1. IDENTIFICATION

Product Identifier: E 85 Ethanol/Gasoline Blend

Synonyms: Ethanol 85%, Ethanol / Gasoline Fuel, E85, Fuel Ethanol, Gasohol

Intended use of the product: Fuel

Contact: Global Companies LLC
Water Mill Center
800 South St.
Waltham, MA 02454-9161
www.globalp.com

Contact Information:
EMERGENCY TELEPHONE NUMBER (24 hrs): CHEMTREC (800) 424-9300
COMPANY CONTACT (business hours): 800-542-0778

2. HAZARD IDENTIFICATION

According to OSHA 29 CFR 1910.1200 HCS

Classification of the Substance or Mixture

Classification (GHS-US):
- Flammable Liquid: Category 2 - H225
- Acute Toxicity: Category 4 - H332
- Skin Corrosion/Irritation: Category 2 - H315
- Carcinogenicity: Category 1A - H350
- Germ Cell Mutagenicity: Category 1B - H340
- Reproductive Toxicity: Category 2 - H361d
- STOT RE: Category 1 - H372
- Aspiration Hazard: Category 1 - H304

Labeling Elements

Signal Word (GHS-US): Danger
H225 – Highly flammable liquid and vapor.
H304 - May be fatal if swallowed and enters airways.
H332 - Harmful if inhaled.
H315 - Causes skin irritation.
H350 – May cause cancer.
H340 – May cause genetic defects.
H361 – Suspected of damaging fertility or the unborn child.
H372 – Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements (GHS-US):
P201 - Obtain special instructions before use.
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 - Keep container tightly closed.
P240 – Ground/bond container and receiving equipment.
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P241 – Use explosion-proof electrical/ventilating/lighting equipment pursuant to applicable electrical code.
P242 – Use only non-sparking tools.
P243 – Take precautionary measures against static discharge.
P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P303+361+353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse with water/shower.
P308+311 - If exposed or concerned: Get medical advice/attention.
P301+310 - If swallowed: Immediately call a poison center/doctor/...
P331 - Do NOT induce vomiting.
P370+P378 – In case of fire use firefighting foam or other appropriate media for Class B fires to extinguish.
P403 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulation.

Other information:
NFPA 704
Health: 1
Fire: 3
Reactivity: 0

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Name</th>
<th>Product Identifier (CAS#)</th>
<th>% (w/w)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Alcohol (Ethanol)</td>
<td>64-17-5</td>
<td>70-79</td>
<td>Flam Liq 2 H225</td>
</tr>
<tr>
<td>Gasoline</td>
<td>8006-61-9</td>
<td>21-30</td>
<td>Carc 1B, H350; Muta 1B, H340; Asp 1, H304</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>0.3 to 1.5 (0.03 to 3*)</td>
<td>Flam liq 2, H225; Carc 1A, H350; Muta 1B H340; STOT RE 1, H372; Asp 1, H304; Eye Irrit 2, H319; Skin Irrit 2, H315</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>0-5</td>
<td>Flam liq 2, H225; Repro 2, H361d; STOT RE 2, H373; Asp 1, H304; Skin Irrit 2, H315; STOT SE 3, H336</td>
</tr>
<tr>
<td>Xylene, mixed isomers</td>
<td>1330-20-7</td>
<td>0-5</td>
<td>Flam Liq 3, H226; Acute Tox 4, H332; Acute Tox 4, H312; Skin Irrit 2, H315</td>
</tr>
<tr>
<td>Ethyl Benzene</td>
<td>100-41-4</td>
<td>&lt; 1</td>
<td>Flam Liq 2, H225; Acute Tox 4, H332; STOT RE 2, H373; Asp 1, H304</td>
</tr>
<tr>
<td>1,2,4- Trimethylbenzene</td>
<td>95-63-6</td>
<td>&lt;1</td>
<td>Flam Liq 3, H226; Acute Tox 4, H332; Acute Tox 4, H312; Skin Irrit 2, H315; Eye Irrit 2, H319; STOT SE 3, H335; Acute Aquatic 2, H411</td>
</tr>
</tbody>
</table>

