



CARBON GREEN BIOENERGY, LLC

Material Safety Data Sheet

E85

SECTION 1 – IDENTIFICATION

Product Name: E85
 Chemical Name: Ethanol/Gasoline Fuel Blend
 Synonyms: Denatured Alcohol; Fuel Alcohol
 Chemical Family: Alcohol
 Manufacturer: Carbon Green BioEnergy, LLC
 7795 Saddlebag Lake Road
 Lake Odessa, MI 48849
 (616) 374-3651

**For Chemical Emergency
 Spill, Leak, Fire, Exposure or Accident
 Call CHEMTREC Day or Night**

**DOMESTIC NORTH AMERICA
 800-424-9300**

**INTERNATIONAL, CALL +1
 703-527-3887 (collect calls accepted)**

SECTION 2 – COMPOSITION & EXPOSURE LIMITS

<u>Material</u>	<u>Percent Volume</u>	<u>CAS Number</u>	<u>OSHA Exposure Limits</u>
Ethanol	75 – 85 %	64-17-5	1,000 ppm TWA
Natural Gas Condensate	15 – 25 %	68919-39-1	500 ppm TWA (as petroleum distillate)
Benzene	< 0.5 %	71-43-2	1 ppm TWA 0.5 ppm STEL

TWA = 8 Hour Time Weighted Average
 STEL = 15 Minute Short Term Exposure Limit

SECTION 3 – HAZARDS IDENTIFICATION

Emergency Response Overview

Physical State: Liquid.

Hazards: **Highly Flammable liquid/vapor** (Gasoline Flash Point = -45 °F; Ethanol Flash Point = 55 °F). Potentially explosive vapor. High vapor pressure (VP = 45 mm Hg) and heavier than air (VD = 1.6). Use an alcohol resistant foam to suppress fires.

May cause irritation to the eyes, skin and respiratory system. May affect the central nervous system. May be harmful or fatal if swallowed. May be harmful if inhaled or absorbed through the skin. Contains Benzene at a low concentration.

Routes of Entry: Inhalation; skin contact; eye contact; and ingestion.

Color/Odor: Colorless liquid. Petroleum/alcohol like odor. Odor threshold reported to be between 50 and 1,000 ppm.

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Potential Health Effects

Symptoms of Acute Exposure

- Eye:** May cause severe eye irritation, redness, tearing, blurred vision and conjunctivitis.
- Skin:** Prolonged or repeated contact may cause irritation, dermatitis, defatting, redness, itching and inflammation. Injection through the skin may cause swelling and be extremely painful.
- Inhalation:** May cause upper respiratory irritation. Exposures over 1,000 ppm may cause central nervous system (CNS) effects such as excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, loss of appetite, and an inability to concentrate. At higher concentrations there may be a loss of reflexes, convulsions, seizures, loss of consciousness, coma, respiratory arrest and death.
- Ingestion:** Toxic if swallowed. Ingestion can cause drunkenness, depression, nausea, vomiting, diarrhea, liver damage and death. Aspiration into the lungs can cause severe chemical pneumonitis or pulmonary edema or hemorrhage which may be fatal. May cause harmful CNS effects similar to those listed under "Inhalation".

Chronic Health Effects

Contains Benzene, a chemical known to cause cancer in humans. Benzene overexposure may cause diseases such as leukemia, immune system disorders and adverse reproductive effects. Long term exposure to E85 may cause loss of appetite, weight loss, nervousness, memory loss and liver damage. May also cause dermatitis, malnutrition, amnesia, dementia, cardiac myopathy, hepatotoxicity, GI bleeding, pancreatitis, and death.

Medical Conditions Aggravated by Exposure

Pre-existing disorders of the CNS, liver, respiratory system, skin, eyes and GI track may be aggravated by exposure to E85.

SECTION 4 – FIRST AID MEASURES

- Eye:** Flush eyes with large amounts of clean water for at least 15 minutes. Flush under upper and lower eyelids. If pain or irritation persists, seek medical attention.
- Skin:** Flush affected area with clean water and soap if available. Remove contaminated clothing. If symptoms or irritation persists, seek medical attention.
- Inhalation:** Move victim to fresh air. For respiratory distress, provide oxygen or administer CPR if necessary. Seek medical attention if victim is unconscious or if discomfort persists.
- Ingestion:** DO NOT INDUCE VOMITING UNLESS DIRECTED TO DO SO BY PHYSICIAN. If victim is conscious, provide water to dilute. Do not give anything by mouth if victim is unconscious or having convulsions. CALL PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY.

