

CHIPPEWA VALLEY ETHANOL COMPANY, LLLP
270 20th St NW BENSON, MN 56215
320.843.4813 (8am-5pm M-F)
800.424.9300 (Chemtrec)

Section 1: PRODUCT IDENTIFICATION

Product Name: E-85®

Common Names: E-83, E-70, Denatured Fuel Ethanol

Section 2: HAZARDS IDENTIFICATION

GHS Classification:

Flammable liquids, Category 2

Serious eye irritation, Category 2A

Hazardous to the aquatic environment - Long-term Hazard, Category 3

Signal Word: DANGER

Hazard Statement:

H224 + H225 - Extremely flammable liquid and vapor.

H302 + H304 - May be fatal if swallowed and enters airways.

H315 - Causes skin irritation.

H319 - Causes serious eye irritation.

H335 - May cause respiratory irritation.

H336 - May cause drowsiness or dizziness.

H350 - May cause cancer.

H370 - Causes damage to organs.

H411 - Toxic to aquatic life with long lasting effects

Precautionary statement(s):

P201 - Obtain special instructions before use.

P202 - Do not handle until all safety precautions have been read and understood.

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P233 + P235 - Keep container cool and tightly closed.

P240 - Ground and bond container and receiving equipment.

P241 - Use explosion proof equipment.

P242 - Use non-sparking tools.

P243 - Take action to prevent static discharges.

P260 + P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.

P264 - Wash hands thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P271 - Use only outdoors or in a well-ventilated area.

P273 - Avoid release to the environment.

P280 - Wear appropriate protective equipment.

P301 + P310 + P312 - IF SWALLOWED: Immediately call POISON CONTROL

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing Rinse skin with water [or shower].

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P331 - Do NOT induce vomiting.

P362 - Take off contaminated clothing.

P370 + P378 - In case of fire: Use appropriate media for extinction.

P403 + P405 + P235 - Store in a secured, cool, well ventilated place.

P501 - Dispose of contents in an approved hazardous waste container



Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT</u>	<u>CAS #</u>	<u>% (BY VOL)</u>
Ethyl Alcohol	64-17-5	70 - 85
Natural Gasoline	8006-61-9	15 - 30
Benzene	71-73-2	<0.1

Section 4: FIRST AID

Inhalation: Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

Skin Contact: Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.

Eye Contact: Flush eyes with water while holding eyelids open. Rest eyes for 30 minutes. If redness, burning, blurred vision, or swelling persist transport to the nearest medical facility for additional treatment.

Ingestion: If swallowed, do not induce vomiting; transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Most Important Symptoms/Effects, Acute & Delayed

: Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Skin irritation signs and symptoms may include a burning sensation, redness, or swelling. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. Breathing of high vapor concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death. Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye color), fatigue, bleeding or easy bruising and sometimes pain and swelling in the upper right abdomen.

Immediate medical attention, special treatment: Treat symptomatically.

Section 5: FIRE AND EXPLOSION INFORMATION

Clear fire area of all non-emergency personnel.

Specific hazards arising from Chemicals: Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases(smoke). Carbon monoxide. Ethanol burns with a smokeless blue flame that is not always visible in normal light.

Suitable Extinguishing Media: Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media: Do not use water in a jet as it may scatter and spread fire..

Protective Equipment &

Precautions for Fire

Fighters: Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

Additional Advice : If possible remove containers from the danger zone. If the fire cannot be extinguished the only course of action is to evacuate immediately. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways.

NFPA CODES: HEALTH - 1 FLAMMABILITY - 3 REACTIVITY - 0

Section 6: ACCIDENTAL RELEASE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: Absorb liquid on paper, vermiculite, floor absorbent, or other absorbent material and transfer to hood.

LARGE SPILL: Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until cleanup has been completed. Stop spill at source, dike area or spill to prevent spreading. Pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers. Prevent run-off to sewers, streams or other bodies of water. If run-off occurs notify proper authorities as required that a spill has occurred.