*for reformulated gasoline
4. FIRST AID MEASURES

<table>
<thead>
<tr>
<th>Route</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Aspiration Hazard: DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.</td>
</tr>
<tr>
<td>Eye Contact</td>
<td>If present, remove contact lenses. In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 minutes. Hold eyelids open to ensure adequate flushing. Seek medical attention.</td>
</tr>
<tr>
<td>Skin Contact</td>
<td>Remove contaminated clothing and shoes. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops.</td>
</tr>
<tr>
<td>Absorption</td>
<td>As with skin contact, remove contaminated clothing and flush with copious amounts of water. Flush affected area for at least 15 minutes to minimize potential for further absorption. Seek medical attention if significant portions of skin have been exposed.</td>
</tr>
</tbody>
</table>

Most Important Symptoms
Contact may cause eye, skin and mucous membrane irritation. Harmful if absorbed through the skin. Avoid prolonged breathing of vapors or mists. Inhalation may cause irritation, anesthetic effects (dizziness, nausea, headache, intoxication), and respiratory system effects.

Long-term exposure may cause effects to specific organs, such as to the liver, kidneys, blood, nervous system, and skin. Contains benzene, which can cause blood disease, including anemia and leukemia.

Immediate Medical Attention and Special Treatment
If ingested, do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs).

Application of epinephrine may cause cardiac arrhythmia in persons exposed to large quantities of hydrocarbon vapor or due to skin absorption. Observe for development of symptoms leading to cardiac arrhythmia.

Urine samples may be obtained to determine biological effects of benzene exposure and should be collected in accordance with the medical surveillance criteria in 29 CFR 1910.1028.

Contaminated clothing, including shoes may present a fire hazard and should be discarded.

Medical Conditions Aggravated by Exposure
Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash). Chronic respiratory disease, liver or kidney dysfunction, or pre-existing central nervous system disorders may be aggravated by exposure.

5. FIRE-FIGHTING MEASURES

Extinguishing Media
SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, fire fighting foam, or Halon.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Firefighting foam suitable for polar solvents is recommended for fuel with greater than 10% oxygenate concentration like this product - refer to NFPA 11 ‘Low Expansion Foam -1994 Edition.’
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Specific Hazards / Products of Combustion
Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Combustion may produce smoke, carbon monoxide and other products of incomplete combustion.

Special Precautions and Protective Equipment for Firefighters
Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other firefighting equipment.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA-approved pressure-demand self-contained breathing apparatus with full face piece and full protective clothing.

Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

See Section 9 for fire properties of this chemical including flash point, autoignition temperature, and explosive limits

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

ACTIVATE FACILITY SPCC, SPILL CONTINGENCY or EMERGENCY PLAN.

Depending on the size of the spill, downwind receptors may need to be notified.

Evacuate nonessential personnel and remove or secure all ignition sources (flame, spark, hot work, hot metal, etc.). Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Do not touch or walk-through spilled material.

Highly flammable material, even small spills may pose a fire danger for emergency responders. Due to high vapor density, flammable / toxic vapors may be present in low lying areas, dikes, pits, drains, or trenches. Ventilate the area. Use of non-sparking tools and intrinsically safe equipment is recommended. Potential for flammable atmosphere should be monitored using a combustible gas indicator positioned down wind of the spill area. See Sections 2 and 7 for further hazard warnings and handling instructions.

Use appropriate personal protective equipment to prevent eye/skin contact and absorption. Use NIOSH approved respiratory protection, if warranted, to prevent exposures above permissible limits (see Section 8). Contaminated clothing should not be near sources of ignition.

Environmental Precautions

Stop the spill to prevent environmental release if it can be done safely. Product is toxic to aquatic life. Take action to isolate environmental receptors including drains, storm sewers and natural water bodies. Keep on impervious surface if at all possible. Use water sparingly to prevent product from spreading. Foam and absorbents may be used to reduce / prevent airborne release.

Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Follow federal, state or local requirements for reporting environmental release where necessary (see Section 15 for further information)

Containment and Clean-Up Methods
Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require
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7. HANDLING AND STORAGE

Handling Precautions

USE ONLY AS A MOTOR FUEL
DO NOT SIPHON BY MOUTH

Handle as a flammable liquid. Keep away from heat, sparks, and open flame. No smoking. Electrical equipment should be approved for classified area. Bond and ground containers during product transfer pursuant to NFPA 70 and API RP 2003 to reduce the possibility of static-initiated fire or explosion. Follow precautions to prevent static initiated fire.

