

Section 1: Product & Company Information**Product Identifier:** **Exo Endosol 101****Other Means of Identification****Product Number:** -**Recommended Use and Restrictions on Use****Recommended Use:** Geo-Thermal Heat Transfer Fluid**Restrictions on use:** Not for human consumption.**Manufacturer / Importer / Supplier / Distributor Information****Company Name:** Greenway Products Inc.**Address:** 4320 Greenway Drive

Knoxville, TN 37918

USA

Information Telephone Number: 1-865-524-4239**Fax Number:** 1-865-524-3375**Website:** www.greenwayproductsinc.com**Contact Person:** Regulatory Manager**E-mail:** regulatory@greenwayproductsinc.com**Emergency Phone Number:** Chemtrec® 1-800-424-9300 / Outside USA 1-703-527-3887 (monitored 24 hours/day)**Section 2: Hazards Identification****GHS Hazard Classification(s)**

In accordance with OSHA Hazard Communication Standard 29 CFR 1910.1200 (HazCom 2012).

Physical Hazard(s)

Flammable, Liquids - 2

Health Hazard(s)

Corrosion/Irritation, Skin - 2

(Corrosion)Damage/Irritation, Eye - 2B

Specific Target Organ Toxicity (STOT)-CNS, Single exposure - 3

Environmental Hazard(s)

Not classified.

Label Elements**Signal Word****DANGER****Hazard Symbol(s)****Hazard Statement(s)**

H225: Highly flammable liquid and vapor

H315: Causes skin Irritation

H320: Causes eye Irritation

H335: May cause respiratory Irritation

Precautionary Statements**Prevention**

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

P233: Keep container tightly closed.

P240: Ground/bond container and receiving equipment.

P241: Use explosion-proof electrical/ventilating/lighting/equipment.

P242: Use only non-sparking tools.

P243: Take precautionary measures against static discharge.

P264: Wash face, hands and any exposed skin thoroughly after handling.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response

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

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

P337 + P313: If eye irritation persists: Get medical advice/attention.

P370 + P378: In case of fire: Use suitable extinguishing media for extinction.



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Storage

P403 + P235: Store in a well-ventilated place. Keep cool.

Disposal

P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC)

None known.

Section 3: Composition/Information on Ingredients

Mixtures

Chemical Identity	Common Name/Synonym(s)	CAS #	Weight %	Impurity or Stabilizing Additive
Ethyl Alcohol	Ethanol	64-17-5	92 – 93%	No

Section 4: First-Aid Measures

General Information

Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

Inhalation

Move to fresh air. Get medical attention if symptoms occur.

Skin Contact

Wash skin thoroughly with soap and water. Get medical attention if symptoms occur. Wash contaminated clothing before reuse.

Eye Contact

Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. If eye irritation persists: Get medical advice/attention.

Ingestion

Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.

Most important symptoms/effects, acute and delayed

Symptoms

Symptoms will vary with alcohol level of the blood. Mild alcohol intoxication occurs at blood levels between 0.05- 0.15%. Approximately 25% of individuals show signs of intoxication at these levels. Above 0.15% the person is definitely under the influence of ethanol; 50-95% of individuals are clinically intoxicated at these levels. Severe poisoning occurs when the blood is ethanol level is 0.3- 0.5%. Above 0.5% the individual will be comatose and death can occur. The unabsorbed ethanol should be removed by gastric lavage after intubating the patient to prevent aspiration. Avoid the use of depressant drugs and administering excessive amounts of fluids.

Indication of immediate medical attention and special treatment needed

Treatment

Symptoms may be delayed. Treat symptomatically.

Section 5: Fire-Fighting Measures

General Fire Hazards

In case of fire and/or explosion do not breathe fumes. Vapors may cause a flash fire or ignite explosively.

Suitable (and Unsuitable) Extinguishing Media

Suitable Extinguishing Media

Water spray, foam, dry powder or carbon dioxide.

Unsuitable Extinguishing Media

Avoid water in straight hose stream; will scatter and spread fire.

