BIOETHANOL GEL FUEL

Safety Data Sheet

According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)
Issue date: 9/12/2025 Version: 1.0

SECTION 1 Identification

1.1. Product identifier

Product form : Mixture
Trade name : BIOETHANOL GEL FUEL

1.2. Other means of identification

No additional information available

1.3. Recommended use of the chemical and restrictions on use

Recommended use : Fuel
Restrictions on use : Only use as directed on package labeling

1.4. Supplier's details

ASTEMREY LLC
312 W 2 ND ST
UNIT A2013
CASPER, WY 82601
USA
T +1 (904) 852-6653
support@astemrey.com

1.5. Emergency phone number

Emergency number : For Hazardous Materials or Dangerous Goods Incident Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night: 1-800-424-9300 (Toll Free, USA) / 703-527-3887 (Virginia, USA)
CCN 1022189
Back-up Emergency Number: +1 703-741-5970 (Washington, DC)

SECTION 2 Hazard Identification

2.1. Classification of the substance or mixture

GHS US classification

Flammable liquid, Category 2	H225	Highly flammable liquid and vapor.
Serious eye damage/eye irritation, Category 2A	H319	Causes serious eye irritation.

Full text of H statements : see section 16

2.2. Label elements

GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US) : Danger
Hazard statements (GHS US) : H225 - Highly flammable liquid and vapor
H319 - Causes serious eye irritation
Precautionary statements (GHS US) : Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.
Keep container tightly closed.
Ground/Bond container and receiving equipment.
Use explosion-proof electrical, lighting, ventilating equipment.

Wash hands, forearms and face thoroughly after handling.
Wear protective gloves, protective clothing, eye and face protection.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice or attention.
In case of fire: Use Dry chemical, CO2, alcohol-resistant foam or waterspray to extinguish.
Store in a well-ventilated place. Keep cool.
Dispose of contents and/or container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulations.

2.3. Hazards associated with known or reasonably anticipated uses

No additional information available

2.4. Hazards not otherwise classified

No additional information available

2.5. Unknown acute toxicity

No additional information available

SECTION 3 Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
Ethanol	CAS-No.: 64-17-5	80	Flam. Liq. 2, H225 Eye Irrit. 2A, H319
Water	CAS-No.: 7732-18-5	19 – 20	Not classified
Carbomer	CAS-No.: 9003-01-4	0.04	Not classified
Denatonium Benzoate	CAS-No.: 3734-33-6	0.03	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Eye Dam. 1, H318

Full text of hazard classes and H-statements : see section 16

SECTION 4 First aid measures

4.1. Description of necessary first-aid measures

First-aid measures general : First aider: Pay attention to self-protection. Never give anything by mouth to an unconscious person. Give artificial respiration if necessary. Induce artificial respiration with mask fitted with one-way valve or other suitable device but, not mouth-to-mouth. If you feel unwell, seek medical advice.

First-aid measures after inhalation : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If the victim is unconscious: Lay in a stable manner on victim's side. Induce artificial respiration with mask fitted with one-way valve or other suitable device; not mouth-to-mouth. If experiencing respiratory symptoms: Call a poison center or a doctor.

First-aid measures after skin contact : Remove affected clothing and wash all exposed skin areas with mild soap and water, followed by warm water rinse. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms/effects, acute and delayed

Symptoms/effects after inhalation : Inhalation may cause irritation, cough, shortness of breath.

Symptoms/effects after skin contact : Repeated exposure may cause skin dryness or cracking.

Symptoms/effects after eye contact : Eye irritation. Redness, itching, tears.

Symptoms/effects after ingestion : Burning sensation. May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Other medical advice or treatment : Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Dry chemical, CO2, alcohol-resistant foam or waterspray.

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard : Highly flammable liquid and vapor.

Explosion hazard : May form flammable/explosive vapor-air mixture. Vapors are heavier than air and may travel considerable distance to an ignition source and flash back to source of vapors.

Hazardous decomposition products in case of fire : Toxic fumes may be released. Carbon dioxide. Carbon monoxide.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection. Move containers from fire area if it can be done without personal risk. Use water spray or fog for cooling exposed containers. Large fires: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Withdraw immediately in case of rising sound from venting devices or discoloration from tank. ALWAYS stay away from tanks engulfed in fire. For a massive fire, use unmanned hose holders or monitor nozzles, or withdraw from the area and allow fire to burn. Prevent fire-fighting water from entering environment.