Use good personal hygiene practices. Use only with protective equipment specified in Section 8. Avoid repeated and/or prolonged skin exposure. Use only outdoors or in well ventilated areas. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves. Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure.

Vapors are heavier than air and can accumulate in low lying areas (e.g., tanks, pits, vaults, dikes, drains, etc.) Follow specific procedures for confined space entry in areas where product may be present pursuant to OSHA requirements in 29 CFR 1910.146. Atmospheric testing using a combustible gas indicator may be necessary in confined areas where product may be present.

Special slow load procedures for “switch loading” must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, “Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents.

Storage

Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Label all secondary containers that this material is transferred into with the chemical name and associated hazard(s). Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. Separate from incompatible materials (see Section 10) by distance or secondary containment.

Store in a well-ventilated area. Protect containers from damage and vehicular traffic. Post “No Smoking” signs in product storage areas. This storage area should comply with NFPA 30 “Flammable and Combustible Liquid Code”. Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 “Cleaning Mobile Tanks In Flammable and Combustible Liquid Service” and API RP 2015 “Cleaning Petroleum Storage Tanks”.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>List</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>8006-61-9</td>
<td>ACGIH TWA</td>
<td>300 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH STEL</td>
<td>500 ppm</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>ACGIH TLV-TWA</td>
<td>0.5 ppm*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH STEL</td>
<td>2.5 ppm*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA AL</td>
<td>0.5 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA TWA</td>
<td>1 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA STEL</td>
<td>5 ppm</td>
</tr>
<tr>
<td>Ethyl Alcohol (Ethanol)</td>
<td>64-17-5</td>
<td>ACGIH STEL</td>
<td>1000 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>
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E85 Ethanol/Gasoline Blend

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>List</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>ACGIH TWA</td>
<td>20 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA TWA</td>
<td>200 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA Ceiling limit</td>
<td>300 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA Ceiling limit Peak</td>
<td>500 ppm (10 min)</td>
</tr>
<tr>
<td>Xylene, mixed isomers</td>
<td>1330-20-7</td>
<td>ACGIH TWA</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH STEL</td>
<td>150 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL</td>
<td>100 ppm</td>
</tr>
<tr>
<td>Ethyl Benzene</td>
<td>100-41-4</td>
<td>ACGIH TWA</td>
<td>20 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA STEL</td>
<td>125 ppm</td>
</tr>
<tr>
<td>1,2,4-Trimethylbenzene</td>
<td>95-63-6</td>
<td>ACGIH TWA</td>
<td>25 ppm</td>
</tr>
</tbody>
</table>

*Skin designation indicates the chemical is skin absorbable

**Engineering Controls**
Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Intrinsically safe equipment and non-sparking tools shall be used in circumstances where concentrations may exceed lower flammable limits. Grounding and bonding shall be used to prevent accumulation and discharge of static electricity.

Emergency shower and eyewash should be provided in proximity to handling areas in the event of exposure to decontaminate.

**Personal Protective Equipment**

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye / Face</td>
<td>Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.</td>
</tr>
<tr>
<td>Skin</td>
<td>Gloves constructed of nitrile or neoprene are recommended when handling this material. If contact with the body is expected, chemical protective clothing such as of E.I. DuPont Tychem®, Barricade®, or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.</td>
</tr>
<tr>
<td>Respiratory</td>
<td>A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection and limitations. Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection. Specific requirements under the OSHA occupational exposure to Benzene may apply if concentrations exceed the action level or permissible limits. Consult 29 CFR 1910.1028 for further information)</td>
</tr>
<tr>
<td>Thermal</td>
<td>Product is stored at ambient temperature. No thermal protection is required except for emergency operations involving actual or potential for fire.</td>
</tr>
</tbody>
</table>
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>A clear, water-like liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>A strong, characteristic aromatic hydrocarbon odor. Oxygenated gasoline with Ethanol may have an alcohol-like odor and is detectable at a lower concentration than non-oxygenated gasoline.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Parameter</td>
</tr>
<tr>
<td></td>
<td>Gasoline with 85% Ethanol</td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting / Freeze Point</td>
<td>- 150 °F</td>
</tr>
<tr>
<td>Boiling Point And Range</td>
<td>85 to 437 °F (39 to 200 C) (based on Gasoline)</td>
</tr>
<tr>
<td>Flash Point</td>
<td>-5.8 °F (-21 C)</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>10-11</td>
</tr>
<tr>
<td>Flammability</td>
<td>Flammable liquid</td>
</tr>
<tr>
<td>Flammability Limits</td>
<td>1.4 – 7.6% (est)</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>7-15 RVP @100 °F (38 C)</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Approximately 3 to 4</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.76 -0.9 (water =1)</td>
</tr>
<tr>
<td>Solubility</td>
<td>85% (ethanol)</td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>2-7</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>highly variable; &gt;530 °F (&gt;280 C)</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Evaporation or ignition likely before decomposition will occur</td>
</tr>
<tr>
<td>Viscosity</td>
<td>&lt;1 cSt</td>
</tr>
<tr>
<td>Percent Volatiles</td>
<td>100%</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity
Material is not self reacting, flammable concentrations may be present in air.