Section 7: HANDLING AND STORAGE

General Precautions: Avoid breathing vapors or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Air-dry contaminated clothing in a well-ventilated area before laundering. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Prevent spillages. Turn off all battery operated portable electronic devices (examples include: cellular phones, pagers and CD players) before operating gasoline pump. Do not use as a cleaning solvent or other non-motor fuel uses. Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse. For comprehensive advice on handling, product transfer, storage and tank cleaning refer to the product supplier. Vehicle fueling and vehicle workshop areas - Avoid inhalation of vapors and contact with skin, when filling or emptying a vehicle.

Precautions for Safe Handling: Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Never siphon by mouth. Avoid exposure.

Conditions for Safe Storage: Drum and small container storage: Keep containers closed when not in use. Drums should be stacked to a maximum of 3 high. Packaged product must be kept tightly closed and stored in a diked (bonded) well-ventilated area, away from, ignition sources and other sources of heat. Use properly labelled and closeable containers. Take suitable precautions when opening sealed containers, as pressure can build up during storage. Bulk storage tanks should be

diked (bonded). Locate tanks away from heat and other sources of ignition. Cleaning, inspection and maintenance of storage tanks is a specialist operation, which requires the implementation of strict procedures and precautions.

Product Transfer: Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/sec until fill pipe submerged to twice its diameter, then ≤ 7 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening hatches or manholes.

Recommended Materials: For containers, or container linings use mild steel, stainless steel. For container paints, use epoxy paint, zinc silicate paint.

Unsuitable Materials: Aluminum if > 50 °C. Most plastics. Neoprene rubber.

Container Advice: Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Other Advice: Ensure that all local regulations regarding handling and storage facilities are followed.

Section 8: EXPOSURE CONTROL, PERSONAL PROTECTIVE EQUIPMENT

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	5 ppm
	TWA	1 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Ethanol (CAS 64-17-5)	PEL	1900 mg/m ³
		1000 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value
Benzene (CAS 71-43-2)	Ceiling	25 ppm
	TWA	10 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	2.5 ppm
	TWA	0.5 ppm
Ethanol (CAS 64-17-5)	STEL	1000 ppm
Gasoline (motor fuel) (CAS 86290-81-5)	STEL	500 ppm
	TWA	300 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	1 ppm
	TWA	0.1 ppm
Ethanol (CAS 64-17-5)	TWA	1900 mg/m ³
		1000 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time -
Benzene (CAS 71-43-2)	25 µg/g	Phenylmercapturic acid	Creatinine in urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Benzene (CAS 71-43-2) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Benzene (CAS 71-43-2) Can be absorbed through the skin.

Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.
Skin protection	
Hand protection	Wear chemical-resistant, impervious gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.
Other	Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.
Respiratory protection	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. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Consult supervisor for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

Section 9: PHYSICAL PROPERTIES

Appearance	Colorless liquid.
Physical state	Liquid.
Form	Liquid.
Color	Colorless
Odor	Characteristic Gasoline Odor (Strong).
Odor threshold	Not available.
pHe	6.5-9.0
Melting point/freezing point	< -173 °F (< -113.89 °C)
Initial boiling point and boiling range	165 - 175.01 °F (73.89 - 79.45 °C)
Flash point	50.0 - 55.4 °F (10.0 - 13.0 °C) (closed cup)
Evaporation rate	1.7 (butyl acetate = 1)
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	1.6
Relative density	Not available.
Solubility (water)	Soluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	> 689 °F (> 365 °C)
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
VOC (Weight %)	100 %

Section 10: STABILITY AND REACTIVITY

Reactivity	Not available.
Chemical stability	Stable under normal temperature conditions and recommended use.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

Section 11: TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Ingestion	May be fatal if swallowed and enters airways.
Inhalation	Inhalation of vapors/fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or difficulty breathing.
Skin contact	Prolonged contact may cause redness, irritation and dry skin.
Eye contact	May cause eye irritation on direct contact.

Symptoms related to the physical, chemical and toxicological characteristics

Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Cyanosis (blue tissue condition, nails, lips, and/or skin). Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.

Information on toxicological effects

Acute toxicity Harmful: may cause lung damage if swallowed.

Components	Species	Test Results
Ethanol (CAS 64-17-5) <i>Acute, Inhalation, LC50</i>	Rat	30000mg/m3

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation Based on available data, the classification criteria are not met.

Respiratory or skin sensitization

Respiratory sensitization Based on available data, the classification criteria are not met.