Specific Hazards Arising from the Chemical

Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations.

Special Protective Equipment and Precautions for Firefighters

Special Fire-Fighting Equipment Procedures

Alcohols burn with a pale blue flame which may be extremely hard to see under normal lighting conditions. Personnel may only be able to feel the heat of the fire without seeing flames. Extreme caution must be exercised in fighting alcohol fires. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. Always stay away from tanks engulfed in fire. Use water spray to keep fire-exposed containers cool. Move containers from fire area if you can do so without risk.

Special Protective Equipment for Fire-Fighters

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Section 6: Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Use personal protective equipment. Keep unauthorized personnel away. Keep upwind. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.



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Methods and Materials for Containment and Clean-Up

Eliminate all ignition sources if safe to do so. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Collect in a non-combustible container for prompt disposal. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures

Dike for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk. Inform authorities if large amounts are involved.

Environmental Precautions

Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

Section 7: Handling and Storage

Precautions for Safe Handling

DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Use personal protective equipment as required. Avoid inhalation of vapors and spray mists. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Use only with adequate ventilation. Wash hands thoroughly after handling. See Section 8 of the SDS for Personal Protective Equipment.

Conditions for Safe Storage, including any Incompatibilities

Keep away from food, drink and animal feeding stuffs. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

Section 8: Exposure Controls/Personal Protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	CAS #	Type	Value	Source
Ethyl Alcohol	64-17-5	STEL	1000 ppm	US. ACGIH Threshold Limit Values
Ethyl Alcohol	64-17-5	PEL	1000 ppm	US OSHA Table Z-1
Ethyl Alcohol	64-17-5	REL	1000 ppm	US. NIOSH: Pocket Guide to Chemical Hazards

Biological Limit Values

None of the components have assigned biological limit values.

Appropriate Engineering Controls

No data available.

Individual protection measures, such as personal protective equipment (PPE)

General Information

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.

Eye/Face Protection

Wear safety glasses with side shields (or goggles). Wear face shield if there is risk of splashes.

Skin Protection

Hand Protection

Wear appropriate chemical resistant gloves.

Other

Wear appropriate chemical resistant clothing.

Respiratory Protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Hygiene Measures

Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned.

Section 9: Physical and Chemical Properties

Appearance:

Physical State: Liquid
Color: Colorless liquid / invisible vapor.

Odor:

Sweet, Alcohol-like

Odor Threshold:

No data available.

pH:

No data available.

Melting Point/Freezing Point:

-114 °C (-173 °F)

Initial Boiling Point and Boiling Range:

78.3 °C (172.9 °F)

Flash Point:

17°C (62°F) - closed cup

Evaporation Rate (butyl acetate=1):

Specific data not available - expected to be rapid.

Flammability (solid, gas):

OSHA/NFPA Class IB Flammable Liquid



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Upper/Lower Limit on Flammability or Explosive Limits

Flammability Limit – Upper: 19% volume
Flammability Limit – Lower: 3.3% volume
Explosive Limit – Upper: No data available.
Explosive Limit – Lower: No data available.

Vapor Pressure: 59.5 hPa (44.6 mmHg) at 20 °C (68 °F) - For 100% Ethyl Alcohol

Vapor Density (air = 1): 1.6

Relative Density (water=1): 0.808 g/mL at 25 °C (77 °F)

Solubility(ies):

Solubility in water: Completely
Solubility (other): No data available.

Partition coefficient (n-octanol/water): No data available.

Auto-Ignition Temperature: 363°C (685.4°F) - (Ethyl Alcohol)

Decomposition Temperature: No data available.

Viscosity: No data available.

Other Information:

Molecular Weight: Mixture
Formula: Mixture

Section 10: Stability and Reactivity

Reactivity

No dangerous reaction known under conditions of normal use.

Chemical Stability

Material is stable under normal conditions.

Possibility of Hazardous Reactions

Hazardous polymerization does not occur.

Conditions to Avoid

Heat, sparks, flames. Contact with incompatible materials.