Stability
Normally stable unless mixed with incompatibles or fire in presence of an ignition source. Material is flammable liquid.

Reactions / Polymerization
Stable. Hazardous polymerization will not occur.

Conditions to Avoid
Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources

Incompatible Materials
Keep away from strong acids and oxidizers.
Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:

Acute Toxicity (Inhalation LC50)
Gasoline (8006-61-9)
LC50 Inhalation Human 2000 ppm/1 hr
Benzene (71-43-2)
LC50 Inhalation Rat 10,000 ppm/7 hr
Ethanol (64-17-5)
LC50 Inhalation Rat >20,000 ppm/10 hr
Toluene (108-88-3)
LC50 Inhalation Mouse 400 ppm/4 hr
1,2,4 Trimethylbenzene (95-63-6)
LC50 Inhalation Mouse 2000 ppm/48 hr
Xylene (1330-20-7)
LC50 Inhalation Rat 6350 ppm/4 hr

Acute Toxicity (Oral LC50)
Gasoline (8006-61-9)
LC50 Oral Rat 14,063 mg/l/4h
Benzene (71-43-2)
LC50 Oral Rat 3306 mg/kg
Ethanol (64-17-5)
LC50 Oral Rat 7060 mg/kg
Toluene (108-88-3)
LC50 Oral Rat 2600 mg/kg
1,2,4 Trimethylbenzene (95-63-6)
LC50 Oral Rat 3550 mg/kg
Xylene (1330-20-7)
LC50 Oral Rat >3500 mg/kg
Ethylbenzene (100-41-4)
LC50 Oral Rat 3500 mg/kg

Acute Toxicity (Dermal LC50)
Gasoline (8006-61-9)
LD50 Dermal Rabbit >5 mL/kg
Benzene (71-43-2)
LD50 Dermal Rabbit >8260 mg/kg
Toluene (108-88-3)
LD50 Dermal Rabbit 12,200 mg/kg
1,2,4 Trimethylbenzene (95-63-6)
LD50 Dermal Rabbit >3160 mg/kg
Xylene (1330-20-7)
LD50 Dermal Rabbit >43 g/kg
Ethylbenzene (100-41-4)  
LC50 Dermal Rabbit   17,800 mg/kg  
Skin Corrosion/Irritation: Causes skin irritation.  
Serious Eye Damage/Irritation: Not classified  
Respiratory or Skin Sensitization: Not classified  
Germ Cell Mutagenicity: May cause genetic defects.  
Carcinogenicity: OSHA: NO  IARC: YES - 2B  NTP: NO  ACGIH: YES (A3)  
IARC has determined that gasoline and gasoline exhaust are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.  
This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. The NTP, ARC, OSHA and ACGIH list benzene as a human carcinogen.  
Reproductive Toxicity: May damage/Suspected of damaging fertility or the unborn child.  
Teratogenicity: Not available  
Specific Target Organ Toxicity (Repeated Exposure): Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.  
Specific Target Organ Toxicity (Single Exposure): Single over-exposure likely to cause central nervous system effects (dizziness and drowsiness), excessive exposure could cause paralysis or cardiac arrhythmia.  
Aspiration Hazard: This chemical is considered to be an aspiration hazard. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.  
Potential Health Effects: Vapor irritating to eyes, nose, and throat. Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur. Inhalation at high concentrations in confined spaces with less than 16% oxygen needed to sustain life, skin and /or eye contact (liquid).  
Chronic effects: Human inhalation (chronic) >500 ppm (approx 1.8 mg/L)/ day. Effects: May cause vomiting, diarrhea, insomnia, headache dizziness, anemia, muscle & neurological symptoms.  
WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.  