SECTION 5 – FIRE FIGHTING MEASURES

Flammability Classification: OSHA/NFPA Class 1A Flammable Liquid.

- Flash Point:** Ethanol: 55 °F
Denaturant: -45 °F
- Auto-Ignition Temperature:** Ethanol: 685 °F
Denaturant: 535 °F (Estimated)
- Flammable Limits (by volume):** Ethanol Lower: 3.3 %
Ethanol Upper: 19 %
Denaturant Lower: 1.4 %
Denaturant Upper: 7.6 %
- Hazardous Combustion Products:** Combustion products include carbon monoxide and carbon dioxide, and to a lesser extent nitrogen and sulfur oxides (NO_x, SO_x).

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Special Conditions to Avoid

Extremely flammable liquid and vapor. Vapors form flammable or explosive mixtures at room temperature. Avoid open flames, sparks and static discharges. Vapor may travel back a considerable distance to a source of ignition and flash back. Vapors may accumulate in low or confined areas. Runoff to sewers may create a fire or explosion hazard. Alcohols burn with a pale blue flame which may be hard to see under normal lighting conditions. Persons may only be able to feel the heat of the flame without seeing the flame. Ethanol is miscible in water and water alone may not put out an ethanol fire.

Extinguishing Media

Use dry chemical, carbon dioxide, water spray (fog) or an alcohol resistant foam. Consult foam manufacturer for appropriate application rates and ratios. Water and water spray may only cool the fire, not extinguish the fire.

Fire Fighting Instructions

Firefighters should wear approved self-contained breathing apparatus (SCBA) and firefighter personal gear. If possible, limit the amount of fuel available to the fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Apply an alcohol resistant foam. Containers may explode in heat or fire. Cool containers by flooding with water until fire is completely extinguished. Keep personnel away from tanks engulfed in flames. Runoff to sewers may create a fire or explosion hazard. If possible, collect or contain fire water and keep out of sewer systems or bodies of water. Clothing, rags or similar organic material contaminated with E85 and stored in a closed space may undergo spontaneous combustion. Transfer to and from commonly bonded and grounded containers.

NFPA Hazard Ratings

Health: 2
Fire: 3
Instability: 0

HMS Hazard Ratings

Health: 2
Fire Hazard: 3
Physical Hazard: 0

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Release Response

- Small Spills:** Eliminate all sources of ignition. Small spills may be flushed and diluted with large amounts of water, or absorbed with an inert dry material, and place in an appropriate waste disposal container. Use spark-proof tools and explosion proof equipment. Dispose of collected waste via a licensed waste disposal firm in an appropriate manner. Transfer to and from commonly bonded and grounded containers. Do not touch or walk through spilled material.
- Large Spills:** Eliminate all sources of ignition. Isolate area and keep unnecessary personnel away. Do not touch or walk through spilled material. Stop leak if without risk. Contact emergency personnel. Use water spray and/or alcohol resistant foam to reduce vapor generation. Contain spill and, if possible, prevent groundwater or surface water exposure and runoff. Use SCBA and suitable personal protective equipment for emergency response. Prevent entry to confined spaces unless SCBA and air monitoring can be performed and proper permit procedures can be followed. For highway or railway spills, contact CHEMTREC at 800-424-9300.

Additional Environmental Considerations

Depending on size and nature of release, local, state and federal authorities may need to be notified. Contact the National Response Center at 800-424-8802 if the release contaminates either the ground or surface waters. Contact local responders/fire officials/water treatment plants if release gets into public sewer/treatment systems. E85 contains denaturant. In event of a spill, facilities should activate appropriate contingency and oil spill response plans.

SECTION 7 – HANDLING AND STORAGE

- Handling:** Open and handle containers with care. Assure adequate ventilation. Keep away from heat, sparks and flames. Metal containers should be grounded and bonded. Use explosion proof electrical equipment for ventilation, lighting and material handling. Do not pressurize, cut, weld, braze, solder, drill on or near storage containers. Assure empty containers are free of vapor. Assure filters are dry prior to disposal. Do not siphon by mouth to transfer product between containers. Never smoke while handling containers or product.