Incompatible Materials

Strong oxidizing agents. Alkali metals. Inorganic salts. Organic - organometallic. Inorganic hydrides.

Hazardous Decomposition Products

Carbon oxides are expected to be, under fire conditions, the primary hazardous decomposition products.

Section 11: Toxicological Information

Information on routes of exposure

Ingestion: Harmful if swallowed.

Inhalation: Harmful if inhaled. May cause irritation to the respiratory system.

Skin Contact: Harmful if absorbed through skin. Causes mild skin irritation.

Eye Contact: Causes serious eye irritation. Eye exposure to Ethanol generally causes transient pain, irritation, and reflex lid closure. A foreign-body sensation may persist for one to two days. Vapors produce transient stinging and tearing, but no apparent adverse effects. Transiently impaired preception of color may occur with acute ingestion or chronic alcoholism.

Information on Toxicological Effects

Acute Toxicity (List all possible routes of exposure)

Oral

Ethanol: LD 50 (Rat): 6,200 mg/kg

Dermal

No data available.

Inhalation

Ethanol: LC 50 (Rat, 10 h): 20,000 mg/l

Repeated Dose Toxicity

No data available.

Skin Corrosion/Irritation

Standard Draize skin test (rabbit) - Dose: 20 mg/24 hrs Reaction: Moderate Repeated exposure may cause skin dryness or cracking.

Serious Eye Damage/Eye Irritation

Standard Draize eye test (rabbit) - Dose: 500 mg Reaction: Severe Dose: 500 mg/24 hrs Reaction: Mild

Respiratory/Skin Sensitization

Not a skin sensitizer.

Carcinogenicity

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans

Ethanol: Group 1, Carcinogenic to humans

US. National Toxicology Program (NTP) Report on Carcinogens

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.



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US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Germ Cell Mutagenicity

In Vitro

No mutagenic components identified.

In Vivo

No mutagenic components identified.

Reproductive Toxicity

May damage fertility or the unborn child. Reproductive toxicity - Human - female - Oral. Effects on Newborns - measured low apgar scores and showed signs of alcohol dependence.

Specific Target Organ Toxicity - Single Exposure

Central nervous system. Eyes. Respiratory tract irritation

Specific Target Organ Toxicity - Repeated Exposure

None known.

Aspiration Hazard

Not classified.

Other Effects

None known.

Section 12: Ecological Information

Ecotoxicity

Acute Hazards to the Aquatic Environment

Fish

Ethanol: LC 50 (Rainbow trout, donaldson trout (*Oncorhynchus mykiss*), 96 h): 12,000 - 16,000 mg/l Mortality

Ethanol: LC 50 (Fathead minnow (*Pimephales promelas*), 96 h): 13,480 mg/l Mortality

Ethanol: LC 50 (Carp (*Leuciscus idus melanotus*), 48 h): 8,140 mg/l Mortality

Aquatic Invertebrates

Ethanol: EC 50 (Water flea (*Daphnia obtusa*), 48 h): 10,100 - 11,200 mg/l Intoxication

Ethanol: LC 50 (Brine shrimp (*Artemia franchiscana*), 48 h): 25.5 mg/l Mortality

Ethanol: LC 50 (Water flea (*Daphnia magna*), 48 h): 7,560 - 12,600 mg/l Mortality

Chronic Hazards to the Aquatic Environment

Fish

No data available.

Aquatic Invertebrates

No data available.

Toxicity to Aquatic Plants

No data available.

Persistence and Degradability

Biodegradation

Expected to be readily biodegradable.

BOD/COD Ratio

No data available.

Bioaccumulative Potential

Bioconcentration Factor (BCF)

No data available on bioaccumulation.

Partition Coefficient n-octanol / water (log Kow)

Ethanol: Log Kow: -0.31

Mobility in Soil

The product is water soluble and may spread in water systems.

Results of PBT and vPvB Assessment

No data available.

Other Adverse Effects

The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Section 13: Disposal Considerations

Disposal Instructions

Discharge, treatment, or disposal may be subject to national, state, or local laws. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container.