12. ECOLOGICAL INFORMATION

Toxicity  
Material is toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).  

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50 Daphnia</td>
<td>30 mmol/m3</td>
<td>(Exposure time: 48 h - Species: Daphnia magna)</td>
</tr>
<tr>
<td>LC 50 Fish</td>
<td>7.7 mg/l</td>
<td>(Exposure time: 96 h - Species: Pimephales promelas)</td>
</tr>
</tbody>
</table>

Persistence and Degradation: Not expected to persist in the environment.  
Bioaccumulative Potential: Not available  
Mobility in Soil: Not available
Other Adverse Effects: None known

Other Information: Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS
Consult federal, state and local waste regulations to determine appropriate disposal options. May be considered a hazardous waste if disposed. Direct solid waste (landfill) or incineration at a solid waste facility is not permissible. Do not discharge to sanitary or storm sewer. Personnel handling waste containers should follow precautions provided in this document.

Shipping containers must be DOT authorized packages. Follow licensure and regulations for transport of hazardous material and hazardous waste as applicable.

14. TRANSPORT INFORMATION

**US DOT**
- UN Identification Number: UN 3475
- Proper Shipping Name: Ethanol and gasoline mixture
- Hazard Class and Packing Group: 3, PG II
- Shipping Label: Flammable Liquid
- ERG: Flammable / 3477, 127

**IATA Cargo**
- UN Identification Number: UN3475
- Shipping Name / Description: Ethanol and gasoline mixture
- Hazard Class and Packing Group: 3, PG II
- ICAO Label: 3
- Packing Instructions Cargo: 364, Y341
- Max Quantity Per Package Cargo: 60 L

**IATA Passenger**
- UN Identification Number: UN3475
- Shipping Name / Description: Ethanol and gasoline mixture
- Hazard Class and Packing Group: 3, PG II
- ICAO Label: 3
- Packing Instructions Passenger: 353, Y341
- Max Quantity Per Package: 5 L

**IMDG**
- UN Identification Number: UN3475
- Shipping Name / Description: Ethanol and gasoline mixture
- Hazard Class and Packing Group: 3, PG II
- IMDG Label: 3
- EmS Number: F-E S-E
- Marine Pollutant: Yes

15. REGULATORY INFORMATION

U.S. Federal, State, and Local Regulatory Information
Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.
SAFETY DATA SHEET
E85 Ethanol/Gasoline Blend

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Immediate (Acute) Health Hazard Yes
Delayed (Chronic) Health Hazard Yes
Fire Hazard Yes
Reactive Hazard No
Sudden Release of Pressure Hazard No

Clean Water Act (Oil Spills)
Any spill or release of this product to “navigable waters” (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) or, if not practical, the U.S. Coast Guard with follow-up to the National Response Center, as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA Section 103 and SARA Section 304 (Release to the Environment)
The CERCLA definition of hazardous substances contains a “petroleum exclusion” clause which exempts crude oil, refined, and unrefined petroleum products and any indigenous components of such. However, other federal reporting requirements (e.g., SARA Section 304 as well as the Clean Water Act if the spill occurs on navigable waters) may still apply.

SARA Section 313- Supplier Notification
This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

- 1,2,4-Trimethylbenzene (95-63-6)
- Benzene (71-43-2)
- Benzene (71-43-2) for reformulated gasoline
- Ethyl benzene (100-41-4)
- Toluene (108-88-3)
- Xylene, mixed isomers (1330-20-7)

Information on each ingredient’s concentration can be found in Section 3
Information on each ingredient’s exposure limits can be found in Section 8

EPA Notification (Oil Spills)
If the there is a discharge of more than 1,000-gallons of oil into or upon navigable waters of the United States, or if it is the second spill event of 42 gallons or more of oil into water within a twelve (12) month period, a written report must be submitted to the Regional Administrator of the EPA within sixty days of the event.