Skin sensitization Based on available data, the classification criteria are not met.

Germ cell mutagenicity May cause genetic defects.

Carcinogenicity May cause cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

Benzene (CAS 71-43-2)	1 Carcinogenic to humans.
Gasoline (motor fuel) (CAS 86290-81-5)	2B Possibly carcinogenic to humans.
Gasoline, natural (CAS 68425-31-0)	2B Possibly carcinogenic to humans.

NTP Report on Carcinogens

Benzene (CAS 71-43-2) Known To Be Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Benzene (CAS 71-43-2) Cancer

Reproductive toxicity	Suspected of damaging fertility or the unborn child. Benzene has demonstrated animal effects of reproductive toxicity. Animal studies of benzene have shown testicular effects, alterations in reproductive cycles, chromosomal aberrations and embryo/fetotoxicity. Ethanol has demonstrated human effects of reproductive toxicity.
Specific target organ toxicity (single exposure)	Based on available data, the classification criteria are not met.
Specific target organ toxicity (repeated exposure)	Based on available data, the classification criteria are not met.
Aspiration hazard	May be fatal if swallowed and enters airways.
Chronic effects	Repeated exposure of laboratory animals to high concentrations of gasoline vapors has caused kidney damage and cancer in rats and cancer in

mice. Gasoline was evaluated for genetic activity in assays using microbial cells, cultured mammalian cells and rat bone marrow cells. The results were all negative so gasoline was considered nonmutagenic under these conditions. Overexposure to this product or its components has been suggested as a cause of liver abnormalities in laboratory animals and humans. Lifetime studies by the American Petroleum Institute have shown that kidney damage and kidney cancer can occur in male rats after prolonged inhalation exposures at elevated concentrations of total gasoline. Kidneys of mice and female rats were unaffected. The U.S. EPA Risk Assessment Forum has concluded that the male rat kidney tumor results are not relevant for humans. Total gasoline exposure also produced liver tumors in female mice only. The implication of these data for humans has not been determined.

Further information

Symptoms may be delayed

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity	Harmful to aquatic life with long lasting effects.		
Components		Species	Test Results
Ethanol (CAS 64-17-5)			
Aquatic			
Algae	EC50	Freshwater algae	275 mg/l, 72 Hours
		Marine water algae	1970 mg/l
Fish	LC50	Fathead minnow	> 100 mg/l, 96 hours
		(Pimephales promelas)	
		Freshwater fish	11200 mg/l, 96 Hours
Invertebrate	EC50	Freshwater invertebrate	5012 mg/l, 48 Hours
		Marine water invertebrate	857 mg/l, 48 Hours
Persistence and degradability	Not available.		
Bioaccumulative potential	Not available.		
	Partition coefficient n-octanol / water (log Kow)		
Ethanol (CAS 64-17-5)	-0.31		
Mobility in soil	Not available.		
Other adverse effects	Not available.		

Section 13: WASTE DISPOSAL CONSIDERATIONS

Disposal instructions	Dispose in accordance with all applicable regulations. This material and its container must be disposed of as hazardous waste. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.
Hazardous waste code	D001: Waste Flammable material with a flash point <140 °F
Waste from residues/unused products	Dispose of in accordance with local regulations

Section 14: TRANSPORTATION INFORMATION

DOT Classification: Hazardous FLAMMABLE LIQUID (173.115)
 Placard Identification: UN1993 Flammable Liquid, n.o.s. (ethanol, gasoline), 3, PG II

Section 15: REGULATORY

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Benzene (CAS 71-43-2)	Cancer Central nervous system Blood Aspiration Skin Eye Respiratory tract irritation Flammability
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CERCLA Hazardous Substance List (40 CFR 302.4)

Benzene (CAS 71-43-2)	LISTED
Ethanol (CAS 64-17-5)	LISTED
Gasoline (motor Fuel) (CAS 86290-81-5)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA Section 302 (Extremely Hazardous Substance): Not Applicable

SARA Section 313 (Toxic Chemicals): Not Applicable

Other federal regulations

CERCLA: Not Applicable

CAA 112 (r): Not Applicable

RCRA: Not Applicable

Section 16: OTHER

THIS SDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

The information accumulated herein is believed to be accurate, but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.