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6 Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid all personal contact including breathing in the mist, spray, vapors. Do not take actions involving personal risks. Absorb spillage to prevent material-damage. Stop leak if safe to do so. Notify authorities if product enters sewers or public waters.

For non-emergency personnel

Protective equipment : Wear recommended personal protective equipment.

Emergency procedures : Evacuate the danger area. If outdoors, move to an area upwind of the danger area. Avoid contact with skin and eyes. If possible without taking personal risks, Remove ignition sources, ventilate area. Prevent other non-emergency personnel from entering the danger area. No open flames, no sparks, and no smoking.

For emergency responders

Protective equipment	:	Wear the recommended personal protective equipment. Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	:	Evacuate personnel to a safe area. Do not touch or walk on the spilled product. Remove all sources of ignition. Stop leak if safe to do so. Use non-sparking tools.
Environmental precautions	:	Avoid release to the environment.

6.2. Methods and materials for containment and cleaning up

For containment	:	Stop leak, if possible without risk. Small spills: Contain with non-combustible inert absorbent. For large spills, use water spray to disperse vapors, flush spill area. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. All equipment used when handling the product must be grounded.
Methods for cleaning up	:	Take up in non-combustible inert absorbent and place into container for disposal. Contaminated absorbent material may pose the same hazard as the spilt product. Decontaminate surfaces and equipment with water and detergent. Until a sufficient level of dilution is achieved, the decontamination water may pose the same hazards as the product. Notify authorities if product enters sewers or public waters. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

For further information refer to section 8: "Exposure controls/personal protection",For further information refer to section 13

SECTION 7 Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Ensure good ventilation of the work station. Use only outdoors or in a well-ventilated area. Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing mist, spray, vapors. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Use explosion-proof equipment. Take precautionary measures against static discharge. Flammable vapors may accumulate in the container.
Hygiene measures	:	Do not eat, drink or smoke when using this product. Always wash hands after handling the product.
Additional hazards when processed	:	Proper grounding procedures to avoid static electricity should be followed.

7.2. Conditions for safe storage, including incompatibilities

Technical measures	:	Ground/bond container and receiving equipment.
Storage conditions	:	Store in a cool, dry and well-ventilated area away from incompatible substances. Keep container closed when not in use. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.
Incompatible materials	:	Strong mineral acids. Strong oxidizing agents.
Packaging materials	:	Store always product in container of same material as original container.

SECTION 8 Exposure controls/personal protection

8.1. Control parameters

Ethanol (64-17-5)

USA - ACGIH - Occupational Exposure Limits

Local name	Ethanol

Ethanol (64-17-5)	
ACGIH® TLV® STEL	1880 mg/m³
	1000 ppm
Remark (ACGIH)	TLV® Basis: URT irr. Notations: A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans)
Regulatory reference	ACGIH 2025
USA - OSHA - Occupational Exposure Limits	
Local name	Ethyl alcohol (Ethanol)
OSHA PEL TWA	1900 mg/m³
	1000 ppm
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - NIOSH - Occupational Exposure Limits	
Local name	Ethyl alcohol (Ethanol)
NIOSH REL 10h TWA	1000 ppm
Regulatory reference (US-NIOSH)	OSHA Annotated Table Z-1 (NIOSH Pocket Guide to Chemical Hazards (NPG))

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station. Use general ventilation, local exhaust ventilation, or process enclosure to keep the airborne concentrations below the permissible exposure limits. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Environmental exposure controls : Avoid release to the environment. Take measures to reduce or limit air emissions and releases to soil and the aquatic environment.

8.3. Individual protection measures, such as personal protective equipment

Personal protective equipment:
Personal protective equipment should be chosen according to national standards and in discussion with the supplier of the protective equipment. Wear recommended personal protective equipment.

Hand protection:

Wear protective gloves. Chemically impervious gloves as described by OSHA's hand protection regulations in 29 CFR 1910.138. The following materials are suitable for protective gloves: Butyl rubber, Fluorocarbon rubber

Eye protection:

Wear safety glasses which protect from splashes

Skin and body protection:

Body protection should be chosen depending on activity and possible exposure. Wear fire/flame resistant/retardant clothing. Antistatic clothing

Respiratory protection:

Use NIOSH approved respirator if ventilation is inadequate. SCBA for emergency responders. Must be used in accordance with an OSHA compliant respiratory protection program.