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Storage: Protect containers against physical damage. Detached or outside storage is preferred. Inside storage should be in an NFPA approved flammable liquids storage room or cabinet. All ignition sources should be eliminated. Ground all drums and transfer vessels when handling. Ground all storage cabinets. Assure adequate ventilation in storage areas. Follow NFPA 30, Flammable and Combustible Liquids Code, for all storage and handling. Consult with local fire codes for additional storage information.

SECTION 8 – EXPOSURE CONTROLS & PERSONAL PROTECTION

Engineering Controls

Engineering controls should be used whenever feasible to maintain concentrations below acceptable exposure limits including but not limited to enclosures, local ventilation and dilution ventilation. When transferring contents, the metallic container must be grounded and bonded to the receiving container to prevent static discharges. Ensure emergency use eyewash/shower stations are available and are maintained for immediate use. Use air monitoring equipment prior to confined space entry or emergency response. Use hot work permit when performing welding, cutting or other hot work in areas where product is stored, transferred or used. Use confined space entry permit prior to entry into a process or storage tank or container that previously contained the product.

Personal Protective Equipment

OSHA requires a Personal Protective Equipment program for the eyes and face to comply with 29 CFR 1910.133.

Eyes: Safety glasses should be used for minimum eye protection. Use chemical goggles or a faceshield when transferring E85 or when a high risk or exposure may exist. Eye and face protection should comply with the most recent version of ANSI Z87.1. OSHA requires a Personal Protective Equipment program for the eyes and face to comply with 29 CFR 1910.133.

Skin: As a minimum, wear cotton long sleeve shirts and pants or flame resistant/retardant clothing. Additional protective clothing (neoprene or nitrile) and boots may be needed when there is a higher risk of exposure.

Hands: Chemical resistant gloves (rubber, neoprene or nitrile) should be worn at all times when handling E85. Replace gloves that are torn, cut or worn. OSHA requires a Personal Protective Equipment program for the hands to comply with 29 CFR 1910.138.

Respiratory: An approved properly fitted air-purifying or air-supplied respirator should be used if exposure may exceed the OSHA exposure limits provided in SECTION 2 of this MSDS. Respiratory protection should comply with the most recent version of ANSI Z88.2. OSHA requires a Personal Protective Equipment program for the eyes and face to comply with 29 CFR 1910.134.

SECTION 9 – PHYSICAL & CHEMICAL PROPERTIES

Color/Odor: Colorless liquid. Petroleum/alcohol like odor. Odor threshold reported to be between 50 and 1,000 ppm.

Boiling Point: Ethanol: 158 °F

Freezing Point: Ethanol: - 173 °F

Vapor Pressure: 45 mm Hg @ 68 °F = 0.87 PSI @ 68 °F

Vapor Density: 1.6 (Air = 1.0)

Evaporate Rate: 1.7 (Butyl acetate = 1.0)

Volatility: 100%

Solubility: Ethanol is soluble in water. Denaturant is not soluble in water.

SECTION 10 – STABILITY & REACTIVITY

Stability: The product is stable. Under normal conditions, hazardous polymerization will not occur. The product does not react with air or water.

Conditions to Avoid: Avoid contact with all possible sources of ignition. Do not pressurize, cut, weld, braze, solder, drill, grind or exposure containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

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Materials to Avoid: Avoid contact with strong acids, alkalis and oxidizers such as chlorine, acetyl chloride and other oxidizers which may cause a violent reaction. The presence of oxygen above 20.9 percent will cause increased fire hazards.

Decomposition: Not expected to decompose under normal conditions. Burning or heating will produce carbon monoxide and carbon dioxide, and to a lesser extent nitrogen and sulfur oxides (NO_x, SO_x).

SECTION 11 – TOXICITY INFORMATION

E85 contains a small concentration of benzene, which is known to cause cancer in humans.

Eye Effects: E85 vapor can produce eye tearing and a burning sensation. Liquid exposure causes pain, irritation, tearing and a burning sensation. Denaturant may cause eye irritation after several hours exposure at 160 to 270 ppm.