Contaminated Packaging



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Since emptied containers retain product residue, follow label warnings even after container is emptied.

Section 14: Transportation Information

US Department of Transportation (DOT)

UN Number: UN1987
UN Proper Shipping Name: Alcohols, n.o.s.
Technical Name: -
Hazard Class: 3
Subsidiary Hazard Risk: -
Packing Group: II
DOT Label/Placard Exemptions: Not determined
Special Provisions: 172, IB2, T7, TP1, TP8, TP28
Packaging Exceptions: 49CFR 173.150, 4b
Packaging Non-Bulk: 49CFR 173.202
Packaging Bulk: 49CFR 173.242
Reportable Quantity (RQ): No
Marine Pollutant: No
Poison Inhalation Hazard: No
Special precautions for user: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Emergency Response Guidebook (ERG) #: 127

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

Section 15: Regulatory Information

US Federal Regulations

Toxic Substance Control Act (TSCA), Chemical Substance Inventory, Section 8(b)

This product or ingredients are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substance List (40 CFR 302.4)

No chemicals in this material are subject to the reporting requirements of CERCLA.

Clean Air Act (CAA), Section 112(r)

No chemicals in this material are subject to the reporting requirements of CAA.

Emergency Planning and Community Right-To-Know Act (EPCRA)

EPCRA 302 Extremely Hazardous Substance

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

EPCRA 304 Emergency Response Notification

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 304.

EPCRA 311/312 Emergency and Hazardous Materials Reporting

Fire Hazard: Yes
Sudden Release of Pressure: No
Reactive: No
Acute Health Hazard: Yes
Chronic Health Hazard: Yes

EPCRA 313 Toxic Chemical Release Inventory (TRI) Reporting

This material does not contain any chemical(s) with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)

This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Important Note: Due to the changing nature of regulatory requirements, the information in this document should NOT be considered all-inclusive or authoritative. Users should make their own investigations to determine the suitability of the information for their particular purposes. International, Federal, State and Local regulations should be consulted to determine compliance with all required reporting requirements.

Section 16: Other Information

Hazardous Materials Identification System (HMIS®) Classification

Health Hazard: 2
Chronic Health Hazard: *
Flammability: 3
Physical Hazard: 0

(Hazard Rating: 0 – Minimal / 1 – Slight / 2 – Moderate / 3 – Serious / 4 – Severe)

National Fire Protection Association (NFPA 704) Rating

Health Hazard: 2
Fire Hazard: 3
Reactivity Hazard: 0
Special: N/A



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Key to Abbreviations and Acronyms

ATE - Acute Toxicity Estimate
BCF - Bioconcentration Factor
EC50 - Effective concentration, 50%
IDHL - Immediately Dangerous to Life and Health
Kg - Kilogram
l - Liter
lb - Pound
LC50 - Lethal Concentration, 50%
LD50 - Lethal Dose, 50%
mg - milligram
ml - milliliter
N/A - Not Applicable
N/D - Not Determined
PEL - Permissible Exposure Limit
REL - Recommended Exposure Limit
STEL - Short-term Exposure Limit
TWA - Time weighted average

ACGIH - American Conference of Industrial Hygienists
AIHA - American Industrial Hygiene Association
BEI - Biological Exposure Indices
CAS - Chemical Abstracts Service
DOT - US Department of Transportation
EPA - US Environmental Protection Agency
GHS - Globally Harmonized System of Classification and Labelling of Chemicals
IARC - International Agency for Research on Cancer
IATA - International Air Transport Association
IBC - Intermediate Bulk Container
IMDG - International Maritime Dangerous Goods
NIOSH - National Institute for Occupational Safety and Health
NTP - National Toxicology Program
OSHA - US Occupational Health and Safety Administration
SARA - US EPA Superfund Amendments and Reauthorization Act
TSCA - US EPA Toxic Substances Control Act
UN - United Nations

References

HSDB* - Hazardous Substances Data Bank

Disclaimer

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