Personal protective equipment symbol(s):

SECTION 9 Physical and chemical properties

9.1. Basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Gel.
Color	:	Colorless
Odor	:	Characteristic
Odor threshold	:	No data available
pH	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	77 °C / 170.6 °F
Flash point	:	13 °C / 55.4 °F
Flammability (solid, gas)	:	No data available
Vapor pressure	:	57 hPa
Relative vapor density at 20°C	:	No data available
Relative density	:	No data available
Density	:	0.79 g/cm³
Solubility	:	Miscible with water.
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Auto-ignition temperature	:	360 °C / 680 °F
Decomposition temperature	:	No data available
Viscosity, kinematic	:	No data available
Explosion limits	:	Lower explosion limit: 3.5 vol % Upper explosion limit: 15 vol %
Particle characteristics	:	No data available

9.2. Data relevant with regard to physical hazard classes (supplemental)

No additional information available

SECTION 10 Stability and reactivity

10.1. Reactivity

Highly flammable liquid and vapor.

10.2. Chemical stability

Stable under normal conditions of use.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition. Incompatible materials.

10.5. Incompatible materials

Strong mineral acids. Strong oxidizing agents.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal decomposition generates: Carbon dioxide. Carbon monoxide.

SECTION 11 Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Ethanol	
LD50 oral rat	7060 mg/kg body weight
LD50 oral	6200 mg/kg
LD50 dermal rabbit	> 18000 mg/kg body weight
LD50 dermal	20000 mg/kg
LC50 Inhalation - Rat	124.7 mg/l/4h

Denatonium Benzoate	
LD50 oral rat	584 mg/kg
LD50 dermal rat	> 2000 mg/kg body weight
LC50 Inhalation - Rat	0.2 mg/l air

Carbomer	
LD50 oral rat	2500 mg/kg
LD50 oral	2500 mg/kg
LD50 dermal rabbit	> 2000 mg/kg body weight
LC50 Inhalation - Rat	> 5.1 mg/l air

Water	
LD50 oral rat	> 10000 mg/kg body weight
LD50 dermal rat	> 10000 mg/kg body weight
LD50 dermal rabbit	> 10000 mg/kg body weight
LC50 Inhalation - Rat	> 100 mg/l/4h

Skin corrosion/irritation : Not classified

Ethanol	
Skin corrosion/irritation, rabbit	Not irritating to rabbits on cutaneous application

Denatonium Benzoate	
pH	6.5 – 7.5

Carbomer	
pH	2.5 – 3

Water	
pH	7

Serious eye damage/irritation : Causes serious eye irritation.

Ethanol	
Serious eye damage/irritation, rabbit	Moderately irritating

Denatonium Benzoate	
pH	6.5 – 7.5

Carbomer	
pH	2.5 – 3

Water	
pH	7

Respiratory or skin sensitization : Not classified

Ethanol	
Skin sensitization, mouse	Not sensitive

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Ethanol	
IARC group	1 - Carcinogenic to humans

Carbomer	
IARC group	3 - Not classifiable

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

Ethanol	
NOAEL (subchronic,oral,animal/male,90 days)	< 9700 mg/kg body weight
NOAEL (subchronic,oral,animal/female,90 days)	> 9400 mg/kg body weight

Denatonium Benzoate	
NOAEL (oral,rat,90 days)	15 mg/kg body weight

Carbomer	
LOAEL (oral,rat,90 days)	100 mg/kg body weight

Aspiration hazard : Not classified

Symptoms/effects after inhalation : Inhalation may cause irritation, cough, shortness of breath.

Symptoms/effects after skin contact : Repeated exposure may cause skin dryness or cracking.

Symptoms/effects after eye contact : Eye irritation. Redness, itching, tears.

Symptoms/effects after ingestion : Burning sensation. May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

SECTION 12 Ecological information

12.1. Ecotoxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Not classified

Ethanol	
LC50 - Fish [1]	11200 mg/l
EC50 - Crustacea [1]	5463 mg/l
ErC50 algae	1000 mg/l
NOEC (chronic)	9.6 mg/l
NOEC chronic crustacea	9.6 mg/l

Denatonium Benzoate	
LC50 - Fish [1]	> 100 mg/l
EC50 72h - Algae [1]	281.556 mg/l

