L</p> <p>Special provisions IB2, T7, TP1, TP8, TP28</p>
IMDG	UN1993	FLAMMABLE LIQUID, N.O.S. (Ethanol, Gasoline, natural, Gasoline)	3	II		<p>Emergency schedules (EmS) F-E, _S-E_</p>

14. Transport information

IATA	UN1993	Flammable liquid, n.o.s. (Ethanol, Gasoline, natural, Gasoline)	3	II		<u>Passenger and Cargo Aircraft</u> Quantity limitation: 5 L Packaging instructions: 353 <u>Cargo Aircraft Only</u> Quantity limitation: 60 L Packaging instructions: 364 <u>Limited Quantities - Passenger Aircraft</u> Quantity limitation: 1 L Packaging instructions: Y341
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PG* : Packing group

15. Regulatory information

HCS Classification : Flammable liquid
Irritating material
Carcinogen
Target organ effects

U.S. Federal regulations : **TSCA 8(a) IUR Exempt/Partial exemption:** Not determined

United States inventory (TSCA 8b): At least one component is not listed.

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: Ethanol; Gasoline; Gasoline, natural

SARA 311/312 MSDS distribution - chemical inventory - hazard identification:

Ethanol: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard;

Gasoline: Delayed (chronic) health hazard; Gasoline, natural: Fire hazard, Immediate

(acute) health hazard, Delayed (chronic) health hazard

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

State regulations

Massachusetts : The following components are listed: ETHYL ALCOHOL; GASOLINE

New York : None of the components are listed.

New Jersey : The following components are listed: ETHYL ALCOHOL; ALCOHOL; GASOLINE; GASOLINE, NATURAL

Pennsylvania : The following components are listed: DENATURED ALCOHOL; GASOLINE

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

15. Regulatory information

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Ethanol	Yes.	No.	No.	No.

16. Other information

Label requirements : FLAMMABLE LIQUID AND VAPOR. INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA. CONTAINS MATERIAL WHICH MAY CAUSE HERITABLE GENETIC EFFECTS.

Date of issue : 11/12/2012

Date of previous issue : No previous validation.

Version : 1

☑ Indicates information that has changed from previously issued version.

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