Skin Effects: Short-term exposure to E85 should not cause irritation or other skin effects. Prolonged or repeated exposure to E85 may cause skin irritation and dermatitis by de-fatting the skin. E85 may be absorbed through the skin.

Inhalation Effects: May cause upper respiratory irritation. Exposures over 1,000 ppm may cause central nervous system (CNS) effects such as excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, loss of appetite, and an inability to concentrate. At higher concentrations there may be a loss of reflexes, convulsions, seizures, loss of consciousness, coma, respiratory arrest and death.

Ingestion Effects: Toxic by ingestion. Ethanol is rapidly absorbed through the gastrointestinal tract and is normally metabolized and excreted in a few hours. Can be fatal or cause blindness if swallowed in extreme quantities. Ingestion can cause headache, nausea, dizziness or narcosis. Chronic over-exposure can cause damage to the gastrointestinal tract, CNS, liver, kidneys and cardiovascular system.

Carcinogenicity: E85 contains a small concentration of benzene, which is known to cause cancer in humans. Potential exposure to benzene vapor may cause diseases such as leukemia, immune system disorders and adverse reproductive effects. Similar naphtha distillates have produced skin tumors in laboratory animals. Chronic exposure to gasoline vapor caused liver tumors in mice and kidney tumors in rats. Prolonged/repeated oral exposure to alkylate naphthas has resulted in kidney damage in rats. The risk of cancer is depends on duration and level of exposure.

Reproductive & Developmental Effects: May cause defects in the CNS, heart, kidney, lungs, gastrointestinal tract and limbs. Exposure to high concentrations of benzene may cause reproductive effects and adverse effects in offspring.

SECTION 12 – ECOLOGICAL INFORMATION

Environmental Fate: When spilled on land, E85 will volatilize, biodegrade and/or leach into the ground. It is anticipated that ethanol will neither absorb into soil nor bio-concentrate in aquatic organisms. When spilled into surface waters, ethanol is miscible with water. May be toxic to species such as the daphnia magna (water flea) and others depending on concentration. In water, photolysis, oxidation, hydrolysis, and biodegradation are expected to occur.

Bioaccumulation: Bioaccumulation is not expected to occur.



SECTION 13 – DISPOSAL CONSIDERATIONS

The generation of waste should be avoided or minimized. Reclaim or reuse whenever possible. All recovered material should be labeled, packaged, transported and disposed of or reclaimed in conformance with applicable state and federal laws and regulations. Dispose of products via a licensed waste disposal contractor. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Consult your local, state or federal authorities.

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SECTION 14 – TRANSPORT INFORMATION

<u>Regulatory Information</u>	<u>UN Number</u>	<u>Proper Shipping Name</u>	<u>Class</u>	<u>Packing Group</u>	<u>Label</u>	<u>Additional Information</u>
DOT Classification	1987	Alcohols, n.o.s.	3	II		None
TDG Classification	1987	Alcohols, n.o.s.	3	II		None

SECTION 15 – REGULATORY INFORMATION

SARA: Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 311/312 – Hazard Categories:

- Immediate (acute) Health Hazard
- Delayed (chronic) Health Hazard
- Fire Hazard

Section 313

E85 contains the following chemicals subject to the reporting requirements established by SARA – BENZENE

TSCA: All components of E85 are listed or exempt from listing in the Toxic Substances Control Act (TSCA) inventory.

Other Regulatory Information

California Proposition 65 requires manufacturers or distributors of consumer products into the State of California to provide a warning statement if the product contains ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm. E85 contains the following ingredients that are listed by the State of California to cause cancer or reproductive harm:

- Ethyl Alcohol, causes developmental toxicity (when in alcoholic beverages)
- Benzene is known to cause cancer

SECTION 16 – OTHER INFORMATION

This Material Safety Data Sheet (MSDS) was prepared in accordance with 29 CFR 1910.1200 by Carbon Green BioEnergy. The information on this MSDS was obtained from sources believed to be reliable. The information is provided without any warranty, expressed or implied, regarding its correctness. Information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The end user of E85 has the responsibility for evaluating the adequacy of the data under the conditions of use, for determine the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. Carbon Green BioEnergy does not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use or disposal of E85. If the product is used as a component in another product this MSDS information may not be applicable.