Carbomer	
EC50 - Crustacea [1]	47 mg/l
EC50 - Crustacea [2]	95 mg/l

12.2. Persistence and degradability

BIOETHANOL GEL FUEL	
Persistence and degradability	Not rapidly degradable

Ethanol	
Persistence and degradability	Rapidly degradable

Denatonium Benzoate	
Persistence and degradability	Not rapidly degradable

Carbomer	
Persistence and degradability	Not rapidly degradable

Water	
Persistence and degradability	Rapidly degradable

12.3. Bioaccumulative potential

Denatonium Benzoate	
Partition coefficient n-octanol/water (Log Pow)	1.78

Water	
Partition coefficient n-octanol/water (Log Pow)	-1.38

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Ozone : Not classified
Fluorinated greenhouse gases : No

SECTION 13 Disposal considerations

Regional waste regulation : Disposal must be done according to official regulations.
Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations : Disposal must be done according to official regulations.
Product/Packaging disposal recommendations : Disposal must be done according to official regulations. Dispose of this material and its container at hazardous or special waste collection point. Refer to all applicable national, international and local regulations or provisions.
Additional information : Flammable vapors may accumulate in the container. Do not re-use empty containers.
Ecological waste information : Avoid release to the environment.
List of Hazardous Wastes Codes : U.S. - RCRA (Resource Conservation Recovery Act) - D Waste- Characteristic Waste Codes. D001: IGNITABLE WASTE.

SECTION 14 Transport information

In accordance with DOT / IMDG / IATA

DOT	IMDG	IATA
14.1. UN number		
UN1170	1170	1170
14.2. Proper Shipping Name		
Ethanol solutions	ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)	Ethanol solution
14.3. Transport hazard class(es)		
3	3	3
14.4. Packing group		
II	II	II
14.5. Environmental hazards		
	Dangerous for the environment: No Marine pollutant: No	
No supplementary information available		

14.6. Transport in bulk

Not applicable

14.7. Special precautions for user

DOT

UN-No. (DOT) : UN1170
DOT Packaging Exceptions (49 CFR 173.xxx) : 4b;150
DOT Packaging Non Bulk (49 CFR 173.xxx) : 202
DOT Packaging Bulk (49 CFR 173.xxx) : 242

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	60 L
DOT Vessel Stowage Location	:	A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel.

IMDG

Special provision (IMDG)	:	144
Limited quantities (IMDG)	:	1 L
Excepted quantities (IMDG)	:	E2
Packing instructions (IMDG)	:	P001
IBC packing instructions (IMDG)	:	IBC02
Tank instructions (IMDG)	:	T4
Tank special provisions (IMDG)	:	TP1
EmS-No. (Fire)	:	F-E - FIRE SCHEDULE Echo - NON-WATER-REACTIVE FLAMMABLE LIQUIDS
EmS-No. (Spillage)	:	S-D - SPILLAGE SCHEDULE Delta - FLAMMABLE LIQUIDS
Stowage category (IMDG)	:	A
Properties and observations (IMDG)	:	Colorless, volatile liquids. Pure ETHANOL: flashpoint 13°C c.c. Explosive limits: 3.3% to 19%. Miscible with water.

IATA

PCA Excepted quantities (IATA)	:	E2
PCA Limited quantities (IATA)	:	Y341
PCA limited quantity max net quantity (IATA)	:	1L
PCA packing instructions (IATA)	:	353
PCA max net quantity (IATA)	:	5L
CAO packing instructions (IATA)	:	364
CAO max net quantity (IATA)	:	60L
ERG code (IATA)	:	3L

SECTION 15 Regulatory information

15.1. Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

Ethanol (64-17-5)

Listed on the Canadian DSL (Domestic Substances List)

Denatonium Benzoate (3734-33-6)

Listed on the Canadian DSL (Domestic Substances List)

Carbomer (9003-01-4)

Listed on the Canadian DSL (Domestic Substances List)

Water (7732-18-5)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

Ethanol (64-17-5)
Listed on IARC (International Agency for Research on Cancer) Listed on INSQ (Mexican National Inventory of Chemical Substances)

Denatonium Benzoate (3734-33-6)
Listed on INSQ (Mexican National Inventory of Chemical Substances)

Carbomer (9003-01-4)
Listed on INSQ (Mexican National Inventory of Chemical Substances)

Water (7732-18-5)
Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Component	State or local regulations
Ethanol(64-17-5)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16 Other information

According to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)
Issue date : 9/12/2025

Full text of hazard classes and H-statements	
H225	Highly flammable liquid and vapor
H302	Harmful if swallowed
H318	Causes serious eye damage
H319	Causes serious eye irritation
H332	Harmful if inhaled

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.