Pennsylvania Right to Know Hazardous Substance list:
The following product components are cited in the Pennsylvania Special Hazardous Substance List, and are present at levels which require reporting.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,4-Trimethylbenzene</td>
<td>95-63-6</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>0.1-3%</td>
</tr>
<tr>
<td>Ethyl Alcohol</td>
<td>64-17-5</td>
<td>70-79%</td>
</tr>
<tr>
<td>Ethyl Benzene</td>
<td>100-41-4</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>0-5%</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>0-5%</td>
</tr>
</tbody>
</table>
New Jersey Right to Know Hazardous Substance List:
The following product components are cited in the New Jersey Right to Know Hazardous Substance List, and are present at levels which require reporting.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
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<td>95-63-6</td>
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<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>0-5%</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>0-5%</td>
</tr>
</tbody>
</table>

California Prop. 65
WARNING: This product contains chemicals known to the State of California to cause Cancer or Reproductive Toxicity.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>Amount</th>
</tr>
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<tr>
<td>Benzene</td>
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<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>0-5%</td>
</tr>
</tbody>
</table>

U.S. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30.

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian Regulatory Information (WHMIS)
Class B, Division 2 (Flammable Liquid)
Class D, Division 2A (Very toxic by other means) and Class D, Division 2B (Toxic by other means)

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>Version</th>
<th>Issue Date</th>
<th>Prior Issue Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>May 20, 2016</td>
<td>May 3, 2015</td>
</tr>
</tbody>
</table>

Description of Revisions
Revised to meet Globally Harmonized System for chemical hazard communication requirements pursuant to OSHA regulatory revisions 77 FR 17884, March 26, 2012.

Abbreviations

- °F Degrees fahrenheit (temperature)
- < Less than
- = Equal to
- > Greater than
- AP Approximately
- C Centigrade (temperature)
- kg Kilogram
- L Liter
- mg Milligrams
- mL Milliliter
- mm² Square millimeters
- mmHg Millimeters of mercury (pressure)
- ppm Parts per million
- sec Second
- ug Micrograms

Acronyms

- ACGIH American Conference of Governmental Industrial Hygienists
- AIHA American Industrial Hygiene Association
- AL Action Level
- ANSI American National Standards Institute
- API American Petroleum Institute
- CAS Chemical Abstract Service
- CERCLA Comprehensive Emergency Response, Compensation, and Liability Act
- DOT U.S. Department of Transportation
- EC50 Ecological concentration 50%
- EPA U.S. Environmental Protection Agency
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERPG</td>
<td>Emergency Response Planning Guideline</td>
</tr>
<tr>
<td>GHS</td>
<td>Global Harmonized System</td>
</tr>
<tr>
<td>HMIS</td>
<td>Hazardous Materials Information System</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research On Cancer</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods</td>
</tr>
<tr>
<td>Koc</td>
<td>Soil Organic Carbon</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal concentration 50%</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal dose 50%</td>
</tr>
<tr>
<td>MSHA</td>
<td>Mine Safety and Health Administration</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute of Occupational Safety and Health</td>
</tr>
<tr>
<td>NOIC</td>
<td>Notice of Intended Change</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
</tr>
<tr>
<td>OPA</td>
<td>Oil Pollution Act of 1990</td>
</tr>
<tr>
<td>OSHA</td>
<td>U.S. Occupational Safety &amp; Health Administration</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit (OSHA)</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation and Recovery Act</td>
</tr>
<tr>
<td>REL</td>
<td>Recommended Exposure Limit (NIOSH)</td>
</tr>
<tr>
<td>RVP</td>
<td>Reid Vapor Pressure</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act of 1986 Title III</td>
</tr>
<tr>
<td>SCBA</td>
<td>Self Contained Breathing Apparatus</td>
</tr>
<tr>
<td>SPCC</td>
<td>Spill Prevention, Control, and Countermeasures</td>
</tr>
<tr>
<td>STEL</td>
<td>Short-Term Exposure Limit (generally 15 minutes)</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value (ACGIH)</td>
</tr>
<tr>
<td>TSCA</td>
<td>Toxic Substances Control Act</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average (8 hr.)</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNECE</td>
<td>United Nations Economic Commission for Europe</td>
</tr>
<tr>
<td>WEEL</td>
<td>Workplace Environmental Exposure Level (AIHA)</td>
</tr>
<tr>
<td>WHMIS</td>
<td>Canadian Workplace Hazardous Materials Information System</td>
</tr>
</tbody>
</table>

Disclaimer of Expressed and Implied Warranties
Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

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** End of Safety Data Sheet **